



Metro Outer Joint Development Assessment Panel Agenda

Meeting Date and Time: Monday, 12 April 2021; 9am
Meeting Number: MOJDAP/80
Meeting Venue: via Zoom

To connect to the meeting via your computer - <https://zoom.us/j/94505060655>

To connect to the meeting via teleconference dial the following phone number -
7150 1149

Insert Meeting ID followed by the hash (#) key when prompted - 945 0506 0655

This DAP meeting will be conducted by electronic means open to the public rather than requiring attendance in person.

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Attendance

DAP Members

Mr Ian Birch (Presiding Member)
Mr Jarrod Ross (A/Deputy Presiding Member)
Mr Jason Hick (Third Specialist Member)
Cr Casey Rose (Local Government Member, Shire of Murray)
Cr David Bolt (Local Government Member, Shire of Murray)

Officers in attendance

Mr Rod Peake (Shire of Murray)

Minute Secretary

Ms Adele McMahon (DAP Secretariat)

Applicants and Submitters

Mr Tom Hockley (Allerding Associates)
Mr John Wood (Providence Lifestyle)
Mr Richard Hammond (Providence Lifestyle)

Members of the Public / Media

Nil

1. Opening of Meeting, Welcome and Acknowledgement

The Presiding Member declares the meeting open and acknowledges the traditional owners and pay respects to Elders past and present of the land on which the meeting is being held.

This meeting is being conducted by electronic means open to the public. Members are reminded to announce their name and title prior to speaking.

2. Apologies

Ms Sheryl Chaffer

3. Members on Leave of Absence

DAP Member, Ms Sheryl Chaffer (Deputy Presiding Member) has been granted leave of absence by the Director General for the period of 29 March 2021 to 23 April 2021 inclusive.

4. Noting of Minutes

Signed minutes of previous meetings are available on the [DAP website](#).

5. Declarations of Due Consideration



Any member who is not familiar with the substance of any report or other information provided for consideration at the DAP meeting must declare that fact before the meeting considers the matter.

6. Disclosure of Interests

Nil

7. Deputations and Presentations

7.1 Mr John Wood and Mr Richard Hammond (Providence Lifestyle) presenting in support of the recommendation for the application at Item 8.1. The presentation will address support for the proposal and overview of Providence Lifestyle model.

7.2 Mr Tom Hockley (Allerding Associates) presenting in support of the recommendation for the application at Item 8.1. The presentation will address support for the proposal and thanking the officer's for their recommendation and conditions.

The Shire of Murray may be provided with the opportunity to respond to questions of the panel, as invited by the Presiding Member.

8. Form 1 – Responsible Authority Reports – DAP Applications

8.1 Lot 156 (528) Pinjarra Road, Furnissdale

Development Description:	Proposed Grouped Dwelling Development
Applicant:	Allerding and Associates on behalf of Ecofit Homes Pty Ltd
Owner:	Mr Stephen Robert Draper, Ms Karen Anne Draper, Mr Raymond Barry Bostelman, Ms Helen Louise Bostelman, Kemoc Pty Ltd and Mr Geoffery Kenneth Marshall
Responsible Authority:	Shire of Murray
DAP File No:	DAP/20/01912

9. Form 2 – Responsible Authority Reports – DAP Amendment or Cancellation of Approval

Nil



10. State Administrative Tribunal Applications and Supreme Court Appeals

Current SAT Applications				
File No. & SAT DR No.	LG Name	Property Location	Application Description	Date Lodged
DAP/19/01708 DR 138/2020	City of Kwinana	Lot 108 Kwinana Beach Road, Kwinana	Proposed Bulk Liquid Storage for GrainCorp Liquid Terminals	01/07/2020
DAP/01729 DR 176/2020	City of Kalamunda	Lot 130 (74) Warlingham Drive, Lesmurdie	Aged Residential Care Facility	28/8/2020
DAP/20/01764 DR 204/2020	City of Swan	Lot 780 (46) Gaston Road, Bullsbrook	Proposed Stock Feed Grain Mill	8/09/2020
DAP/20/01829 DR 001/2021	City of Swan	Lot 1 (42) Dale Road & Lot 4 (43) Yukich Close, Middle Swan	Aged care and community purpose	08/01/2021

11. General Business

In accordance with Section 7.3 of the DAP Standing Orders 2020 only the Presiding Member may publicly comment on the operations or determinations of a DAP and other DAP members should not be approached to make comment.

12. Meeting Closure



Presentation Request Form

[Regulation 40\(3\)](#) and [DAP Standing Orders 2020](#) cl. 3.5

Must be submitted at least 72 hours (3 ordinary days) before the meeting

Presentation Request Guidelines

Persons interested in presenting to a DAP must first consider whether their concern has been adequately addressed in the responsible authority report or other submissions. Your request will be determined by the Presiding Member based on individual merit and likely contribution to assist the DAP's consideration and determination of the application.

Presentations are not to exceed **5 minutes**. It is important to note that the presentation content will be **published on the DAP website** as part of the meeting agenda.

Please complete a separate form for each presenter and submit to daps@dph.wa.gov.au

Presenter Details

Name	John Wood / Richard Hammond
Company (if applicable)	Providence Lifestyle
Please identify if you have any special requirements:	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> If yes, please state any accessibility or special requirements: Click or tap here to enter text.

Meeting Details

DAP Name	Metro Outer Joint Development Assessment Panel
Meeting Date	12 April 2021
DAP Application Number	DAP/20/01912
Property Location	Lot 156 (528) Pinjarra Road, Furnissdale
Agenda Item Number	8.1

Presentation Details

I have read the contents of the report contained in the Agenda and note that my presentation content will be published as part of the Agenda:	YES <input checked="" type="checkbox"/>
Is the presentation in support of or against the <u>report recommendation</u> ? (<i>contained within the Agenda</i>)	SUPPORT <input checked="" type="checkbox"/> AGAINST <input type="checkbox"/>
Is the presentation in support of or against the <u>proposed development</u> ?	SUPPORT <input checked="" type="checkbox"/> AGAINST <input type="checkbox"/>
Will the presentation require power-point facilities?	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> If yes, please attach



Presentation Content*

These details may be circulated to the local government and applicant if deemed necessary by the Presiding Member. Handouts or power points will not be accepted on the day.

Brief sentence summary for inclusion on the Agenda	<i>The presentation will address:</i> Support for the proposal and overview of Providence Lifestyle model.
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In accordance with Clause 3.5.2 of the [DAP Standing Orders](#), your presentation request must also be accompanied with a written document detailing the content of your presentation.

Please attach detailed content of presentation or provide below:

- John will be providing an overview of the Providence Lifestyle model and will be available to answer any questions of the panel.
- Richard is available to present in relation to the architectural aspects of the proposal as required.



Presentation Request Form

[Regulation 40\(3\)](#) and [DAP Standing Orders 2020](#) cl. 3.5

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Please complete a separate form for each presenter and submit to daps@dph.wa.gov.au

Presenter Details

Name	Tom Hockley
Company (if applicable)	Allerding & Associates
Please identify if you have any special requirements:	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> If yes, please state any accessibility or special requirements: Click or tap here to enter text.

Meeting Details

DAP Name	Metro Outer Joint Development Assessment Panel
Meeting Date	12 April 2021
DAP Application Number	DAP/20/01912
Property Location	Lot 156 (528) Pinjarra Road, Furnissdale
Agenda Item Number	8.1

Presentation Details

I have read the contents of the report contained in the Agenda and note that my presentation content will be published as part of the Agenda:	YES <input checked="" type="checkbox"/>
Is the presentation in support of or against the <u>report recommendation</u> ? (<i>contained within the Agenda</i>)	SUPPORT <input checked="" type="checkbox"/> AGAINST <input type="checkbox"/>
Is the presentation in support of or against the <u>proposed development</u> ?	SUPPORT <input checked="" type="checkbox"/> AGAINST <input type="checkbox"/>
Will the presentation require power-point facilities?	YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> If yes, please attach



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Brief sentence summary for inclusion on the Agenda	<i>The presentation will address:</i> Support for the proposal and thanking the officer's for their recommendation and conditions.
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In accordance with Clause 3.5.2 of the [DAP Standing Orders](#), your presentation request must also be accompanied with a written document detailing the content of your presentation.

Please attach detailed content of presentation or provide below:

- Thanks to the assessing officers for working with us throughout the course of the application.
- The proposal represents one of the first examples of a grouped dwelling build to rent model offered by Providence Lifestyle and is a model that is growing in popularity and necessity.
- The Shire officers worked with us along the way since lodgement in September 2020.
- With the Shire's support we have successfully worked through a number of matters including road widening and intersection treatments, acoustic treatments, tree retention, drainage and sewer connection.
- We have reviewed the conditions and are comfortable with those requirements.
- We would therefore like to commend the Officers report and recommendation which we support.
- Thank you for your consideration.

PINJARRA ROAD, 528 (LOT 156) FURNISSDALE - PROPOSED GROUPED DWELLING DEVELOPMENT

Form 1 – Responsible Authority Report (Regulation 12)

DAP Name:	Metro Outer JDAP	
Local Government Area:	Shire of Murray	
Applicant:	Allerding and Associates on behalf of Ecofit Homes Pty Ltd	
Owner:	Stephen Robert Draper, Karen Anne Draper, Raymond Barry Bostelman, Helen Louise Bostelman, Kemoc Pty Ltd and Geoffery Kenneth Marshall	
Value of Development:	\$13.3 million <input checked="" type="checkbox"/> Mandatory (Regulation 5) <input type="checkbox"/> Opt In (Regulation 6)	
Responsible Authority:	Shire of Murray	
Authorising Officer:	Rod Peake, Director Planning and Sustainability	
LG Reference:	P215/2020	
DAP File No:	DAP/20-01912	
Application Received Date:	4 December 2020	
Report Due Date:	29 March 2021	
Application Statutory Process Timeframe:	90 Days, with an additional 25 days agreed.	
Attachment(s):	1. Location plan 2. Development application report 3. Revised site plan dated 23.3.2021 4. Building Plans and elevations 5. Waste truck sweep paths Revision B 6. Stormwater concept plans 7. Tree inspection report 8. Tree retention plan 9. Submissions 10. Agency referral responses 11. Revised Water Corporation advice 12. Transport impact statement Revision B 13. Revised acoustic report dated February 2021 14. Revised Main Roads WA advice 15. Further revised acoustic modelling dated 22.3.2021	
Is the Responsible Authority Recommendation the same as the Officer Recommendation?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> N/A	Complete Responsible Authority Recommendation section
	<input type="checkbox"/> No	Complete Responsible Authority and Officer Recommendation sections

Responsible Authority Recommendation

That the Metro Outer JDAP resolves to:

1. **Approve** DAP Application reference DAP/20-01912 and accompanying plans (Attachments 3 and 4) in accordance with Clause 68 of Schedule 2 (Deemed Provisions) of the *Planning and Development (Local Planning Schemes) Regulations 2015*, and the provisions of the Shire of Murray Town Planning Scheme No. 4, subject to the following conditions:

Conditions

1. Pursuant to clause 22 of the Peel Region Scheme, this approval is deemed to be an approval under clause 22(1) of the Peel Region Scheme.
2. This decision constitutes planning approval only and is valid for a period of two years from the date of approval. If the subject development is not substantially commenced within the specified period, the approval shall lapse and be of no further effect.
3. The approved development shall be connected to the reticulated water and sewerage networks to a sufficient capacity to service the approved development to the satisfaction of the Shire of Murray on advice from Water Corporation prior to the development first being occupied.
4. A schedule of colours and materials for all exterior parts of the development shall be submitted to and approved by the Shire of Murray prior to the commencement of development. Development shall be undertaken in accordance with the approved schedule and all external materials and finishes shall be maintained to a high standard, including being free of vandalism, to the satisfaction of the Shire.

Roads and Access

5. Prior to commencement of works, the submitted Transport Impact Statement (Ref: W202190 REV B-Final, dated 15/02/2021) shall be revised to the satisfaction of the Shire of Murray on the advice of Main Roads Western Australia, incorporating an updated SIDRA analysis, to determine the ultimate layout of the Pinjarra Road / Riverside Drive intersection.

6. Prior to commencement of works, the Pinjarra Road / Riverside Drive intersection shall be designed and approved to the satisfaction of the Shire of Murray on the advice of Main Roads Western Australia. The detailed design shall include (without being limited to) the following:
 - a) an 'ultimate' intersection layout concept which accommodates the future development traffic of the locality, with due regard to the recommendations of the final approved Transport Impact Statement and future servicing requirements of the 'Furnissdale West Structure Plan' area; and
 - b) a detailed 'interim' intersection layout design to support the proposed development traffic, including provision of an appropriate corner road truncation area, drainage, kerbing, pedestrian footpath and lighting.

The approved interim intersection layout is to be constructed at the full cost of the landowner/applicant prior to the approved development first being occupied.

7. Prior to the approved development first being occupied, a 10 metre-wide land area measured along the full Pinjarra Road road frontage to Lot 156, a corner truncation area as determined by the approved detailed 'ultimate' intersection layout design required under Condition 6a, and widening along the remaining western side of Riverside Drive where it abuts Lot 156 to accommodate the approved detailed engineering design in accordance with Condition 8 below, is to be ceded to the Crown free of cost and without payment of compensation.
8. Prior to the commencement of works, a detailed engineering design to the satisfaction of the Shire of Murray is to be submitted to the Shire of Murray for approval for the upgrade of Riverside Drive to a Liveable Neighbourhoods 'Neighbourhood Connector A' road for the portion of Riverside Drive that abuts Lot 156. The detailed design is to include drainage, kerbing, pedestrian footpaths, street trees, landscaping and street lighting. The approved design is to be constructed to the satisfaction of the Shire of Murray at the full cost of the landowner/applicant prior to the approved development first being occupied.
9. Prior to the commencement of works, amended plans are to be submitted to the satisfaction of the Shire of Murray to reflect the road widening requirements set out in Conditions 6 and 7, acoustic treatments required by Condition 15 and bin storage/collection areas required by Condition 22.
10. Prior to the development first being occupied, arrangements being made with the Shire of Murray for the landowner/applicant to contribute towards the costs of providing common infrastructure as established through Development Control Area 4 provisions of the Shire of Murray Town Planning Scheme No. 4.
11. Prior to the development first being occupied, crossovers designed in accordance with the Shire of Murray Specifications are to be constructed. Crossovers are to thereafter be maintained in a serviceable condition to the satisfaction of the Shire of Murray.
12. Prior to the development first being occupied, the existing driveway / crossover on Pinjarra Road is to be removed and the road verge reinstated consistent with the adjacent verge to the specifications of Main Roads Western Australia to the satisfaction of the Shire of Murray.

13. The construction of a new dual use path within the road reserve of Pinjarra Road and the western verge of Riverside Drive where the development site abuts these roads.
14. The car parking bays, driveways and points of ingress and egress shown on the approved plans are to be designed, constructed, drained and marked in accordance with the Australian Standard for Off-street Car Parking (AS/NZS2890) prior to the development first being occupied and thereafter maintained in a serviceable condition to the satisfaction of the Shire of Murray.
15. Prior to commencement of works, the Noise Management Plan (Ref: 27222-2-20031-02, dated February 2021) shall be revised to the satisfaction of the Shire on the advice of Main Roads WA. The approved revised Noise Management Plan shall be implemented at the full cost of the landowner/applicant to the satisfaction of the Shire.

Water Management

16. Prior to the commencement of civil works an Urban Water Management Plan is to be prepared and submitted for approval to the satisfaction of the Shire of Murray on advice of the Department of Water and Environment Regulation. The drainage system is to be designed, constructed and managed as per Stormwater Management Manual for Western Australia (DWER, 2004) and Decision Process for Stormwater Management in Western Australia (DWER, 2017). The plan is to describe and demonstrate the management of drainage for minor, small and major events taking into consideration the drainage strategy outlined in the previously approved 'Various Landholdings Furnissdale Local Water Management Strategy (Hyd2o, October 2015)' for the Furnissdale West Structure Plan, including this site's connection and/or discharge to external drainage catchments. The approved plan is to be implemented to the satisfaction of the Shire of Murray. The finished floor and surface levels of the development shall be finally determined in the context of the Urban Water Management Plan and be sufficient to ensure adequate protection from major storm events to the satisfaction of the Shire of Murray.
17. Prior to the commencement of works detailed engineering drawings and specifications are to be submitted for approval by the Shire of Murray, and works undertaken in accordance with the approved engineering drawings and specifications, for the draining of the land in accordance with the approved Urban Water Management Plan.
18. Prior to the commencement of any sub-surface or excavation works, an acid sulphate soils self-assessment form and, if required as a result of the self-assessment, an acid sulphate soils report and an acid sulphate soils management plan shall be prepared for approval by the Shire of Murray on advice from the Department of Water and Environment Regulation. Where an acid sulphate soils management plan is required to be prepared, all site works shall be carried out in accordance with the approved management plan.

Landscaping

19. Detailed landscaping plans to the satisfaction of the Shire of Murray are to be submitted for approval prior to the commencement of development. These landscaping plans are to indicate the proposed landscaping treatment(s) of both the site and the adjoining road verge(s), and shall:
- Be drawn at an appropriate scale of either 1:100, 1:200 or 1:500;
 - Provide all details relating to paving, treatment of verges, irrigation and plantings;
 - Include shade trees within new car parking areas at the rate of one tree for every four bays;
 - Show spot levels and/or contours of the site;
 - Be based on water sensitive urban design and designing out crime principles;
 - Meet the requirements set out in the Shire of Murray Mosquito Local Planning Policy;
 - Outline what works, if necessary, are required within the subject site and adjacent verges to ensure compliance with AS3959.

The approved landscape plans are to be implemented prior to the development first being occupied with the landscaping to be thereafter maintained in a healthy condition.

20. The trees highlighted as 'Significant Habitat Tree to be Retained' and 'Tree to be Retained' on the plan titled 'Tree Retention Plan' (prepared by Richard Hammond Architect being Plan No. A2.03 dated 26.10.20) are to be retained unless otherwise agreed in writing by the Shire of Murray. These trees are to be maintained on an ongoing basis by the owner and shall not without the written agreement of the Shire of Murray be removed, pruned, filled or excavated around or otherwise treated in a manner that would adversely impact the health and longevity of the trees.
21. Detailed plans are to be submitted to the Shire of Murray for approval which highlights the location of the 'Significant Habitat Tree to be Retained' and 'Tree to be Retained' referred to in Condition 20, existing survey levels, any proposed changes to these levels, the detailed positioning and design of development including underground infrastructure designed in a manner that will maximise tree retention, and minimise any adverse impacts on the health and longevity of the trees to be retained to the satisfaction of the Shire. The development to be carried out in accordance with the approved detailed plans consistent with this condition.

Waste Management

22. Prior to the commencement of development, modified plans are to be submitted for approval by the Shire of Murray to show bin storage/collection areas. Waste storage areas collection Waste storage area(s) shall be designed in accordance with the Shire of Murray Health Local Law and ensure that bins and receptacles can be appropriately accessed by waste collection vehicles and screened from view.

Bushfire Management

23. The development shall at all times comply with the requirements and recommendations of the approved Bushfire Management Plan (prepared by Allering and Associates being Document ID NLV FU2 ZB/2009 dated 30.9.20), or a revised Bushfire Management Plan approved by the Shire of Murray.
24. A notification, pursuant to section 70A of the Transfer of Land Act 1893, shall be placed on the certificate of title for the subject lot. The notification shall be at the owner/applicants' expense and lodged with the Shire for execution prior to commencement of development, and placed on the certificate of title prior to occupation of the development. The notification is to state as follows:

'This land is within a bushfire prone area as designated by an Order made by the Fire and Emergency Services Commissioner'.

Construction Management

25. A Construction Management Plan shall be submitted to the Shire of Murray for approval prior to the commencement of development. The management plan shall include details regarding mitigation measures to address impacts associated with construction works and shall be prepared to the specification and satisfaction of the Shire. The construction works shall be undertaken in accordance with the approved Construction Management Plan.

Mosquito Management

26. Prior to the commencement of civil works, a Mosquito Management Plan shall be submitted to and approved by the Shire of Murray consistent with its 'Mosquito Local Planning Policy', demonstrating how mosquito impacts from nearby breeding areas will be kept to a minimum (non-nuisance levels) post development. All management recommendations set out in the approved Mosquito Management Plan shall be in place prior to occupation of the development and thereafter maintained to the satisfaction of the Shire of Murray.

Advice Notes

1. Riverside Drive is to be designed and constructed to an urban standard in accordance with the Liveable Neighbourhoods 'Neighbourhood Connector A' street cross section and the IPWEA Local Government Guidelines for Subdivision Development. Works within the eastern verge of Riverside Drive, including kerbing, car parking embayments, footpaths, street trees and landscaping are not required to be constructed under this approval.

2. Development Control Area 4 provides for a cost sharing arrangement between owners of land within the Furnissdale West Structure Plan area for specified common infrastructure. Some works specified in conditions of this approval may contribute toward the common infrastructure costs, including but not limited to the upgrading of Riverside Drive. The Development Contribution Plan report for Development Control Area 4 which will specify matters including costs, priority, timing of common infrastructure has not been prepared and approved to date. Suitable arrangements for a contribution toward the costs of common infrastructure can therefore be satisfied by the owner entering into a legal agreement with the Shire of Murray agreeing to make the proportional contribution applicable to Lot 156, allowing for any works required by conditions of this approval once the Development Contribution Plan report has been prepared and approved.
3. The Urban Water Management Plan is to include provision for a piped stormwater drainage system within the Riverside Drive road reserve.
4. The Construction Management Plan will in particular need to ensure that:
 - A suitable standard and location of access to and from the site is provided;
 - Adequate space is provided within the development site for the parking of construction vehicles and for the storage of building materials to minimise the need to utilise the surrounding road network;
 - Pedestrian and vehicular access around the site is maintained;
 - The hours of construction are limited to ensure that there is no adverse impact on the amenity of the surrounding properties;
 - The impacts caused by sand drift and dust from the site are minimised;
 - Construction waste is suitably managed to ensure it does not escape from the site and does not adversely impact visual amenity;
 - Other matters that have the potential to impact the nearby area are effectively managed.
5. Tree 2 identified in the report by Terrestrial Ecosystems dated 15 October 2020 should be reinspected immediately prior to clearing with a zoologist present to ensure that there is no nesting taking place.

Details: outline of development application

Region Scheme	Peel Region Scheme
Region Scheme - Zone/Reserve	Urban zone and Primary Regional Road reserve
Local Planning Scheme	Shire of Murray Town Planning Scheme No. 4
Local Planning Scheme - Zone/Reserve	Residential Development and No Zone
Structure Plan/Precinct Plan	Furnissdale West Structure Plan
Structure Plan/Precinct Plan - Land Use Designation	Residential R60 and Public Open Space
Use Class and permissibility:	Grouped Dwellings (AA)
Lot Size:	2.7973Ha

Existing Land Use:	Single House and outbuilding
State Heritage Register	No
Local Heritage	<input checked="" type="checkbox"/> N/A <input type="checkbox"/> Heritage List <input type="checkbox"/> Heritage Area
Design Review	<input checked="" type="checkbox"/> N/A <input type="checkbox"/> Local Design Review Panel <input type="checkbox"/> State Design Review Panel <input type="checkbox"/> Other
Bushfire Prone Area	Yes
Swan River Trust Area	No

Proposal:

The application proposes a grouped dwelling development in a 'Lifestyle Village' format, comprising the following key elements:

- 80 grouped dwellings;
- Associated community and recreation facilities for residents, including clubhouse, separate multiuse room, bowling green, workshop and landscaped gardens; and
- An Internal communal driveway network with access to Riverside Drive via two new crossovers.

The proposal aims to provide an affordable housing option with a target market being the 50 to 70 year old's, although the development will not be restricted to this age group.

The development application report is included at Attachment 2, the latest site plan at Attachment 3 and the building plans and elevations of the grouped dwellings, clubhouse and workshop included at Attachment 4.

Proposed Land Use	Grouped Dwellings
Proposed Net Lettable Area	N/A
Proposed No. Storeys	Single Storey
Proposed No. Dwellings	80

Background:

Lot 156 (the site) has an area of 2.7973 hectares (Ha) and contains a single dwelling and outbuilding which was constructed in the late 1970's. The site is otherwise vacant and contains numerous generally native trees in a parkland cleared setting with limited understory. The site is relatively low lying and falls by approximately 1.5 metres from northeast to southwest.

The site is located at the corner of Pinjarra Road and Riverside Drive, Furnissdale. The predominant character of the Furnissdale locality is Special Rural with lot sizes ranging from typically from two to four hectares in area, although a number of other land uses have established in the area including the Furnissdale townsite around 1.2km to the southwest, the Barragup Furnissdale Activity Centre which straddles both sides of Pinjarra Road around 200 metres to the southeast of the site, a small poultry farm around 160m to the south of the site and two caravan parks to the immediate

northwest of the site. The Serpentine River is located around 350 metres to the west of the site. A location plan is included at Attachment 1.

The site forms part of an approximate 50Ha precinct which was zoned for urban purposes in 2015, known as Furnissdale West. Land within the Furnissdale West precinct is yet to be subdivided and developed for urban purposes.

Legislation and Policy:

Legislation

Peel Region Scheme
Shire of Murray Town Planning Scheme No. 4
Planning and Development (Local Planning Schemes) Regulations

State Government Policies

State Planning Policy 2.1 – Peel Harvey Coastal Plain Catchment
State Planning Policy 2.5 – Rural Planning
State Planning Policy 3.7 - Planning in Bushfire Prone Areas
State Planning Policy 5.4 – Road and Rail Noise
State Planning Policy 7.3 – Residential Design Codes

Structure Plans/Activity Centre Plans

Furnissdale West Structure Plan

Local Policies

Mosquito Local Planning Policy
Natural Landscape in Urban Areas Local Planning Policy
Water Sensitive Urban Design Local Planning Policy

Consultation:

Public Consultation

Clause 64(1)(c) of the Deemed Provisions in Schedule 2 of the *Planning and Development (Local Planning Schemes) Regulations* (Regulations) provides that the local government may advertise an application for development approval.

In this case the development application was advertised. The notice period was for an extended 46 day period given the intervening Christmas - new year holiday period. The closing date for submissions was 15 January 2021. Notice involved the following:

- Written notification sent to owners of land within 200m of the site; and
- Details of the application were available on the Shire's website for the duration of the notice period.

Four (4) submissions were received, including one objection, one in support and two identical submissions providing comments. The submissions are included at Attachment 9.

Key matters raised in submissions are as follows:

Issue Raised	Officer comments
Developer Contribution Obligations	<p>The submission raising this issue was on behalf of other landowners located within the Furnissdale West Structure Plan area and highlights that the Development Contribution Area No. 4 (DCA4) listed in Schedule 13 of the Shire's TPS4 has not been mentioned in the application report. It seeks to ensure a suitable condition is imposed to ensure an equitable cost sharing is achieved across the DCA.</p> <p>DCA4 requires owners within the Furnissdale West Structure Plan Area to contribute on a pro-rata land area basis toward the upgrade of Riverside Drive, Ronlyn Road including the intersections with Pinjarra Road, shared drainage, open space areas associated with the residential development of the area. A Developer Contribution Plan has not yet been established which will set out the costs, priorities and timing of the infrastructure.</p> <p>The developer is agreeable to entering into a legal agreement to secure its proportional contribution towards the infrastructure required with the final developer contribution to be finalised once the Shire finalises a Developer Contribution Plan.</p> <p>The final DCP could include additional contributions payable by the developer or may result in a refund to the developer. The Applicant is agreeable for a legal agreement being established through a condition of approval.</p>
Area not suitable for residential development.	<p>The submitter cites a range of reasons including increased boat traffic and boat wash, increased traffic, rubbish, unlicensed motor bike activity, and crime.</p> <p>The site is already zoned for residential purposes. The target population being 50-70 year old's together with the onsite facilities will minimise the traffic generated from the development. Riverside Drive will be upgraded to a Neighbourhood Connector A road as part of the development to accommodate the additional traffic and will operate well within capacity. There is no evidence to suggest future residents of the development will contribute toward additional rubbish and crime in the area. Increasing use of the river and any associated pressures on bank stability is a broader management issue not directly associated with this application.</p>

Referrals/consultation with Government/Service Agencies

Clause 66 of the Deemed Provisions at Schedule 2 of the Regulations makes provision for the local government to refer the application to statutory or public authorities where it may affect that authority.

In this case the application was referred to Main Roads Western Australia, Department of Water and Environment Regulation, Department of Fire and Emergency Services, Water Corporation, Western Power, Department of Planning, Lands and Heritage (Planning and Aboriginal Heritage sections), Department of Health and Public Transport Authority.

The authorities were provided a 46 day comment period, closing on 15 January 2021. At the close of the comment period responses had been received from the following authorities. Full responses are available at Attachment 10.

Water Corporation

The Water Corporation advised that section 6.2 of the application report relating to sewer connection does not represent the servicing situation. Rather it says that there is no permanent pump station existing for the catchment that the site falls within and that to be serviced the development should have headworks infrastructure constructed in the form of the Barragup Waste Water Pump Station 'C'. This headworks infrastructure is planned to be constructed in the 2023/24 financial year on land to the south east of the subject site.

Further discussions between the applicant and the Water Corporation have indicated that the applicant's proposal to install a private sewer pump station and share the existing private pressure main in the adjacent caravan park which discharges flow to the access chamber in the Mandurah Sewer District is acceptable, provided the pump rate is no greater than three litres per second. To achieve this the applicant will provide a holding tank in the north western corner of the site. The further advice received from the Water Corporation and a plan showing the proposed location of the pump station and holding tank is included at Attachment 11.

The Water Corporation has confirmed that reticulated water is currently available to the site.

A condition of approval is recommended requiring the development to be connected to both reticulated sewer and water.

Public Transport Authority

The Public Transport Authority confirms bus route 600 is within the walkable catchment from the subject site and advises of its support for increased residential densities in the vicinity of existing transport routes as this helps to increase patronage on the bus network.

Department of Health

The Department of Health has advised that the development will need to connect to scheme water and reticulated sewerage. A condition of approval is recommended requiring connection of the development to both reticulated sewer and water.

The Department has also advised that proposal is located in an area that may be prone to mosquitoes as wetlands are located in the vicinity. Stormwater management

infrastructure should therefore be in accordance with the Department of Water publication Stormwater Management Manual for Western Australia. Conditions of approval are recommended requiring the preparation and implementation of an Urban Water Management Plan, detailed stormwater plans and a Mosquito Management Plan to address this issue.

Department of Water and Environment Regulation

The Department of Water and Environment Regulation highlights the need for a clearing permit for the clearing of native vegetation and advises that the Department has received an application for a permit to clear native vegetation consistent with the clearing proposed in the development application, notwithstanding that the issue of a development approval may exempt the need for the permit. The Department advises that it will defer a decision on the application for a clearing permit until the development application has been determined.

The Department highlights that the site is located in an area which Acid Sulphate Soils (ASS) risk mapping indicates has a moderate to high risk of ASS occurring within three metres of the natural soil surface and therefore advises that the model ASS related condition will be necessary in this instance. This is included as one of the recommended conditions of approval.

The Department further recommends that a Drainage Management Plan is prepared to the satisfaction of the Department and the Shire of Murray, with the drainage system being designed, constructed and managed as per Stormwater Management Manual for Western Australia (DWER, 2004) and Decision process for stormwater in Western Australia (DWER, 2017). The Department advises that the Plan is to describe and demonstrate the management of drainage for minor, small and major events taking into consideration the drainage strategy outlined in the previously approved Various Landholdings Furnissdale Local Water Management Strategy (Hyd2o, October 2015 associated with the Furnissdale West Structure Plan) including this site's connection and/or discharge to external drainage catchments. Further information has been provided showing stormwater concept plans (Attachment 6) for the site which are acceptable in principle, noting that the drainage system in Riverside Drive should be a piped system rather than including sub soil disposal. Conditions of approval are recommended requiring the preparation and implementation of an Urban Water Management Plan and detailed engineering drawings for the stormwater drainage system.

Department of Fire and Emergency Services

The Department of Fire and Emergency Services highlighted three comments in relation to the applicant's Bushfire Management Plan (BMP).

1. The vegetation classification for Plot 7 cannot be substantiated as Class D Scrub with the limited information and photographic evidence available. The Department highlights that the BMP acknowledges the vegetation within this plot currently exceeds six metres in height which AS 3959 references as the maximum height for this vegetation type and further that a desktop assessment of aerial imagery indicates disturbance of this plot and this plot being at an early successional stage as indicated by the presence of Spearwood and immature Eucalypts.

It is suggested by the Department that given the potential for further regeneration it considers this plot to be Low Open Forest with the potential to become Open Forest and suggests the BMP should detail specifically how the classification was derived particularly the potential for revegetation (i.e. Forest as opposed to Scrub).

2. As a consequence of point 1 above the Department indicates that the Building Attack Level (BAL) ratings cannot be validated and there are areas of the site exposed to BAL40/FZ which represents an extreme risk.
3. The referral has not included an Emergency Evacuation Plan.

The applicant has provided further information to address the points raised by the Department.

Main Roads Western Australia

The initial application was considered by Main Roads Western Australia (MRWA) who raised a number of significant traffic related issues. The applicant provided a revised Traffic Impact Statement (Attachment 12) and revised Acoustic report (Attachment 13) and subsequent revised advice received from MRWA (Attachment 14) indicates that whilst it still has a number of concerns, it is considered that the proposal can be progressed from a Main Roads perspective, subject to the matters outlined below being addressed via the recommended conditions of approval.

Pinjarra Road intersection upgrade / Transport Impact Assessment ('TIA')

The subject land forms part of a broader Development Contribution Area and MRWA acknowledges that the developer is therefore only responsible to construct the interim intersection upgrade and the timing for further upgrading of the intersection, to reflect the ultimate intersection layout, is yet to be established through the preparation of the Development Contribution Plan for the area.

On this basis, the intersection will need to be designed to accommodate both the ultimate intersection layout/road infrastructure requirements for the future development area south of the Pinjarra Road junction and the interim intersection layout, to reflect the specific traffic demands generated by the development, and/or satisfy minimum development requirements to bring the existing verge and road infrastructure to an urban standard. Finalising the ultimate intersection layout will inform the requisite land area requirements to identify the road reserve boundaries (widening) to implement the ultimate intersection layout. This is an important aspect because it will enable paths and services to be placed on their final and proper alignments.

MRWA recommends that the Riverside Drive road reserve be widened in accordance with the Furnissdale West Structure Plan and the Main Roads concept plan (included as part of Attachment 14). From a road engineering perspective, the development should, as a minimum, be required to fully upgrade the western side of Riverside Drive to an 'urban standard' (pavement widening, kerb and drain). Not doing this will significantly complicate the installation of the path which needs to be installed on the western side of Riverside Drive. The extent of any additional minor intersection works on the eastern side of Riverside Drive will be established once further detailed design is undertaken.

The applicant has submitted further road cross sections information for MRWA review, in response to our previous referral comments. It is considered that this information can be further developed, using Main Roads' base concept design and updated traffic analysis, discussed below.

To determine the ultimate intersection layout design requirements, the necessary traffic modelling, including a SIDRA analysis of anticipated traffic volumes for the proposed development area and the future development north of Pinjarra Road, will need to be completed.

MRWA does not support GTA consultants amended Transport Impact Assessment (Attachment 12). More specifically, the analysis did not use MRWA traffic data for Pinjarra Road for the ultimate development of the area to determine the ultimate layout for the Riverside Drive / Pinjarra Road intersection. ROM 2041 data was supplied to the consultant and should have been used for the analysis. Instead, the consultant has elected to use 2031 ROM data and the associated lower traffic volumes. The modelling, based on the reduced traffic volumes, therefore suggests that a two-lane approach to Pinjarra Road (as anticipated and shown by Main Roads conceptual layout) is not required. MRWA does not support this finding and is prepared to assist in the matter and undertake its own traffic analysis to resolve this issue, if requested.

It is considered that the development proposal can be progressed with agreement from the developer to continue further discussion with MRWA and undertake additional modelling to determine the ultimate intersection layout requirements.

Existing Access

The existing access onto Pinjarra Road is required to be decommissioned and a condition is included below to this effect.

Noise Assessment

MRWA does not support the revised Noise Management Plan (NMP) (Attachment 13) submitted for consideration. Given that the development is proposed on a greenfields site, it is considered appropriate that noise attenuation in the form of a noise barrier be provided to ensure an acceptable level of residential amenity is provided for future occupiers of the Estate/Lifestyle Village. It is considered that a noise wall could be recessed into the site and appropriately landscaped if there is potential concerns with the visual impact of such a wall.

The applicant has not updated the traffic noise assessment to correctly forecast traffic growth on Pinjarra Road. It was previously advised that the adopted traffic figure should be based on a 4% to 5% growth rate to take future growth in this location into consideration (Activity Centre Area), which also reflects the 2041 ROM24 Link Volume Plots previously provided. It is anticipated that the traffic volumes to be used should at least reference 35,000 vpd for a 20 year forecasting period.

The applicant has further assumed that the future road pavement will be dense graded asphalt, which is not supported by MRWA. At this stage it is considered that any future pavement upgrade will comprise micro-surfacing, which has a lower acoustic performance than dense graded asphalt.

The assessment also assumes that future development levels for the site will remain unchanged and have used the existing natural ground level for modelling purposes, which is not supported. The road cross section information recently provided suggests that filling of the site will occur and modelling should therefore be reviewed on this basis.

The applicant has also not undertaken the necessary modelling to accommodate the planned 3rd lane on Pinjarra Road/the ultimate network in this location, as reflected in the Peel Region Scheme. The applicant is of the view that it is not required for the developer to do so and the responsibility for noise attenuation for a 3rd lane rests with the State/Main Roads.

MRWA does not support this view on the basis that the 3rd lane is currently identified in the Peel Region Scheme as a planning requirement and development/subdivision along Pinjarra Road is required in general to accommodate this future network requirement through appropriate development design (i.e. development setbacks and access), road intersection design, and the ceding of land by developers to the Crown for this future road requirement, where appropriate. This aspect is also acknowledged in this application with the proposed ceding of land requirements along Pinjarra Road and intersection design.

MRWA has sought advice from the Department of Planning Lands and Heritage to confirm with whom the respective responsibilities/obligations rest and has received confirmation that the developer is required to undertake modelling for the 3rd lane and to provide any noise attenuation identified in the assessment.

It is recommended that the NMP should be further reviewed with consideration to the above to establish the predicted future noise levels that will be received at the property and to use this information as the basis to enter into discussions with the Shire regarding appropriate noise attenuation for the development and preparation of a NMP.

It is considered that the NMP should be reviewed in respect to the following:

1. update and incorporate appropriate future traffic volumes for the purposes of noise modeling;
2. inclusion of a 3rd traffic lane to accommodate future network planning;
3. adopt micro-surfacing as a future road pavement for the purposes of noise modelling; and
4. review modelling with reference to future development site levels.

It is considered that the development can be progressed with agreement from the applicant to review the NMP in respect to the above and acknowledgment that the development interface with Pinjarra Road may need to be amended to reflect the outcome and further discussion with the Shire and MRWA.

Landscaping/screening

MRWA previous comments remain valid.

MRWA Recommended Conditions

1. Prior to commencement of works, the submitted Transport Impact Statement (Ref: W202190 REV B-Final, dated 15/02/2021) shall be revised to the satisfaction of

the [WAPC/Shire] on the advice of Main Roads WA, incorporating an updated SIDRA analysis, to determine the ultimate layout of the Pinjarra Road / Riverside Drive intersection.

2. Prior to commencement of works, the Pinjarra Road / Riverside Drive intersection shall be designed and approved to the satisfaction of the [WAPC/Shire] on the advice of Main Roads WA. The detailed design shall include (without being limited to) the following:
 - a) an 'ultimate' intersection layout concept which accommodates the future development traffic of the locality, with due regard to the recommendations of the final Transport Impact Statement, the attached Main Roads design concept and future servicing requirements (refer condition 2.ii below) of the 'Furnissdale West Structure Plan' planning precinct; and
 - b) a detailed 'interim intersection layout design to support the proposed development traffic, including provision of an appropriate corner road truncation area, drainage, kerbing, pedestrian footpath and lighting.
3. The approved interim intersection layout is to be constructed at the full cost of the landowner/applicant prior to the commencement of the use.
4. Prior to commencement of development, a 10 metre-wide land area measured along the full Pinjarra Road road frontage and a corner truncation area, as determined by the detailed 'interim' intersection layout design, is to be ceded to the Crown free of cost, in accordance with the Peel Region Scheme.

Note: It is assumed that the Shire will require the general widening of Riverside Drive road reserve in accordance with the 'Furnissdale West Structure Plan' and the Main Roads-approved intersection design.

5. Prior to commencement of works, the Noise Management Plan (Ref: 27222-2-20031-02, dated February 2021) shall be revised to the satisfaction of the [WAPC/Shire] on the advice of Main Roads WA. The Noise Management Plan shall be implemented at the full cost of the landowner/applicant to the satisfaction of the [WAPC/Shire].
6. Prior to commencement of works, the existing driveway / crossover on Pinjarra Road is to be removed and the road verge reinstated to the specifications of Main Roads and satisfaction of the [WAPC/Shire]
7. The Pinjarra Road road reserve is to be fenced to the specifications of Main Roads. This fence may comprise a noise barrier or an alternative suitable fence to the specifications of Main Roads and satisfaction of the [WAPC/Shire].

Further acoustic modelling has since been undertaken with revised proposals for acoustic treatment for the development. The applicant has agreed with the MRWA recommended conditions and these have been reflected in either the revised site plan or recommended conditions of approval.

Design Review Panel Advice

No applicable

Planning Assessment:

The proposal has been assessed against the relevant legislative requirements of the Scheme, State and Local Planning Policies, and the West Furnissdale Structure Plan outlined in the Legislation and Policy section of this report. The following matters have been identified as key considerations for the determination of this application.

Peel Region Scheme
Furnissdale West Structure Plan
Infrastructure Provision and Upgrades
Bushfire Management
Road Noise
Vegetation
Poultry Farm

These matters are outlined and discussed below:

Peel Region Scheme

Under the Peel Region Scheme (PRS) the site is predominantly zoned 'Urban' with the northern 10m of the site abutting Pinjarra Road reserved for the purpose of 'Primary Regional Road'. The reserved portion of the site reflects the planned future upgrade of Pinjarra to accommodate six traffic lanes.

The purpose of a 'Primary Regional Road' reserve under the PRS is to "*provide a regional road network to accommodate current and future transport needs on roads declared under the Main Roads Act 1930*". The application does not proposed development within the portion of the site reserved for Primary Regional Road purposes and does not propose vehicular access directly onto Pinjarra Road. The application therefore does not impact on the purpose of the reserved portion of the site. Recommended conditions of approval are included requiring the ceding of the reserved portion of the site.

The purpose of the 'Urban zone under the PRS is to "*provide for residential development and associated local employment, recreation and open space, shopping, schools and other community facilities*". The application proposes to develop the Urban zoned portion of the site for residential purposes and is therefore consistent with the purpose of the zone.

Under clause 21 of the PRS, development on zoned land requires development approval under the PRS if it is of a kind or class set out in a resolution of the Western Australian Planning Commission (WAPC). Resolution 2014/02 gazetted on 9 May 2014 specifies a requirement for development approval where the development proposes access to a regional road. In this case the site is located directly adjacent to the intersection of Pinjarra Road and Riverside Drive. Whilst direct vehicular access is proposed off Riverside Drive, access to the site will still be via Pinjarra Road. This triggers the need for a PRS approval.

Under section 16 of the *Planning and Development Act 2005* the WAPC may, by resolution published in the Government Gazette, delegate any function to a local government. The Notice of Delegation (DEL 2008/12) published in the Government Gazette on 19 December 2008 includes a delegation in the case of land abutting a Primary Regional Road where the local government accepts the advice and/or recommendations of MRWA. In this case the advice and recommendations of MRWA

are accepted. This report therefore recommends approval under both the PRS and Shire of Murray TPS4.

Furnissdale West Structure Plan

Under clause 27 of the Deemed Provisions for Local Planning Schemes in Schedule 2 of the Regulations, a decision-maker for an application for development approval in an area that is covered by a structure plan that has been approved by the WAPC is to have due regard to, but is not bound by, the structure plan when deciding the application.

In this case the Furnissdale West Structure Plan was approved by the WAPC on 19 October 2016. The Structure Plan shows the site as Residential R60 with a 2,111m² area of Public Open Space (with drainage) in the southern corner of the site adjacent to Riverside Drive. The Structure Plan provides for a dwelling target of 26 dwellings per site area across the structure plan area and 30 dwellings per site hectare within 400 metres of the Barragup Furnissdale Activity Centre.

The development application proposes a residential density of 28.7 dwellings per site hectare. The entire lot is within 400m of the edge of the Barragup Furnissdale Activity Centre, however is up to 485m away from the 'main street' within the commercial precinct of the Activity Centre.

The *Planning and Development Act* makes provision for the WAPC to impose a condition of subdivision requiring land to be set aside for public open space. The site is not intended to be subdivided and a requirement for setting aside public open space is not triggered. The structure plan provides an area of 2,111 m² of public open space (including drainage) which translates to approximately 7.6% of the net site area (excluding the Primary Regional Roads reserve). As the public open space shown in the Structure Plan is less than the normal 10% provision, approval of the site without a public open space contribution will not reduce the overall public open space allocation for the remaining portion of the Furnissdale West Structure Plan area.

The proposed development is considered to be generally consistent with the Furnissdale West Structure Plan.

Infrastructure Provision and Upgrades

The Furnissdale West Structure Plan refers to the following infrastructure that developers within the area may be required to contribute to:

1. Ceding and developing land for public open space in accordance with the Structure Plan and Liveable Neighbourhoods;
2. Upgrading and widening those parts of Riverside Drive and Ronlyn Road which abut the Structure Plan area – upgrading these roads may involve the provision of dual use pathways, the installation of underground power lines, drainage facilities and street trees;
3. Upgrading the Riverside Drive and Pinjarra Road intersection and the Ronlyn Road and Pinjarra Road intersection;
4. Acquiring land required for the construction of drainage infrastructure necessary to drain the Structure Plan area; and
5. The cost of preparing and administering developer contributions.

Due to the fragmented nature of land within the area the Structure Plan specifies that it will be necessary to coordinate contributions for this infrastructure through mechanisms such as a Development Contribution Plan incorporated into the Town Planning Scheme.

TPS4 includes a Development Contribution Area covering land within the Furnissdale West Structure Plan area covering the above infrastructure and associated costs, including the construction of shared drainage. A Development Contribution Plan which will determine the contribution costs, priorities and timing has not yet been prepared and approved.

The following comments are provided in respect of each of these infrastructure items:

1. Ceding and developing land for public open space

As the application does not involve the subdivision of land no public open space contribution is triggered.

2. Upgrading and widening Riverside Drive and Ronlyn Road

Conditions are recommended which require the design and construction works to be undertaken to upgrade the section of Riverside Drive abutting the site to a Neighbourhood Connector standard prior to occupation of the development.

3. Upgrading the Riverside Drive and Pinjarra Road intersection and the Ronlyn Road and Pinjarra Road intersection;

Conditions are recommended for the ceding of land reserved for PRS Primary Regional Road purposes, for the widening of Riverside Drive by two metres to enable sufficient land for the construction of a Neighbourhood Connector standard road, and following further intersection analysis and detailed planning, land required for the ultimate Riverside Drive / Pinjarra Road intersection.

4. Acquiring land for and construction of shared drainage infrastructure

Stormwater concept plans show the proposed drainage concept for the site (Attachment 6). This includes the overflow drainage to Riverside Drive. Overflow site drainage and drainage for Riverside Drive will be disposed of via private land protected by an easement to the south of the site. Detailed planning for the drainage system will be undertaken through the preparation of an Urban Water Management Plan and detailed engineering plans. Conditions for the preparation and implementation of these plans are included as recommendations.

As the Developer Contribution Plan is not yet in place, a further condition is recommended to ensure arrangements are in place for the provision of an equitable contribution toward shared infrastructure. This would be undertaken by the developer entering into a legal agreement with the Shire of Murray agreeing to make the proportional contribution applicable to Lot 156, allowing for any works required by conditions of this approval, once the Development Contribution Plan has been prepared and approved.

The development will also need to connect to reticulated water and sewer and conditions are included requiring this prior to occupation. Water is available to service the site and an in-principle agreement is in place with the Water Corporation for the

developer to install a private sewer pump station and share the existing private pressure main in the adjacent caravan park which discharges sewer flow to the Mandurah Sewer District provided the pump rate is no greater than three litres per second.

Bushfire Management

A Bushfire Management Plan (BMP) was submitted with the application and this was referred to DFES for its comments. DFES highlighted three comments in relation to the applicant's BMP.

1. Question over whether the vegetation classification for Plot 7 is correct.

The applicant has responded by advising that vegetation assessment and classification was based on predominant vegetation type and structure. The vegetation classification within the BMP was undertaken through a thorough site visit and analysis of the vegetation type following the methods set out in AS3959. The Class D Scrub classification of the vegetation within Plot 7 is considered to be an accurate assessment of this vegetation type. DFES has relied on a desktop assessment of aerial imagery which is an unreliable method of vegetation classification. No changes to the BMP are recommended.

2. As a consequence of point 1 above, question over whether the BAL ratings are correct and therefore further parts of the site are exposed to BAL40/FZ which represents and extreme risk.

Given the comments provided under point 1 above the BAL contour plan is considered accurate. It is noted however that nine dwellings are still included within the area designated as BAL40/FZ and as a consequence will remain undevelopable until such time as the BAL rating can be reduced to BAL 29 (moderate hazard level) or lower as required by Acceptable Solution A1.1 and A2.1 of the WAPC's Guidelines for Planning in Bushfire Prone Areas.

3. Whether an Emergency Evacuation Plan is required

The proposal is for a permanent form of housing (rather than short stay or transient form of accommodation) and is not an aged care development. Therefore the residents will not typically have reduced physical or mental ability and will be aware of their surroundings and familiar with escape options in the event of a bushfire in adjacent land. No Bushfire Emergency Evacuation Plan is therefore necessary under the SPP 3.7 or associated guidelines.

The current version of the BMP is therefore considered appropriate (Annexure 6 of Attachment 2). A condition is recommended requiring the implementation of the proposed requirements under the approved BMP.

Road Noise

Pinjarra Road is designated as an 'Other Significant Freight/Traffic Route' under State Planning Policy 5.4 - Road and Rail Noise. The majority of the site is located within the 200m trigger distance referred to in the policy. SPP5.4 sets out noise targets to provide a reasonable level of acoustic amenity for residents of dwellings adjacent to major roads.

MRWA has not supported the initial version (Annexure 7 of Attachment 2) and first revision of the Acoustic report (Attachment 13) predominantly as these did not recognise the forecast traffic volumes, planned upgrade of Pinjarra Road or likely road surfacing of Pinjarra Road.

Further acoustic modelling has now been undertaken by the applicant (Attachment 15) which factors in the forecast traffic flows, road widening and road surfacing highlighted by MRWA and on the basis of a partial fencing / barrier along the boundary to Pinjarra Road and quiet house design to the first two rows of houses along Pinjarra Road and the first row of houses along Riverside Drive near the intersection of Pinjarra Road, shows that compliance with the noise targets of SPP 5.4 will be likely to be possible. A full revised acoustic report will however be necessary to properly demonstrate this with the recommendation of the report being implemented. A condition is recommended requiring this.

Vegetation

The site contains numerous generally native trees in a parkland cleared setting with limited understory.

The report by Bowman and Partners Environmental (Annexure 5 of Attachment 2) highlights the Flora and Vegetation survey undertaken by ENV for the Furnissdale West Structure Plan in 2010. It notes that substantial clearing has been undertaken on the site and concludes that there is effectively no native understorey present, with the vegetation condition therefore being degraded to completely degraded and no known species of native flora or fauna with any special conservation value.

It is noted that an application for a clearing permit has been lodged with the Department of Water and Environment Regulation which is consistent with the clearing proposed under the development application. A decision on the application for a clearing permit is deferred pending a decision on the development application. DWER did not raise any objection to the clearing.

A Tree Inspection report was undertaken by Terrestrial Ecosystems (Attachment 7) outlining the results of an investigation into two trees onsite with hollows to determine if they were being utilised by Black Cockatoos. The report highlights there is no evidence that the inspected trees are currently being used by Black Cockatoos, however has identified that a hollow in a dead tree (tree 2) contained some evidence of past breeding and recommends that the tree be reinspected immediately prior to removal to ensure there is no breeding taking place at the time. An advice note is included drawing attention to this.

The Shire's Natural Landscape in Urban Areas Local Planning Policy seeks to facilitate the retention of trees and native vegetation through the planning and development process. A Tree Retention Plan (Attachment 8) has been submitted which three habitat trees and 22 other trees which are intended to be retained. Conditions are recommended to ensure the protection and ongoing retention of these trees where possible.

Poultry Farm

A small poultry farm exists on Lot 1186 approximately 160m south, diagonally opposite on Riverside Drive.

State Planning Policy 2.5: Rural Planning (SPP2.5) applies to rural land and rural land uses in Western Australia, including (but not limited to) rural land uses on land that is not zoned rural or land that may be impacted by rural land uses. It aims to protect and preserve Western Australia's rural land assets while ensuring broad compatibility between land uses.

SPP2.5 repealed State Planning Policy 4.3 Poultry Farms Policy and provides guidance to planning decision makers regarding the development and operation and buffers for animal premises such as poultry farms.

Poultry farms can have adverse amenity impacts on residential areas by way of dust and odour. The Environmental Protection Authority's *Environmental Protection Guidance Statement No. 3: Separation Distances between Industrial and Sensitive Land Uses* provides guidance on recommended separation distances between many rural land uses and sensitive land uses. This guidance statement assists in the determination of land use buffers and planning decision-making. This Statement recommends a buffer distance of between 300m and one kilometre depending on the size of the poultry farm.

In this case the poultry farm is located on Urban zoned land within the Furnissdale West Structure Plan area. Section 2.3.5 of the Structure Plan states that the poultry operator/owner (the proponent of the Structure Plan) will relocate on implementation of the structure plan. This will permanently remove any foreseeable land use conflict between the proposed development and the poultry farm. There have been no complaints or amenity issues raised with the Shire in relation to poultry farm in recent times.

Conclusion:

The proposal has been assessed and found to be generally consistent with the State and local planning framework. It is recommended that the application be approved, subject to a range of recommended conditions.



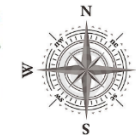
This document is compiled from various sources and whilst the Shire of Murray has made every effort to ensure the accuracy and currency of the information, Council accepts no responsibility or liability for any errors or omissions.

Location Plan – Lot 156 (528)
Pinjarra Road, Furnissdale

Scale : **1:10000**
Drawn by : **IntraMaps**

Original Size

A4



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Development Application
Providence Mandurah Lifestyle Village
Lot 156 Pinjarra Road, Furnissdale
Shire of Murray

Prepared for: Ecofit Homes Pty Ltd
Prepared by: Allering and Associates

SEPTEMBER 2020



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ANNEXURE 3 - DEVELOPMENT PLANS

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FIGURE 1 - LOCATION PLAN

FIGURE 2 – POPULATION FORECASTS

FIGURE 3 -SITE PLAN

FIGURE 4 – PEEL REGIONAL SCHEME MAP

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FIGURE 6 – TOWN PLANNING SCHEME MAP

FIGURE 7 – FURNISSDALE WEST STRUCTURE PLAN MAP

TABLE 1 - SITE DETAILS

TABLE 2 – ASSESSMENT UNDER THE RESIDENTIAL DESIGN CODES

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TABLE 4 – TREE PROVISION RATES FOR GROUPED DWELLINGS

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Document ID: NLV FU2 GE / 200930 Report

Issue		Status	Prepared by;		Approved by:	
			Name	Initials	Name	Initials
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2	30/9/2020	FINAL	Patricia de Kobbe	PD	Tom Hockley	TH

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EXECUTIVE SUMMARY

The proposed Mandurah Providence Lifestyle Village will provide compact accommodation for the over 50s in Furnissdale which at present is in short supply. The Lifestyle Village will provide a range of grouped dwelling options which will be enhanced by popular community facilities. The Village will be centrally administered to provide a secure and cohesive community based village environment. Maintenance and gardening services will be provided for the 1, 2 and 3 bedroom rental homes to enable a high amenity lifestyle for over 50's who choose to downsize and seek more affordable accommodation options.

Research has shown that 85.5% of Australians over 55 years are living in their preferred location with 44% believing that there were not enough affordable housing options in the area that they would want to live with a similar proportion believing there were not enough suitable housing options. The scarcity of suitable housing options is accentuated by the projected and current increase in the proportion of older Australians within total population growth forecasts which will increase the demand for compact and affordable housing.

The Mandurah Providence Lifestyle Village has been designed to fill this gap and furnish suitable and affordable accommodation in a community setting, which will foster a socially cohesive lifestyle in close proximity to the Mandurah City Centre.

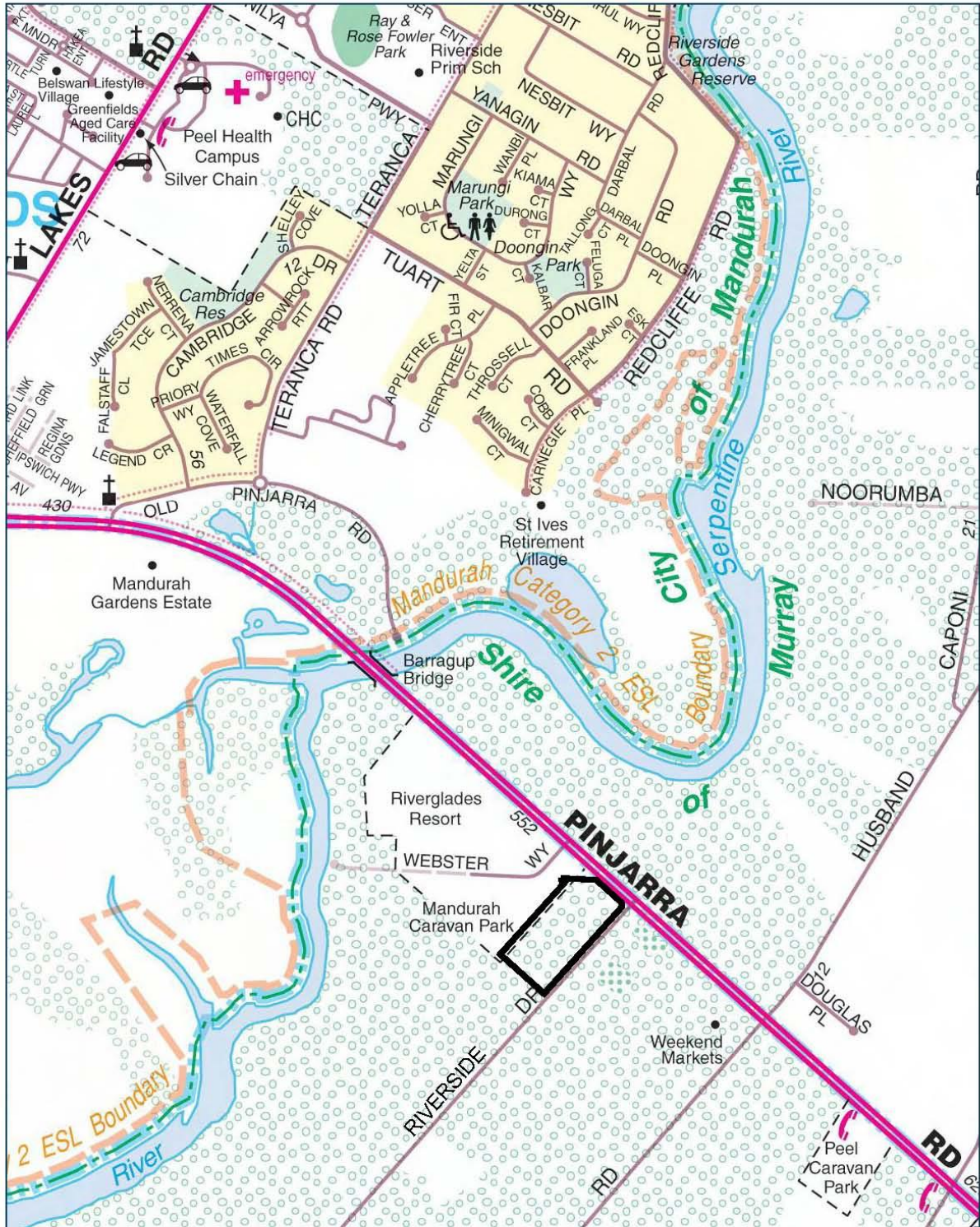
1.0 INTRODUCTION




Ecofit Homes Pty Ltd (**Ecofit**) is seeking planning approval for the proposed Providence Mandurah Lifestyle Village (**PMLV**) to be located at Lot 156 (No. 528) Pinjarra Road, Furnissdale (**subject site**). A Location Plan for the site has been included as **Figure 1**. Ecofit proposes to develop the site with 79 grouped dwellings and associated community and recreation facilities. Application forms for the proposed development are included as **Annexure 1**.

The PMLV objective is to deliver high quality and architecturally designed housing that is also affordable for the over 50s. It is proposed to provide affordable living options within a retirement community which provides central communal facilities to enhance active social interaction within the village.

The Village will be located within the Shire of Murray in the locality of Furnissdale, approximately 75 km south of the Perth Central Business District and 4 km east of Mandurah town centre. The subject site is contained within the Furnissdale West Structure Plan (**FWSP**) area and identified within the FWSP as "proposed to facilitate a potential future Lifestyle Village".

The proposed use is therefore consistent with the applicable planning framework and will respond to the growing demand for affordable housing for the over 50s in the locality.



<p>LOCATION PLAN</p> <p>LOT 156 (No. 607) PINJARRA ROAD FURNISSDALE</p> <p>SHIRE OF PEPPERMINT GROVE</p>	<p>0 10 20 30 40m</p> <p>SCALE: 1:1000 ORIGINAL PLAN SIZE: A4</p> <p>JOB CODE: NLV FUR GE</p> <p>DATE: 20.01.2020</p> 	<p>LEGEND:</p> <p>SUBJECT LAND - </p>	 <p>Town Planners, Advocates and Subdivision Designers</p>
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Figure 1: Location Plan

2.0 BACKGROUND

The size and demographic composition of the population in Western Australia has been forecast to change significantly over the next three decades. These changes have been identified in State strategic documents including the State Planning Strategy 2050 and Perth and Peel @3.5million and its associated sub-regional frameworks.

WA's future population has been forecast to increase substantially but disproportionately, with older Australians experiencing the highest proportional increase, resulting in an ageing population. At a local level, published .idcommunity population projections for the Shire of Murray and the locality of Furnissdale reflect this trend. As depicted in **Figure 2**, the greatest proportional increases are forecast for the older age groups, particularly for the 50-59 service group.

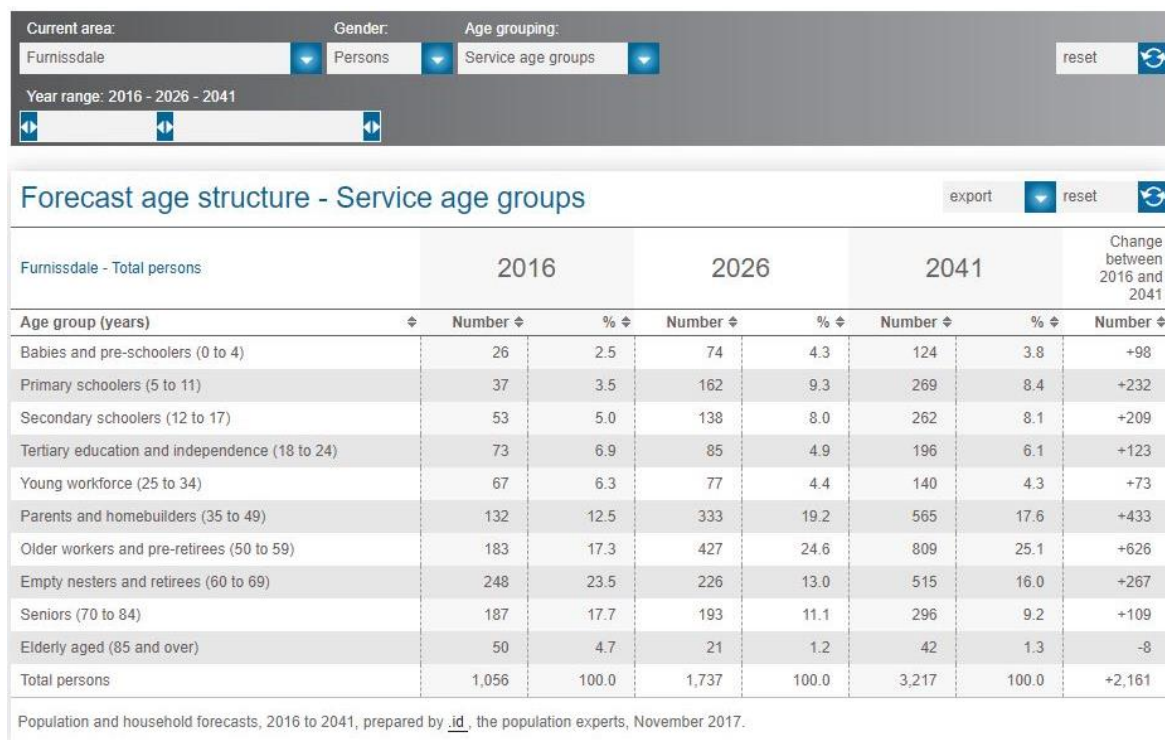


Figure 2: Furnissdale forecast age structure by groups

In parallel, and as a result of this demographic trend there has been there has been a growing demand for more diverse, and in particular affordable, housing options. The need for cheaper accommodation has been recognised at both State and local levels in the preparation of the draft New Housing strategy and the publication of Ageing with Choice and the Shire of Murray's Strategic Community Plan.

The Mandurah Providence Lifestyle Village responds to these changes in housing demand by providing compact and affordable grouped dwellings in a community setting and in close proximity to the Mandurah town centre.

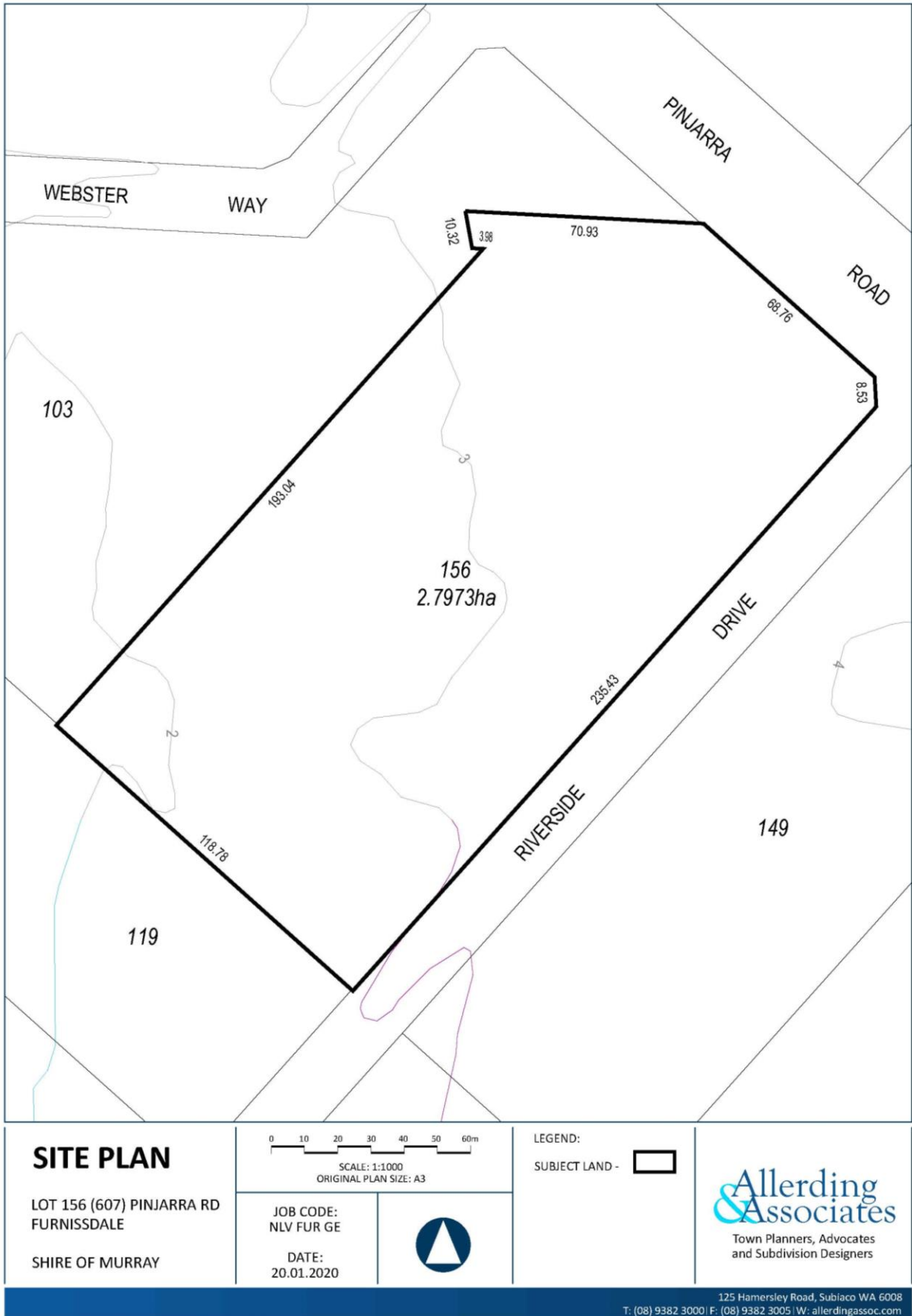


Figure 3: Site Plan

3.0 SITE DETAILS

3.1 Subject Site

The particulars of the subject site are described in **Table 1**.

Table 1: Site Details

Lot Number	House Number	Diagram	Volume	Folio
156	528	20124	1837	106

A copy of the Certificate of Title is included in **Annexure 2**.

The subject site measures 2.79 ha in area and the topography is relatively level, with the land sloping gently down to the south west of Pinjarra Road (refer to the Site Plan at **Figure 3**).

3.2 Location and Context

The subject site is located within the Shire of Murray in the locality of Furnissdale, approximately 75 km south of the Perth Central Business District and 4 km east of Mandurah town centre. A Location Plan depicting the subject site is included as **Figure 1**.

At present, Lot 156 contains a single residential dwelling on undeveloped vegetated land. The subject site is adjoined by a caravan and chalet park to the north east, Pinjarra Road to the north east and rural lots to the south west. The property to the east of Riverside Drive currently contains a single residential dwelling on a large landholding which has now been zoned Urban under the Peel Region Scheme and forms part of the Furnissdale West Structure Plan.

Current access to the site is via a single entry point from Pinjarra Road.

3.3 Integration

Riverside Drive, which is a south-west to north-east running 'Local Distributor' road, connects to the north-east with Pinjarra Road ('Primary Distributor') (directing traffic in a north-west to south-east direction) which in turn connects with the Kwinana Freeway ('Primary Distributor'), Forrest Highway ('Primary Distributor') and Mandurah Road ('Primary Distributor'). Such road connectivity ensures that the proposed development is well situated in terms of direct vehicular access to Mandurah, Perth, Pinjarra and other local and regional centres.

A main entrance is proposed to the Lifestyle Village via Riverside Drive to the east with a secondary two way access point to the south east of the side to Riverside Drive. This will enable connectivity to regional road linkages as well as local roads which already provide access and integration with existing residential land south of the Structure plan area, including access to local facilities nearby as well as the commercial outlets within the Structure Plan area.

No traffic conflict is anticipated between the proposed development and Riverside Drive given that, typically, the traffic generated by a Lifestyle Resort is significantly less than that generated by a conventional residential subdivision. The proposed development will generate approximately 3 vehicle trips per dwelling per day, compared with approximately 9 to 10 vehicles trips generated per conventional residential dwelling per day. Based on the proposed 80 dwellings this equates to 240 vehicle trips per day, which is not considered significant in the context of overall traffic volumes on the broader road distribution network.

4.0 PROPOSED DEVELOPMENT

4.1 Site Layout and Built Form

The proposed development will facilitate 79 high end and architecturally designed grouped dwellings. A Masterplan depicting the village layout is included as **Annexure 3**. The Design Principles are based on the following key considerations:

- a need to give every house passive solar access;
- a desire not to interfere unduly with the existing landform; and
- a principle of maintaining significant trees wherever possible.

Pedestrian circulation will follow the permeable grid road system which has an 8 km per hour speed limit. The roads provide linkages from the dwellings to the park spaces and to the shared community facilities. This use of the street as the public realm is in accordance with the philosophy of New Urbanism, as the houses overlook the streets as a focus of activity and positive social space.

The village will be complemented by other facilities located in the Lifestyle Village layout.

The proposed housing form has been architecturally designed with a range of housing types conducive to providing choice to prospective residents. A development schedule including setbacks, areas and design elements for all 79 dwellings is included as **Annexure 3**. Plans and elevations of the types of housing proposed are included as **Annexure 3**.

Vehicular access to the subject site is proposed via two separate crossovers from Riverside Drive to the east. Both access points will be sealed and will allow for two way movement.

4.2 Clubhouse and Community Facilities

The PMLV will also include a central single storey clubhouse and main building which will provide a community focus for the Village. Scaled floor and elevation plans for the clubhouse are included in **Annexure 3**.

The Clubhouse will feature a central open hall/lounge area which will include a dance floor, bar/ café, a games corner, library and toilets. A separate administration area and office area will be accessed through an entrance to the south of the building.

The central community open space within PMLV will include a bowls area, gardens and barbecue facilities.

4.3 Workshop

The lifestyle village workshop is provided to form a community hub for residents, predominantly male, who often miss a “backyard shed” for hobbies. The workshop provides a clean, safe and secure building for wood and steelwork, similar to the facilities provided by the “Mens’ Shed” movement.

The village management provide the building, work benches and storage and pay for lighting and power. Residents stock the building with their tools – often providing them for other people to use, and source the materials they need. Often projects developed in the workshop are used to provide facilities for the village, for example outdoor chess pieces, bowls score boards and dart board cabinets.

Participation in the workshop activity is only allowed to residents who have undertaken induction into the use of the facility. In the villages developed to date it has proved to be a highly popular and successful amenity, as both a hobby and social centre.

5.0 PROVIDENCE LIFESTYLE VILLAGES

Providence master planned communities are designed to introduce social engagement, affordability, safety, and security within gated estates using a rental model which removes the entry and exit fees usually associated with retirement villages. Providence ‘Club Members’ will be able to downsize their house, free up equity for travel, hobbies and leisure and move into a manageable new home.

This development model provides architecturally designed accommodation, which is affordable and contemporary, within the relaxed ambience of a secure community setting and self-serviced by important community facilities.

Generally, Providence residents will be generation younger than typical retirement village residents. Providence residents will be typically aged between 50 and 70 representing Australia’s fastest growing demographic sector and reflecting the demographic trend anticipated for the future projections in the Perth and Peel Regions. The Providence model aims to provide a lifestyle choice for active over 50s who are typically too young, too fit, or too healthy for a traditional retirement village. Generally, these residents have a good 20 to 30 years of active life ahead of them, and appreciate the atmosphere, security and facilities offered by the Lifestyle Village.

Providence Lifestyle is designed to enrich the lives of its club members by creating a safe environment for social engagement. Each Providence Community is designed to encourage socialisation with either the “Street” onto which each home opens and the recreational Buildings and facilities areas. The communal facilities will support sporting and leisure activities (such as bowls), a general fitness centre, club house with a dance floor, catering facilities, a library, outdoor facilities, and alfresco entertaining areas.

Street layouts and communal facilities are designed to allow for incidental interaction in an environment which will reproduce many of the characteristics of traditional local neighbourhoods.

5.1 Sustainability

Providence is committed to developing the Mandurah Lifestyle Village with a quadruple bottom line. This entails social, financial and environmental sustainability, with ongoing central governance to ensure continuing best practice. Because all grouped dwellings will be centrally owned and administered rather than in individually owned, Providence will be able to undertake a significantly greater level of sustainable development than in a conventional suburb comprising multiple ownerships. This is considered in further detail below.

5.1.1 Economic

By removing the purchase or entry cost through the provision of a long term dwelling lease housing cost becomes very affordable. Residents can usually sell their family home, take a long term lease on a Providence house and put a significant surplus in the bank to finance their future retirement.

5.1.2 Social

The social structure of Providence Village is highly supportive without being intrusive. Residents can enjoy the privacy of their homes and sheltered outdoor spaces for relaxation or entertaining with family and friends. Residents also have access to the on-site facilities for their social, recreational, sporting, and personal needs, as well as for the benefit of visiting family members.

Village management will organise a strong and active social club to organise and maintain a social calendar for those who wish to participate. Activities such as the gardening and growing of produce will encourage social interaction and central mail collection and recycling areas will be common meeting points.

5.1.3 Environment

The central governance model provides the opportunity for the implementation and management of sustainable environmental principles and practices. There are a number of environmentally sustainable initiatives in this project. The homes are appropriately sized and designed to provide good solar access and natural cross ventilation, with narrow floor plans that also enable good natural lighting. The cadastral pattern, with roads running north to south means that most homes have the long axis of the floor plan facing north for good winter sun access.

Discussions with building contractors have confirmed that homes can be built on site from factory made components and brought to lock-up within 7 days – a highly efficient construction process with a lowered carbon footprint, minimising waste.

Landscaping will be “water wise” with sub surface reticulation to minimise potable water use outside the dwelling.

Environmental management is vastly improved with the arrangements adopted by Providence. These arrangements ensure ongoing coordination and implementation of sustainability measures without directly burdening external Government agencies. This is largely derived also from the control that Providence will have over the construction of individual buildings which is typically not seen under a conventional grouped dwelling subdivision model.

5.2 Affordability

Prospective Providence residents will be able to sell their existing home and take a long term lease on a grouped dwelling. This will facilitate the freeing up of capital to pursue an active lifestyle or simply to provide a nest egg for financial security. Therefore, this provides an affordable option for anybody aged 50 years and over. Alternatively, Providence members will be able to rent out their existing homes to provide a stream of income to finance their rental costs and future retirement.

5.3 Housing Choice

The Providence aesthetic is set in a high quality landscaped area providing a distinctive 'sense of place'. The dwelling designs follow a contemporary theme and are architecturally designed to a high standard. Each home will be integrated into the landscape, minimising access impediments with good solar access and 'waterwise' treatments.

The use of the internal Site streets as the public realm is in accordance with the philosophy of New Urbanism, as the houses overlook these streets as a focus of activity and positive social space. The roads will be privately maintained and upgraded, again providing fewer burdens on local and State resources in terms of maintenance and infrastructure.

All dwellings are architecturally designed, engineer certified and meet or exceed the requirements of BCA standards.

The dwellings are designed with an emphasis on low maintenance and longevity, based on a 100 year lifecycle which compares favourably with traditional housing. Each dwelling has a private outdoor space usually located to the north and to the rear of each house. This provides residents with a secluded garden and external sitting space, with good winter solar access.

Plans and images of the proposed dwellings, are contained in **Annexure 3**.

6.0 EXISTING AND PROPOSED INFRASTRUCTURE SERVICING

The following summarises the intended servicing arrangements for the Site.

6.1 Water Supply

Water mains exist in a number of locations around the subject site which will provide for adequate connection options for mains water supply and fire service. The development will also utilise the latest "Water-Wise" techniques in water harvesting and storage on a house by house basis and for the development as a whole to maximise water conservation.

6.2 Sewer Connection

The landowner is currently in negotiations with the Riverglades Caravan Park operator to the north of the subject site to facilitate a cost sharing arrangement for the extension of the existing reticulated sewer from the north to service the development. This would include cost contributions for the ongoing maintenance and repair of the infrastructure.

This has included engagement with the Water Corporation to ensure that any future connection would be acceptable. The Water Corporation has agreed to the proposed connection point in principle and that the existing pressure main is capable of accepting the nominated flow. This approval is subject to a report that shows the combined (for Providence and Riverglades) pumped discharge rate.

It is anticipated that the sewer connection agreements will be finalised through the course of the planning application assessment process.

6.3 Water Management

All stormwater will be contained on site. A geotechnical study was commissioned as part of the proposal and undertaken by Galt. A copy of the study is included at **Annexure 4**. The geotechnical study notes that soil permeability on site is very good, in excess of 15 metres/day.

Stormwater from roofs will be piped to soakwells, designed and located in accordance with the Galt study.

Stormwater from roads, driveways and hard surfaces will be directed to vegetated roadside swales. The swales fall at approximately 1% in their length, to maximise infiltration, and are heavily vegetated to maximise water purification. From the swales, stormwater will leach through the soil, ultimately re-charging the aquifer.

The vegetated swales form a green edge to the road system as an extension of the front gardens to the homes.

As the water will be entirely managed on site through the development of an internalised stormwater management system, no connection to the local or district drainage system is planned.

6.4 Power Supply

The development will be connected to mains power. Underground high voltage cables have been installed along Riverside Drive and Pinjarra Road adjacent to the subject site.

6.5 Telecommunications

All dwellings will be connected with telephones and broadband internet, as well as television cabling from a common antenna. In addition, all homes will be connected to an internal intercom service providing gate control and linkage to the Village administration and other dwellings.

6.6 Movement Network

Riverside Drive connects to the north-east with Pinjarra Road which in turn connects with the Kwinana Freeway, Forrest Highway and Mandurah Road. Such road connectivity ensures that the proposed development is well situated in terms of direct vehicular access to Mandurah, Perth, Pinjarra and other local and regional centres.

Acknowledging that Lifestyle Villages typically generate less vehicular traffic than a conventional residential subdivision (as considered under Section 3.3 above) and having regard to the sparsely developed nature of the existing Furnissdale precinct and the limited pressure placed on the existing road network, the impacts of the traffic volumes associated with the proposed Lifestyle Village on the road network are considered acceptable.

6.7 Public Transport

The Site is serviced by public transport including the 600 Bus which stops approximately 250m to the north-east of the Site on Pinjarra Road, providing a connection to the Mandurah town centre and train station. The same bus route also provides access to Pinjarra. These bus services are expected to be extended with the development of residential subdivision on land to the South. Other bus stops located within the immediate vicinity of the site, positioned among the other local distributor road networks provide access to Mandurah train station and Pinjarra, including the 598 and 727 respectively, which are located on Smith Street after Riverside Drive.

The Site is located approximately 5km east of the Mandurah Train Station which provides linkages to Rockingham, Fremantle, and Perth CBD. Moreover, Providence will utilise their own village bus to provides its residents with transport services for shopping journeys as well as recreation and excursion activities.

6.8 Waste Management

Waste management will be undertaken by the village management, with a 3 bin system – waste to landfill, green waste and recycling. As a precedent, previous leasehold estates developed by the proponent have reduced waste to landfill by 75% using this system.

Village management will periodically collect general waste, recycling and composting waste from homes via a vehicle and trailer collection system. There is an allocated space near the village workshop for storage of general waste and bulk bin recycling and space for composting green waste.

Bulk general waste and recycling will be removed by Cleanaway contractors on a regular basis.

7.0 ENVIRONMENTAL CONSIDERATIONS

A review of the environmental factors applicable to the site has been undertaken and a summary of the environmental constraints identified as part of this report are summarised below. An environmental consultant has been employed to provide a more detailed assessment of these constraints. This assessment is provided within the Environmental Report included as **Annexure 5**).

7.1 Acid Sulphate Soils

Acid sulphate soils (ASS) are naturally occurring soils and sediments containing sulphide minerals, predominantly pyrite (an iron sulphide). In an undisturbed state below the water table, these soils are benign and not acidic. However, if the soils are drained, excavated or exposed by lowering of the water table, the sulphides will react with oxygen to form sulphuric acid.

The entirety of the site has been classified as Class 1 ASS which can be described as follows:

Class 1 – High to moderate risk of Acid Sulphate soils (ASS) occurring within 3m of natural soil surface.

The nature of soil disturbance that triggers ASS investigation for Class 1 areas include:

- Earthworks involving soil disturbance in excess of 100m³ where dewatering or soil draining activity is expected.

The nature of the proposed development, which avoids deep excavation and soil profiles, will be appropriately managed at the time development is undertaken.

7.2 Soil Profile

The Pinjarra sheet of the 1:50,000 scale Urban Geology series map indicates that the area is underlain by Bassendean Sand.

The subsurface conditions are relatively consistent across the site and the typical soil profile may be summarised as:

TOPSOIL SAND (SP): fine to coarse grained sand, sub-angular to sub-rounded, dark grey to grey, trace fines, trace organics, extending from the surface to depths of around 0.1 m to 0.2 m; overlying

SAND (SP): fine to medium grained, sub-angular to sub-rounded, white to pale brown/orange brown, trace fines, extending to maximum investigated depth of 2.7 m.

Bassendean sands are well drained, and both the types of remnant vegetation and the mapping of the site as an upland (i.e. not a wetland) indicates that rainfall infiltration occurs readily within the land.

7.3 1 in 100 AEP Development Control Area

The subject site has been identified as being within 300 metres of a 1 in 100 Annual Exceedance probability (AEP) floodplain and may be affected by flooding during a 1 in 100 AEP flood. The Floodplain Development Strategy for the area recommends that proposed development that is located outside of the floodway is considered acceptable with respect to major flooding, however, a minimum habitable floor level of 0.5 metres above the adjacent 1 in 100 AEP flood level is generally recommended. The finished floor levels of the buildings within the Lifestyle Village will be constructed according to this recommendation.

7.4 Groundwater

The Perth Groundwater Atlas's (1997 and 2004 editions) do not extend to the site. However, given the Serpentine River is within 200 m to 300 m of the site, the maximum groundwater elevation is expected to be to be close to the level of the river.

Groundwater is therefore expected to be within about 1.5 m of the current ground surface.

7.5 Bush Fire Prone Area

The site has been identified as being in a Bushfire Prone Area in the DFES's map of Bushfire Prone Areas as described in further detail in Section 9.5 of this Report. A Bushfire Attack Level (BAL) Assessment and Bushfire Management Plan has been prepared for the site and is included as **Annexure 6**.

7.6 Native Vegetation

The vegetation at Lot 156 is in degraded to completely degraded condition with sand, pasture grasses and weeds comprising approximately half the site, and with remnant tree vegetation with effectively no native understorey present forming the balance of the site.

There are no known species of native flora or fauna with any special conservation values likely to utilise the site.

An Environmental and Vegetation report has been prepared and has been included as **Annexure 5**.

An application for a clearing permit has been lodged.

8.0 STRATEGIC PLANNING FRAMEWORK

There is a growing alignment between the various policy initiatives sought by Government to provide affordable housing opportunities and the capacity of the planning system to effectively deliver them. The proposed Providence Lifestyle Village is entirely consistent with those initiatives.

8.1 State Planning Strategy 2050

The State Planning Strategy 2050 is the highest order planning instrument in the Western Australian planning system. The Strategy is a guide through which public authorities and local governments can express or frame their legislative mandates and/or influence in land use planning, land development and related matters.

The Strategy offers an integrated whole-of-government view of strategic planning needed to respond to various challenges, including population growth, an ageing population, and an orientation towards sustainable living. As stated:

“The Western Australian population is ageing ... Over the next 40 years the proportion of the population aged 65 or over is likely to increase from 13% to 22% and, in contrast, the proportion aged 15 or under is likely to decrease slightly from 19% to 18%.

Such a change in the State’s demographics has direct impacts on planning directions and priorities (e.g. access to health care, mobility, labour pressures and internal migration).

The ageing of our population will increase the demand for dwellings such as apartments or units in suitable locations.

This demographic shift will impact on most aspects of the economy, in particular the composition of the labour force, healthcare requirements, education and social services, and the mix of dwellings [emphasis added].”

Moreover, and as recognised by the Strategy, Western Australia’s demographics and household structures are changing rapidly, yet *‘the diversity of the available housing stock remains relatively static’*. In achieving a vision of sustained growth and prosperity, where Western Australians enjoy high standards of living, communities will require access to diverse housing and services that complement their values and lifestyle choice.

The proposed Providence Lifestyle Village aims to respond to these challenges by older Australians with diverse and affordable housing opportunities.

One of the objectives identified by the State Planning Strategy is *‘to encourage active lifestyles, community interaction and betterment’*. In its consideration of this objective, the Strategy acknowledges that:

‘[a]n ageing population exhibits increasing demand for healthy recreation and experiences, presenting opportunities for emergent lifestyle services and facilities.’

The proposed Providence Lifestyle Village responds to these demands by providing facilities that support sporting and leisure activities including a community clubhouse, a bowls lawn, outdoor facilities and alfresco entertaining areas. Further, the provision of these facilities and services on Site reduces demand or pressure on local and State government authorities and surrounding community infrastructure, otherwise generated by similar density conventional housing developments.

8.2 Perth and Peel @3.5 million

Perth and Peel @ 3.5 million builds on the vision laid down in Directions 2031 and Beyond and provides a link to the South Metropolitan Peel Sub-Regional Planning Framework which will define the spatial plan for the region over the next three decades.

Notably the document identifies significant population growth for the Perth and Peel region, projecting a total population of 3.5 million people by 2050. Drawing on the shared key principles from previous spatial planning documents the document identifies the need to meet long-term, diverse housing needs.

Diversity in accommodation options is propelled by changing demographic patterns with consequential changes in household composition. In particular, our population is ageing, which leads to the growing demand for houses with convenient access to a range of community, recreational and health options and for affordable smaller dwellings which are easier to maintain. Older couples without children are predicted to be the fastest growing family type. Two person households are expected to soon outnumber couples with children, while single person households will also increase.

The grouped dwellings proposed by the Mandurah Providence Lifestyle Village respond to the identified changes in demographic and household composition by providing affordable smaller houses for the over fifties with access to social infrastructure in the form of recreational and leisure communal facility. The dwellings will also be within 5 kilometres of Mandurah town centre which will provide additional health and social infrastructure.

8.3 Housing Strategy WA and Affordability

Housing Strategy WA, and specifically *Affordable Housing Strategy 2010 - 2020*, was the first Whole-of-Government housing strategy to be developed in WA. The aim of the Strategy was to deliver a responsive housing system which meets the changing needs, aspirations and choices of Western Australians in a sustainable way. Three major themes provided the foundation for the strategy – affordability, sustainability and equity.

The State Government's Affordable Housing Strategy 2010-2020 specifically aimed to increase the supply and diversity of affordable housing across Western Australia. The Strategy specifically identified "breakthrough initiatives" such as establishing alternate housing product and market for new types of affordable accommodation and improving housing supply based largely around different land tenure models. The Providence model clearly aligns with the initiatives and strategies identified by the Affordable Housing Strategy 2010 - 2020.

The Department of Communities is now developing a new WA Housing Strategy 2020-2030, which will set the direction for the next 10 years, creating a more sustainable and responsive housing system for WA. The new WA Housing Strategy will be informed by the recently released Ageing with Choice.

8.4 Ageing with Choice

Ageing with Choice: Future directions for seniors housing 2019 to 2024, was released on 19 October 2019 and includes a 5 year plan to support older Western Australians, particularly those on low to moderate incomes, to access affordable, manageable and stable homes so they can age well in their community of choice. Amongst other things, it commits to delivering an increased proportion of homes that can support ageing in place and provide affordable homes on people on low to moderate incomes.

Ageing with Choice identifies a number of priorities which enable ageing in place, including providing alternatives to home ownership and providing better rental options for older Western Australians. Mandurah Providence Lifestyle Village responds to the objectives of the new WA Housing Strategy 2020-2030 and Ageing with Choice by providing affordable rented accommodation for the over 50's with communal facilities in a location close to the Mandurah and Pinjarra town centres.

8.4.1 Shire of Murray Strategic Community Plan 2023

The Shire of Murray Strategic Community Plan 2023 is a blueprint for the future direction of the Shire and its community members. It represents a shared community vision and sets out long term strategies designed to strengthen and build on Murray's unique assets.

As recognised by the Strategic Community Plan, the Shire of Murray is experiencing unprecedented population growth, with its population forecasted to reach 30,000 by 2023. In response to this, the Strategic Community Plan acknowledges the Shire's vision to promote sustainable development and diverse lifestyle opportunities for a growing population while preserving Murray's natural assets and heritage. This vision is aligned with the objectives of the proposed development subject of this application.

The proposed development also complements the Shire's role to facilitate the supply of affordable and diverse housing options, as recognised by the Strategic Community Plan in the following terms:

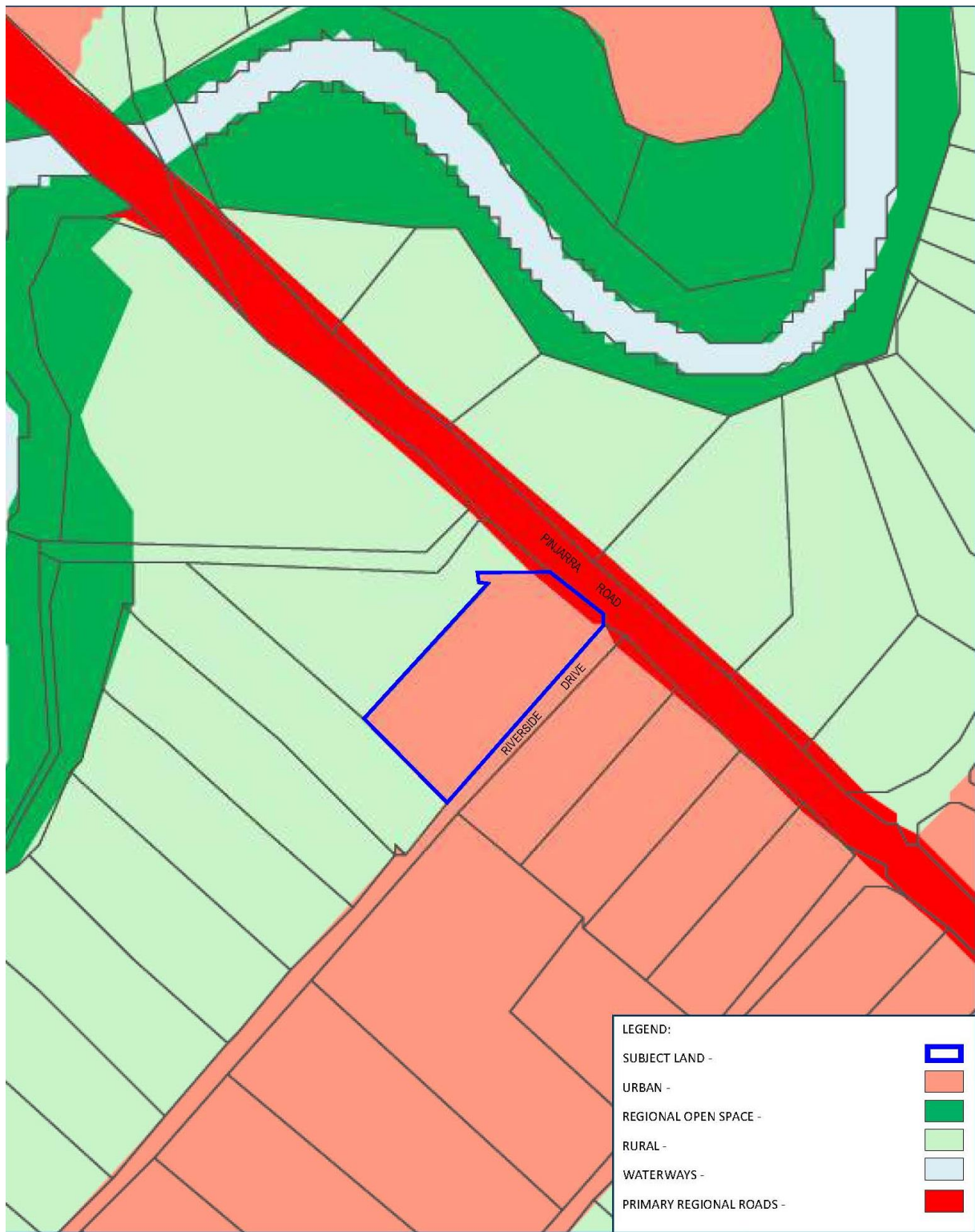
The Shire's role in the primary housing market over the last two decades has been to provide relatively affordable and diverse living options for young and established families, retirees and older adults... This role is expected to continue and expand as the stocks of residential land in Mandurah are depleted and housing costs in Perth remain high.

This role is also reflected under objective 2.1.1 of the Community Plan to 'provide a range of housing types and land use alternatives. Specifically, in relation to the subject locality, the Strategic Community Plan also recognises that 'growing opportunities for residential development will exist in fragmented landholdings in Furnissdale ...'

9.0 STATUTORY PLANNING FRAMEWORK

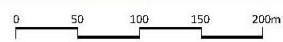
9.1 Peel Region Scheme

The subject site is zoned 'Urban' and 'Primary Regional Road' under the Peel Region Scheme (PRS). Refer to **Figure 4** for an extract of the PRS Map.



PEEL REGION SCHEME

LOT 156 (No. 607) PINJARRA ROAD
FURNISSDALE
SHIRE OF HARVEY



SCALE: 1:5000
ORIGINAL PLAN SIZE: A4

JOB CODE:
NLV FUR GE
DATE:
20.01.2020



**Allerding
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Figure 4: PRS Map

9.2 State Planning Policy 2.1: The Peel-Harvey Coastal Plain Catchment

State Planning Policy 2.1: The Peel Harvey Coastal Plain Catchment (**SPP2.1**) Applies to all land uses within the portion of the catchment of the Peel-Harvey Estuarine system that lies on the Swan Coastal Plain. The subject site lies within this catchment and 350 metres away from the Serpentine River which discharges directly into the Peel-Harvey estuary to the south.

The general objectives of SPP2.1 are to balance the social, economic, ecological, aesthetic and recreational management and potential of the Pee-Harvey Coastal Plain Catchment. This includes minimising the export of nutrient (primarily phosphorous) to the district resulting from the subdivision and development of land. In particular it requires that this discharge should not exceed pre-development levels.

A Local Water Management strategy was prepared for the Structure Plan area to satisfy the requirements of SPP2.1.

9.3 State Planning Policy 2.5: Rural Planning

State Planning Policy 2.5: Rural Planning (**SPP2.5**) applies to rural land and rural land uses in Western Australia, including (but not limited to) rural land uses on land that is not zoned rural or land that may be impacted by rural land uses. It aims to protect and preserve Western Australia's rural land assets while ensuring broad compatibility between land uses.

SPP2.5 repeals State Planning Policy 4.3 Poultry Farms Policy and provides guidance to planning decision makers regarding the development and operation and buffers for animal premises such as poultry farms. The existing poultry farm located at 155 Ronlyn Road, Furnissdale, is located within 160m of the subject site No 155 Ronlyn Road, however, is located within the Furnissdale West Structure Plan area which has been rezoned as Urban under the Peel Region Scheme. Section 2.3.5 of the Structure Plan states that the poultry operator/owner will relocate on implementation of the structure plan. This will permanently remove any foreseeable land use conflict between the proposed Lifestyle Village and the poultry farm.

9.4 State Planning Policy 3.0: Urban Growth and Settlement

State Planning Policy 3.0: Urban Growth and Settlement (**SPP3.0**) sets out the principles and considerations which apply to planning for urban growth and settlement in Western Australia and informs more detailed policies on particular matters relating to planning for urban settlements that required additional guidance.

The stated objectives of SPP3.0 include promoting sustainable and orderly settlement which will provide a variety of housing which responds to the social and economic needs of the community. This involves the creation of communal built form which reduces energy, water and travel demand and provides choice and affordability of housing. Importantly it aims to coordinate new development with the efficient, economic and timely provision of infrastructure and services.

The Mandurah Providence Lifestyle Village responds to the objectives of the Policy by providing compact, affordable accommodation which meets the social and economic needs of the projected demographic of Furnissdale and the surrounding area. The demand for accommodation by the over 50s will be met through sustainable and liveable grouped development which reduces the need for energy and water consumption and is located on a bus route close to the Mandurah and Pinjarra town centres.

The site area will be serviced with all essential infrastructure through the extension of existing infrastructure available on adjacent land. Being located close to Mandurah, prospective residents will be close to existing community infrastructure and services additional to those provided within the village.

9.5 State Planning Policy 3.7: Planning in Bushfire Prone Areas

A package of reforms was introduced in 2015 to help protect lives and property against the threat of bushfires throughout Western Australia. State Planning Policy 3.7: Planning for Bushfire Prone Areas (**SPP3.7**) and the Guidelines for Planning in Bushfire Prone Areas (**the Guidelines**) were released and took effect on 7 December 2015.

SPP 3.7 provides the foundation for land use planning decisions in designated bushfire prone areas. Areas within Western Australia have been designated as bushfire prone by the Fire and Emergency Services (**FES**) Commissioner, and the Map of Bushfire Prone Areas which identifies the parts of the State that are designated as bushfire prone came into effect on 8 December 2015. An extract of this Map depicting the Site is included as **Figure 5**.

Clause 6.2(a) of SPP 3.7 provides as follows:

- a) *Strategic planning proposals, subdivision and development applications within designated bushfire prone areas relating to land that has or will have a Bushfire Hazard Level (BHL) above low and/or where a Bushfire Attack Level (BAL) rating above BAL-LOW apply, are to comply with these policy measures.*

Further, Clause 6.5 specifies that:

Any development application to which policy measure 6.2 applies is to be accompanied by the following information in accordance with the Guidelines: (i) a BAL assessment. BAL assessments should be prepared by an accredited Level 1 BAL Assessor or a Bushfire Planning Practitioner unless otherwise exempted in the Guidelines; or

- a) *a BAL assessment. BAL assessments should be prepared by an accredited Level 1 BAL Assessor or a Bushfire Planning Practitioner unless otherwise exempted in the Guidelines; or ...*
- b) *the identification of any bushfire hazard issues arising from the BAL Contour Map or the BAL assessment; and*
- c) *an assessment against the bushfire protection criteria requirements contained within the Guidelines demonstrating compliance within the boundary of the development site.*

This information can be provided in the form of a Bushfire Management Plan or an amended Bushfire Management Plan where one has been previously endorsed.



Figure 5: Map of Bushfire Prone Areas

A Bushfire Management Plan addressing the above provisions has been prepared as part of this report and is included as **Annexure 6**.

9.6 State Planning Policy No. 5.4: Road and Rail Noise

State Planning Policy 5.4 Road and Rail Noise (**SPP 5.4**) applies to all stages of planning in Western Australia, where a noise-sensitive land use is proposed within the policy's trigger distance of specified transport routes or when new or major upgrades of road and rail are proposed. The transport routes identified are considered of key economic importance due to their high vehicle movements and/or freight handling functions.

The objective of the policy is to:

- protect the community from unreasonable levels of transport noise.
- protect strategic and other significant freight transport corridors from incompatible urban encroachment.
- ensure transport infrastructure and land-use can mutually exist within urban corridors.
- ensure that noise impacts are addressed as early as possible in the planning process.
- encourage best practice noise mitigation design and construction standards.

In particular, SPP5.4 aims to ensure that acceptable levels of acoustic amenity can be achieved through the consideration of interface issues that balance reasonable and practical considerations when noise sensitive land use and/or development is proposed in areas impacted by road and rail noise.

Section 4.1.2 of the Policy specifies trigger distances from transport corridors such that, where any part of the lot is within the specified trigger distance, an assessment against the policy is required to determine the likely level of transport noise and management/mitigation required. Table 1 identifies the trigger distance from road carriageway edge of strategic freight and major traffic routes as 300 metres. Lot 156 lies entirely within the trigger distance area for Pinjarra Road.

Table 2 within Section 6 of the policy sets out noise targets that are to be achieved by proposals under which the policy applies. Where exceeded, an assessment is required to determine the likely level of transport noise and management/mitigation required. An expert acoustic consultant has been engaged to undertake this assessment and determine the management and mitigation measures required. The acoustic consultant's report has been included as **Annexure 7** to this report.

9.7 State Planning Policy 7.3 Residential Design Codes Volume 1 (SPP7.3v1)

State Planning Policy 7.3: Residential Design Codes Volume 1 (**SPP7.3V1**), replaces Part 5 of SPP3.1: Residential Design Codes and incorporates amendments gazetted on 24 May 2019. The purpose of the R-Codes is to provide a comprehensive basis for the control of residential development for single houses, grouped dwellings and multiple dwellings in areas less than R40. The grouped dwellings which form part of this application for development approval are assessed in **Table 2** against the applicable elements of SPP7.3V1.

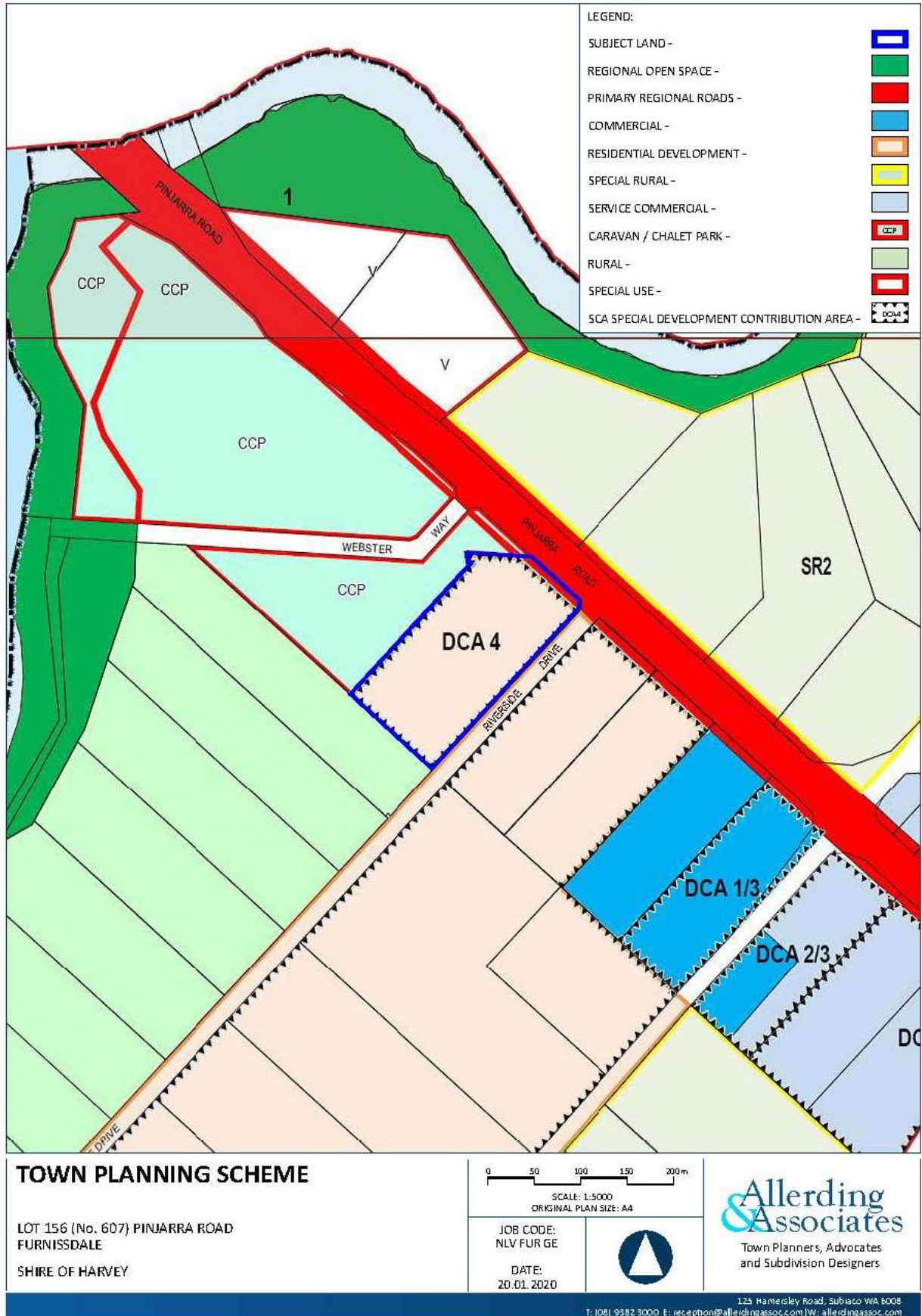


Figure 6: Extract of TPS4 Scheme Map

9.8 Shire of Murray Town Planning Scheme No. 4

The subject site is zoned Residential Development and Primary Regional Road under the Shire of Murray's Town Planning Scheme No. 4 (**TPS4**). An extract of the TPS4 Scheme Map is included as **Figure 6**.

Clause 6.5 outlines the special provisions within the Residential Development zone and states as follows

- 6.5.1 *It is the intention of the Council to ensure that subdivision and development of land within the (Urban) Residential Development Zone takes place only after comprehensive planning ensures the maximum possible benefits of urban design and servicing.*
- 6.5.2 *In this regard the Council, before supporting or approving any proposal for subdivision or development of land within the zone, may require the preparation of an Outline Development Plan for the whole of the zone or for any particular part of parts as is considered appropriate by the Council with regard to the primary intent of the zone.*

A portion of the site is situated within the Pinjarra Road Primary Regional Road reserve for future road widening. No development is proposed within the road reserve. A Peel Region Scheme application for planning approval form has been included within **Annexure 1**.

The subject site is located within the Furnissdale West Structure Plan (**FWSP**) area.

9.9 Furnissdale West Structure Plan

The Furnissdale West Structure Plan (**FWSP**) was approved by resolution of the Western Australian Planning Commission (**WAPC**) on 19 October 2016.

The Structure Plan covers an area of 50.15 hectares of Residential Development zoned land in Furnissdale approximately 14 kilometres north west of the Pinjarra Town Centre and approximately 5km east of the Mandurah Town Centre. The Structure Plan area is bordered by Riverside Drive to the northwest, Ronlyn Drive to the southeast and Pinjarra Road to the northeast.

The purpose of the Structure Plan is to facilitate the development of the site for residential purposes. The Structure plan is therefore prepared to satisfy the requirements of Clause 6.5 of TPS4 to facilitate the subdivision and development of the land. A copy of the Structure Plan map is included as **Figure 7**.

The Structure Plan outlines land use zones and reserves applicable within TPS4. Lot 156 is identified as Residential R60 and has been identified within section 4.3.2 of FWSP as being "proposed to facilitate a potential future 'Lifestyle Village'".



Figure 7: Furnissdale West Structure Plan

9.10 Draft Lot 156 Pinjarra Road Local Development Plan

Part 5 of the FWSP lists a number of criteria which may require the preparation of a Local Development Plan (LDP). The following are relevant to the current application for development approval:

- d. abutting Pinjarra Road or which are adversely affected by traffic noise from Pinjarra Road;
- h. are subject to fire management requirements.

The subject site adjoins Pinjarra Road and is located within an area designated as Bushfire Prone within the DFES's map of Bushfire Prone areas. A draft LDP has therefore been prepared for the site and has been submitted concurrently with the current application for development approval. A copy of the draft LDP has been included as **Annexure 8** to this report.

10.0 ASSESSMENT UNDER THE PLANNING FRAMEWORK

10.1 Residential Design Codes (SPP7.3 Vol 1)

Clause 7.2.1 (c) of LPS4 requires that all residential development within the Shire of Murray shall conform with the requirements of the Residential Design Codes (RDCs) as follows:

c) Unless otherwise provided for in the Scheme, the development of land for any of the residential purposes dealt with by the Residential Planning Codes shall conform to the provisions of these codes.

Clause 7.3.1 of the RDCs provides details of the scope of local development plans in relation to Volume 1 of the Codes, listing which deemed to comply provisions can be amended or replaced by a local development plan. The draft LDP for Lot 156 Pinjarra Road varies some of the deemed to comply provisions listed in Clause 7.3.1 of the RDCs in a manner consistent with the relevant design principles.

The 79 grouped dwellings meet all other deemed to comply requirements of the RDCs apart from the variations discussed in **Table 2** below, which are not listed as capable of amendment under Clause 7.3.1. **Table 2** assesses element variations against the relevant design principles.

Table 2: Assessment under the Residential Design Codes

Element	Deemed to comply	Design Principles	Response
5.1.1 Site Area	<p>Development which complies with the dwelling type and the site area requirements set out in Table 1</p> <p>2 or three bedroom grouped dwellings min Area 120m² Average area 150m²</p> <p>For the purposes of single bedroom dwellings, the site area may be reduced by up to one third. Minimum area 80m² Average Area 100m²</p>		<p>All two and three bedroom grouped dwellings have minimum site area equal to or greater than 120m² and an average site area of 150m².</p> <p>All single bedroom dwellings exceed the minimum and average site requirements.</p>
5.1.2 Street Setback	Front setback to communal street 1.5m		All dwellings comply with deemed to comply.
5.1.3 Lot boundary setback	<p>Lot boundary setbacks of 1.5m</p> <p>Can be reduced by half the width of a communal street to a maximum reduction of 2m</p>	<p>P3.1 Buildings set back from lot boundaries or adjacent buildings on the same lot so as to:</p> <ul style="list-style-type: none"> Reduce impact of building bulk on adjoining properties; 	<p>56 grouped dwellings meet lot boundary setback requirements.</p> <p>23 dwellings feature small variations in the minimum lot boundary setbacks which vary from 1.0m to 1.3m in lieu of the required 1.5 metre setback.</p>

Element	Deemed to comply	Design Principles	Response
		<ul style="list-style-type: none"> • Provide adequate direct sun and ventilation to the building and open spaces on the site and adjoining properties; • Minimise the extent of overlooking and resultant loss of privacy on adjoining properties 	<p>However, these minor variations:</p> <ul style="list-style-type: none"> • Do not appreciably result in building bulk impacts on adjoining properties. • do not detract from the provision of sunlight and ventilation to adjoining properties. Living rooms to homes are designed to the north with service spaces to the south providing visual and acoustic separation between commonly used spaces. Solar access remains compliant. • Dwellings are separated by 1.8m fences minimising the extent of overlooking and loss of privacy on adjoining properties.
5.1.4 Open space	45% of site area as per Table 1		All 79 grouped dwellings comply
5.1.6 Building height	6m to top of wall roof above		All 79 grouped dwellings comply
5.2.1 Setback of garages and carports	<p>Garages to be set back 4.5m from the primary street and 1.5m from secondary street</p> <p>Given the grouped dwellings all front on to a communal street, this deemed to comply requirement will be varied in the Local Development Plan included in Annexure X as follows:</p> <p>Garages with roller doors will be set back a minimum of 1.5m from the communal street</p>		All 79 grouped dwellings have primary and secondary frontage to private or communal roads which cannot be defined as primary or secondary streets.

Element	Deemed to comply	Design Principles	Response
	<p>Carport to be set back 1 to communal street as per Table 1</p>	<p>The setting back of carports and garages to maintain clear sight lines along the street and not detract from the streetscape or appearance of dwellings or obstructs views of dwellings from the street and vice versa.</p>	<p>All grouped dwellings meet the relevant design principles and are compliant with the Local Development Plan's replacement deemed to comply requirement of 1.5m.</p> <p>All grouped dwellings with carports comply</p>
<p>5.2.2 Garage width</p>	<p>No more than 50% of the frontage at the setback line as viewed from the street.</p> <p>This deemed to comply standard has been replaced in the attached Local Development Plan as follows:</p> <p>Where a garage is located in front or within 1m of the building facing the communal street, the garage door and its supporting structures is not to occupy more than 55% of the frontage at the setback line as viewed from the street.</p>	<p>Visual connectivity between the dwelling and the streetscape should be maintained and the effect of the garage door on the streetscape is not dominated by garage doors.</p>	<p>All dwellings meet applicable design principles whereby the streetscape is not dominated by doors and visual connectivity to individual dwellings is maintained.</p> <p>All dwellings meet the replacement deemed to comply requirement in the Local Development Plan with the exceptions of dwelling 50, which is separated from the street by a battleaxe driveway which reduces the rear garage's effect on the streetscape.</p>

Element	Deemed to comply	Design Principles	Response
5.2.3 Street surveillance	<p>The street elevations of the dwelling to address the street with clearly definable entry points visible and accessed from the street.</p> <p>At least one major opening from a habitable room of the dwelling faces the street and the pedestrian or vehicular approach to the dwelling.</p>		All grouped dwellings comply.
5.3.1 Outdoor living areas	<p>Outdoor living area of 16 m² for two and three bedroom dwellings</p> <p>Outdoor living area of 10.7m² for single bedroom dwellings as per Element 5.3.3 Single bedroom dwellings.</p> <p>Have a minimum dimension of 4 metres.</p> <p>Behind the street setback area</p> <p>Directly accessible from a habitable room of the dwelling</p> <p>To have at least two thirds of the required area without permanent roof cover</p>	<p>Outdoor living areas which provide spaces:</p> <ul style="list-style-type: none"> • Capable of use in conjunction with a habitable room of the dwelling. • Open to winter sun and ventilation; and optimise use of the northern aspect of the site 	<p>All grouped dwellings comply with the minimum areas for outdoor living areas.</p> <p>51 dwellings do not achieve a minimum dimension of 4 metres.</p> <p>However, all outdoor living areas are capable of use in conjunction with a habitable room and are open to winter sun and ventilation, maximising the northern aspect of the site</p> <p>Additionally, residents will have access to the indoor and outdoor recreation spaces at the clubhouse and community area which will provide ample alternative outdoor living opportunities.</p>
5.3.2 Landscaping	<p>Landscaping of grouped and multiple dwelling common property and communal open space in accordance with the following:</p> <p>No parking in street setback area</p>	NA	NA

Element	Deemed to comply	Design Principles	Response
	<p>Separate pedestrian paths providing wheelchair accessibility</p> <p>Landscaping between each six consecutive car parking spaces to provide shade</p> <p>Lighting to pathways, and communal open space and car parking areas</p> <p>Bin areas conveniently located and screened from view;</p> <p>Trees greater than 3m in height shall be retained</p> <p>Adequate sight lines for pedestrians and vehicles</p> <p>Clear line of sight between areas designated as communal open space and at least two habitable room windows</p> <p>Clothes drying areas which are secure and screened from view; and unroofed visitors car parking spaces to be effectively screened from the street.</p>		<p>Pedestrian paths 1.2m in width are provided along the communal east to west roads on site adjoining the northern boundary of the site as well as adjoining the landscaped areas on each side of the main entranceway from Riverside Drive.</p> <p>Existing shade trees provide shade to communal parking bays to the south and east of the community area.</p> <p>Complies</p> <p>Complies</p> <p>Complies</p> <p>Complies</p> <p>Complies</p> <p>Complies</p>
5.3.3 Parking	1 parking bay per dwelling and 20 visitor bays		<p>All grouped dwellings are provided with a car parking space whilst 41 of the dwellings have double carports or garages.</p> <p>Additionally, 21 visitor bays are provided at the entrance of the development.</p>
5.3.4 Design of car parking spaces	<p>To comply with AS 2890</p> <p>Visitor bays clearly marked</p> <p>Areas with 6 or more bays to include shade trees</p>		<p>Complies</p> <p>Complies</p>

Element	Deemed to comply	Design Principles	Response
		Car, cycle and other parking facilities are to be designed and located on-site to be conveniently accessed, secure, consistent with the streetscape and appropriately manage stormwater to protect the environment.	<p>Parking bays to the south and east of the communal area are provided with adjacent shade trees.</p> <p>All car parking bays can be conveniently accessed and are secure within a gated community.</p> <p>All stormwater will be contained on site.</p>
5.3.5 Vehicular access	<p>Access to be provided from a right-of way or secondary street if available</p> <p>Driveways no narrower than 3m for four or more dwellings</p> <p>No closer than 0.5 to pole or boundary</p>		<p>Access provided from communal street for all dwellings.</p> <p>Complies</p> <p>Complies</p>
5.3.5. Vehicular access Communal Road	<p>When any proposed development has potential to be subdivided to create 20 or more green title, strata or survey strata lots, with each of these lots obtaining driveway access from a communal street, a minimum total width of 12 metres is required for the communal street, which includes a paved vehicular carriageway with a minimum width of 5.5 metres and a pedestrian path as required by Clause 5.3.6.</p>	<p>P5.1 Vehicular access provided for each development to site to provide;</p> <ul style="list-style-type: none"> Vehicle access safety, 	<p>The communal streets have a paved vehicular carriageway which is 6 metres wide and are adjoined by pedestrian paths measuring 1.2 metres enabling safe pedestrian movement between the public street, communal facilities and individual dwellings.</p>

Element	Deemed to comply	Design Principles	Response
		<ul style="list-style-type: none"> • Reduced impact of access points on the streetscape; • legible access; • pedestrian safety; • minimal crossovers; and high-quality landscaping features <p>P5.2 Development with potential to be subdivided to create 20 or more green title, strata or survey strata lots provides legible internal and external connections to the surrounding road network and accommodates traffic movement and volume, visitor parking, pedestrian access, street shade trees, utility services and access for waste collection and emergency service vehicles</p>	<p>There will be an internal communal road speed restriction of 8km/hour ensuring safe vehicular and pedestrian movement. This speed limit will also help to accommodate waste collection and utility services.</p> <p>All garages with roller doors will be automated to minimise time spent on the paved carriageway when accessing individual dwellings. The 8km/hour speed limit will permit cars to wait in the road reserve while the roller doors open.</p> <p>Access points to each lot will be clearly visible while traffic movement within the village is anticipated to be of low volume as referred to in Section 3.3 of this report.</p> <p>Legible connections to the road network are provided at the entrances to the subject site from Riverside Drive and at the gated entrance to future roads within the structure plan to the east and west of the subject site.</p> <p>The movement network allows for safe and efficient movement of emergency service vehicles and waste collection vehicles.</p> <p>Landscaping throughout the site will be implemented given the large areas of open space provided for within the communal facilities and the foreshore reservation area.</p> <p>In summary, the proposed vehicle movement network complies with the Design Principles for vehicular access.</p>

Element	Deemed to comply	Design Principles	Response
5.3.6 Pedestrian access	According to AS1428 and min 1.2m in width.	Legible safe and direct access for pedestrians to move between communal car parking areas or public streets and individual dwellings.	<p>Pedestrian paths 1.2m in width are provided along the communal east to west roads on site adjoining the northern boundary of the site as well as adjoining the landscaped areas on each side of the main entranceway from Riverside Drive.</p> <p>Low traffic volumes and an 8km/hour speed restriction on the communal roads ensure that pedestrians can move safely in all areas of the development.</p>
5.4.1 Visual Privacy	<p>Major openings to bedrooms and studies, 4.5m cone of vision</p> <p>Major openings to habitable rooms - 6m cone of vision</p> <p>Unenclosed outdoor habitable spaces – 7.5m cone of vision</p> <p>Or permanently screened from view</p>		All major openings to the grouped dwellings will be screened from view by 1.8m fences between dwellings
5.4.4 External fixtures, utilities and facilities	An enclosed lockable storage area accessible from outside the dwelling with a minimum dimension of 1.5m when provided external to a garage and 1m when provided within a garage and an internal area of at least 4m ² for each grouped dwelling		Complies
5.5.3 Single bedroom dwellings	<p>Single bedroom dwellings shall comply with the following:</p> <ul style="list-style-type: none"> I. a maximum plot ratio area of 70m². II. 45% open space; III. 1 car park space per dwelling. IV. A minimum outdoor living area of 10.7m² min 		The 29 grouped dwellings in the development meet these requirements and respond to a demand for single dwelling accommodation in the locality.

10.2 Planning and Development (Local Planning Schemes) Regulations 2015

The *Planning and Development (Local Planning Schemes) Regulations 2015* (**the Regulations**) have introduced a set of deemed provisions within Schedule 2 that automatically form part of LPS4. In particular, Clause 67 of Schedule 2 deals with matters to be considered by Local Government and include the following key provisions relevant to this application:

Table 3: Matters to be considered.

Matters to be considered	Comment
a) <i>the aims and provisions of this Scheme and any other local planning scheme operating within the Scheme area;</i>	The proposed grouped dwelling development meets the objectives of the Residential Development zone in designating the land for future residential development through the Furnissdale West Structure Plan
b) <i>the requirements of orderly and proper planning including any proposed local planning scheme or amendment to this Scheme that has been advertised under the Planning and Development (Local Planning Schemes) Regulations 2015 or any other proposed planning instrument that the local government is seriously considering adopting or approving;</i>	The proposal complies with the applicable planning framework. The proposal is entirely consistent with the proposed amenity for its location within the Furnissdale West Structure Plan consisting of higher density residential development. The development will provide a high level of visual attraction.
c) <i>any approved State Planning Policy</i>	The proposed development is consistent with the provisions of SPP2.1, SPP2.5 SPP3, SPP3.7 and SPP5.4 and SPP7.2V1 as demonstrated in Sections 9.1 to 9.7 of this report.
g) <i>any local planning policy for the Scheme area</i>	The proposed development is consistent with the requirements of Natural Landscape in Urban Areas Local Planning Policy and Water Sensitive Urban Design Local Planning Policy as demonstrated in Sections 10.3 and 10.4 of this report.
h) <i>any structure plan, activity centre plan or local development plan that relates to the development;</i>	The proposed development is generally consistent with the provisions of the Furnissdale West Structure Plan.
m) <i>the compatibility of the development with its setting including the relationship of the development to development on adjoining land or on other land in the locality including, but not limited to, the likely</i>	The proposed development is consistent with the intended residential setting of the surrounding development as envisaged by the Furnissdale West Structure Plan. The development will comply largely with height and setback requirements. The

Matters to be considered	Comment
<p><i>effect of the height, bulk, scale, orientation and appearance of the development;</i></p>	<p>proposed landscaping and built form will enhance the streetscape and reflect the desired built form for the area.</p> <p>Accordingly, the development is considered compatible with the surrounding locality, and sets a high standard for future development in the Structure Plan area.</p>
<p>n) <i>the amenity of the locality including the following –</i></p> <p>(i) <i>environmental impacts of the development;</i></p> <p>(ii) <i>the character of the locality;</i></p> <p>(iii) <i>social impacts of the development;</i></p>	<p>The proposal is environmentally sustainable, with solar access and ventilation for all dwellings, the use of solar panels and water sensitive design practices as described further in this report.</p> <p>The Architecturally designed and contemporary grouped dwellings and extensive landscaping of the development will add to the character of the locality.</p> <p>The proposed new dwellings will add to the density and vibrancy of the community; residents will enjoy close proximity to both urban and rural amenities, and public transport linking them to services and facilities in the Mandurah city centre.</p>
<p>o) <i>The likely effects of the development on the natural environment or water resources and any means that are proposed to protect or to mitigate impacts on the natural environment or water resource.</i></p>	<p>The applicant has engaged environmental and geotechnical consultants to provide advice to mitigate the impact on the environment and water resources on site.</p>
<p>p) <i>whether adequate provision has been made for the landscaping of the land to which the application relates and whether any trees or other vegetation on the land should be preserved;</i></p>	<p>The development has been provided with landscaping, as illustrated in the Masterplan included as Annexure 3.</p>
<p>q) <i>The adequacy of -</i></p> <p>i. <i>the proposed means of access and egress from the site; and</i></p> <p>ii. <i>arrangements for the loading, unloading, manoeuvring and parking of vehicles;</i></p>	<p>Access to the proposed development will be provided via two crossovers on Riverside Drive.</p> <p>Extensive parking has been provided adjacent to the community facilities to accommodate loading and unloading from delivery vehicles. The internal road width of 6 metres and the double driveway at the central access point facilitates the manoeuvring of vehicles such that all vehicles can exit on to Riverside Drive in forward gear.</p>
<p>r) <i>the amount of traffic likely to be generated by the development particularly in relation to the capacity of the road system in the locality and the probable effects on traffic flow and safety;</i></p>	<p>Acknowledging that Lifestyle Villages typically generate less vehicular traffic than a conventional residential subdivision (as considered under Section 3.3 above) and having regard to the sparsely developed nature of the existing Furnissdale precinct and the limited pressure placed on the existing road network, the impacts of</p>

Matters to be considered	Comment
	the traffic volumes associated with the proposed Lifestyle Village on the road network are considered acceptable.
<p>s) <i>The availability and adequacy for the development of the following-</i></p> <ul style="list-style-type: none"> iii. <i>public transport services;</i> iv. <i>public utility services;</i> v. <i>storage management and collection of waste;</i> vi. <i>access for pedestrians and cyclists (including end of trip storage, toilet, and shower facilities);</i> vii. <i>access by older people and people with disability;</i> 	<p>The proposed development is within easy walking distance of bus stops which will connect residents with the Mandurah and Pinjarra town centres. In addition, a courtesy bus will be provided for residents by the Lifestyle Village.</p> <p>Waste management will be undertaken by the village management as described in Section 6.7 of this report.</p> <p>Village management will periodically collect general waste, and place it in an allocated space near the village workshop for storage.</p> <p>Bulk general waste and recycling will be removed by Cleanaway contractors on a regular basis.</p> <p>The vehicle speed of the roads internal to the development will be restricted to 8 km/h, making them suitable for use by bicycles and pedestrians. In addition, pedestrian footpaths 1.2m wide have been provided throughout the Village as depicted on the plans included as Annexure 3.</p> <p>All dwellings will be single storey and the community buildings will be made universally accessible.</p>
<p>w) <i>the history of the site where the development is to be located</i></p>	<p>The site currently contains a single residential dwelling.</p>

10.3 Shire of Murray Local Planning Policy: Natural Landscape in Urban Areas

The Natural Landscape in Urban Areas Local Planning Policy (NLUALPP) was adopted in 2018. This policy is intended to provide a framework for the retention and enhancement of natural landscape features as early as possible within the planning and development process.

The policy includes general requirements as follows:

There is a general presumption against the clearing of significant native trees and vegetation where reasonably avoidable. All attempts are to be made to retain, integrate and maintain in a safe and healthy condition significant native trees and vegetation during the planning, design and construction phases of subdivision and development where this is reasonable possible to achieve through site sensitive planning and design.

It is noted that the form of development over the subject site has been previously accepted under the Furnissdale West Structure Plan, which was approved by the WAPC on 19 October 2016. The Structure Plan outlines land use zones and reserves applicable within TPS4. The subject site is identified as Residential R60 and has been identified within section 4.3.2 of the plan as being “proposed to facilitate a potential future ‘Lifestyle Village’”. The Structure Plan map (refer **Figure 7** above) demonstrates how the clearing of land has been previously contemplated and approved to facilitate development of the subject site in line with the intended residential land use and density.

The approved Furnissdale West Structure Plan therefore sets out the ultimate future development footprint of the land which identifies that the land will be cleared to enable the development at a Residential R60 density.

It is anticipated that, as a condition of planning approval, a landscape plan will be prepared to demonstrate to the extent possible, how the development achieves additional planting in line with the intent of the tree provision rates set out under the policy. At the development stage, the policy lists On-Site Tree Provision Rates as follows:

Table 4: Tree provision rates for grouped dwellings

Type of Development	Tree Provision Rate	Planning Guidelines	Response
Group Dwellings	Minimum one advanced tree for each 450m ² of site area.	Preferred location for existing and new trees in common property areas or private open spaces immediately adjacent to common property; and The size and location of new trees should have regard to neighbouring properties in particular to minimise overshadowing of solar panels. Small tree species are preferred where there are concerns about the impact on neighbouring properties.	The subject property currently contains native vegetation, the majority of which will require removal as part of the proposed development. However, it is intended that several existing trees will be retained around the communal facilities. Given that the approved residential density of R60 will prohibit extensive planting within individual properties, any new landscaping will, to the extent possible, be designed to generally meet the intent of tree provision rates across the site and within communal areas. Due to the site layout, including opportunities for planting in communal areas, it is not anticipated that new trees will in any way adversely affect the neighbouring properties.

10.4 Shire of Murray Local Planning Policy: Water Sensitive Urban Design

The Water Sensitive Urban Design Local Planning Policy (WSUDLPP) is applicable to the whole Shire of Murray and should be used and applied in the preparation of development applications where non-rural development is proposed. The Policy has been developed in line with the Western Australian Planning Commission's "Better Urban Water Management Framework". Its purpose is to ensure that all development occurs with a focus on total water cycle management for the region and not just localised end of pipe drainage solutions.

The Policy requires compliance with a list of Water Sensitive Urban Design Strategies which are listed in Section 7. **Table 5** below provides responses to the strategies relevant to this application.

Table 5: Compliance with Water Sensitive Urban Design Strategies

Strategy	Response
1. Compliance with environmental quality criteria	<p>Potable water use outside of homes or buildings will be minimised through "water wise" landscaping with sub surface reticulation.</p> <p>Groundwater will be maintained at pre-development levels.</p> <p>Soil infiltration tests conducted by qualified geotechnical engineers have confirmed high infiltration rates indicating that detained immobile stormwater will be infiltrated quickly and is unlikely to lead to mosquito infestation. Refer to Annexure 4 for a copy of the Geotechnical Study.</p>
2. Compliance with stormwater management policies	<p>Stormwater management aligns with the objectives and principles in the Stormwater management Manual for Western Australia and the Murray Drainage and Water Management Plan where applicable.</p> <p>Unlike standard residential subdivisions, the entire land title remains in the ownership and management of Providence. This means there is a greater capacity to control the management of stormwater on site through soakwells and vegetated stormwater drainage swales.</p>

Strategy	Response
	Further, given central management control, the high level of indigenous planting in communal areas, limited garden space the Lifestyle Village will produce far less nitrogen and phosphorous than a standard residential subdivision. The use of fertilisers and herbicides is strictly controlled in village landscaping, thereby reducing the nutrient load.
3. Preparation of Water Management Strategies	An Urban Water Management Strategy (UWMS) was prepared by hyd20 for the Furnissdale West Structure Plan. Due to the fact that the proposed grouped dwelling development differs from conventional residential subdivision and instead provides for a managed estate, all stormwater is capable of being retained on site through a combination of soakwells and vegetated roadside stormwater swales. Therefore, the proposal will meet the intent of the UWMS by ensuring that stormwater is fully capable of being accommodated on site.
4. Soil Amendment	Given that the annual maximum groundwater level is approximately 1.5m (greater than 1.2m below the natural ground level) soil amendment to maximise phosphorous retention is not required
5. Total Phosphorous and Total Nitrogen Import and Export Criteria	The nutrient input rate is likely to be lower than the current average estimated rates due to the reasons expressed in Section 2 of this table
6. Local Deep Rooted Perennial Vegetation	It is proposed to retain several existing trees will be around the communal facilities. New trees will be planted to comply with the required tree provision rate in the Shire of Murray's Local Planning Policy NUALPP.

11.0 CONCLUSION

The proposal to establish the Mandurah Providence Lifestyle Village at Lot 156 Pinjarra Road, Furnissdale as a response to the current shortfall of affordable and appropriate housing options for our ageing population and consistent with the Local and State strategic planning framework. The success of other similar leasehold developments throughout Perth has demonstrated that a large market exists for this housing model.

There are sound reasons for the Shire of Murray to support the development proposal for this form of development. In particular, the site is ideally located, with close proximity to services and facilities in an area planned for urban development.

In summary:

- The zoning of the land supports this form of leasehold grouped and multiple dwelling development at the density proposed, which is consistent with the zoning of the land as well as the strategic planning framework specifically with respect to housing provision and identified areas for development for an ageing population;
- Facilitation of the proposal would assist in addressing broader State and local issues in response to the need for affordable housing options in Perth and for an ageing population;
- The proposal sought is specifically tailored to facilitate the development of a residential leasehold estate for the over 50's. Further, the site is identified within the Furnissdale West Structure Plan as "proposed to facilitate a potential future Lifestyle Village".
- The established single ownership management model will ensure that Providence Lifestyle will maintain substantial control over the activities that occur on the site, as well as the works undertaken during development.
- In addition, Providence Lifestyle's leasehold model means that land does not become subdivided. This management model not only achieves a greater level of sustainable development than in conventional residential suburbs comprising multiple ownerships, it also enables a higher level of risk management and control, which is important in development on sites where environmental considerations are prioritised.

The proposal will offer residents new housing choices and an invigorating and secure lifestyle, along with sustainability principles incorporated into the development. This development reflects a worldwide trend of addressing the needs of ageing populations and is embraced by the current legislation. This development will provide affordable accommodation in a manner appropriate to our society and urban settlement patterns. We therefore respectfully seek the support of Development WA for this proposed development on Lot 156 Pinjarra Road, Furnissdale.

Annexure 1

Development Application Forms

Application for Planning Approval

Schedule 1 – Form 1
Shire of Murray Town Planning Scheme No 4

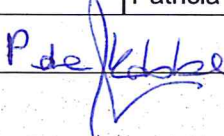
Owner/s details										
Name:	(see attached)									
Address:								Postcode:		
Work Ph:			Home Ph:			Fax:			Mobile:	
Contact person:						Email:				
Signature:	(see attached)					Date:				
Signature:						Date:				
The signature of the owner(s) is required on all applications. This application will not proceed without that signature(s).										
Applicant details										
Name:	Allerding and Associates									
Address:	125 Hamersley Road, Subiaco							Postcode:	6008	
Work Ph:	9382 3000		Home Ph:			Fax:			Mobile:	0402162 174
Contact person for correspondence:	Patricia de Kobbe									
Email:	patricia@allerdingassoc.com									
Signature:	<i>P de Kobbe</i>					Date:	30/9/2020			
Property details										
Lot No	156	House/Street No	528		Location No					
Diagram/Plan No	20124		Certificate of Title Vol No	1837		Folio	106			
Title encumbrances (eg easements, restrictive covenants):										
see certificate										
Street Name	Pinjarra Road					Suburb	Furnissdale			
Nearest street intersection	Riverside Drive									
Description of proposed development and/or use:										
Nature of Development:										
Grouped Dwelling Development										
Is an exemption from development claimed for part of the development? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No										
If yes, is the exemption for: <input type="checkbox"/> Works <input type="checkbox"/> Use										
Description of exemption claimed (if relevant):										
Nature of any existing buildings and/or land use:										
Dwelling and outbuildings										
Approximate cost of proposed development:	\$13.3 million				Estimated time of completion:	1 year				
Has this development already commenced or been completed? <input type="checkbox"/> Yes <input type="checkbox"/> No										
Office Use Only										
Acceptance Officer's initials:					Date received:				LG Ref#	

Planning Application Checklist

This checklist has been introduced to ensure that development applications are complete before they are accepted and registered as received applications. The reasons for requiring complete applications include:

1. The information is required under the Shire of Murray's Town Planning Scheme No 4 and therefore required by law.
2. Assessment cannot be carried out by a planning officer until all information is received.
3. Completed information reduces delays.
4. Requirement of the Shire's Customer Service Charter.

	Required	Provided
1	Shire of Murray Application for Approval to Commence Development (Form 1) completed and signed by the owners of the land and the applicant (example attached).	+
2	A written explanation outlining the proposal and providing justification for any variations to the development requirements.	+
3	Payment of the appropriate planning application fee (refer to Planning Administration Fees Info Note 1 attached)	+
4	A completed checklist	+
5	Three copies of a site plans, floor plan and elevations.	+
	Site Plan	
	- Scale of Plan – to be not less than 1:200	+
	- Street name, number and lot number	+
	- Scale bar and north point (snf)	+
	- Site dimensions / area	+
	- Existing and proposed buildings and structures (mark on plans what is existing and what is proposed).	+
	- Details of existing and proposed walls, fences and retaining walls.	+
	- Details of structures and vegetation proposed to be removed.	+
	- Areas to be landscaped.	+
	- Distances of all structures from boundaries of the site.	+
	- Existing and proposed building envelope (if applicable).	+
	Floor Plan	
	- Scale of Plan – to be not less than 1:200.	+
	- Finished Floor Levels and spot levels.	+
	- Show all proposed buildings (including outbuildings and indicate the intended use).	
	Elevation Plans	+
	- Scale of Plan – to be not less than 1:100.	+
	- Show all proposed buildings and signage.	+
	- The proposed materials of exterior construction.	+
	- Ground levels, wall heights and roof heights.	+
All plans and details must be in ink, legible, drawn to scale and include the Lot and Street address and Owner's details		

Applicant's Name:	Patricia de Kobbe		
Signature:		Date:	30/9/2020

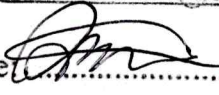
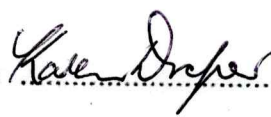
Attachment
Shire of Murray
Application for Planning Approval

Owners Details



Full Name: Geoffrey Kenneth Marshall Phone: 0412918718
Postal Address: 11 Greenshank Mews, Wannanup 6210
Email: n/a

Signature:  Date 30/9/20


Full Name: Stephen Robert Draper & Karen Anne Draper Phone: 0417185325
Postal Address: 30 Panamuna Drive, Falcon 6210
Email: beachhouseart@bigpond.com

Signature:  Date 30/9/20 Signature:  Date 30/9/20

Full Name: Raymond Barry Bostelman & Helen Louise Bostelman
Postal Address: 2C Clydesdale Street, Alfred Cove 6154 Phone: 0419922467
Email: raybos42@hotmail.com

Signature:  Date 29/9/20 Signature:  Date: 29/9/20

Company: Kemoc Pty Ltd ATF The Laughton Family Trust
Postal Address: 4 Sutton Street, Mandurah 6210
Email: 36chris.l@gmail.com

Signature:  Date: 30/9/20
Christopher Laughton (Director)

Phone: 0415158792



Peel Region Scheme Form 1 Application for Planning Approval



Owner/s details

Registered proprietor/s (landowner/s) or the authorised agent's details **must** be provided in this section. If there are more than two landowners please provide all relevant information on a separate page. Signature/s must be provided by all registered proprietors or by an authorised agent. **Alternatively**, a letter of consent, which is signed by all registered proprietors or by the authorised agent, can be provided.

Full name	(see attached)	Ph. (Home)	
Company/agency (if applicable)		Ph. (Work)	
ACN/ABN (if applicable)		Ph. (Mobile)	
Postal address	(see attached)	Fax	
Town/suburb	(see attached) Postcode		
Email	(see attached)		
Signature	The landowner/s or authorised agent consents to the applicant submitting this application	Date	
Name and position	(see attached)	(if signing on behalf of a company or agency)	

Applicant details

Name/company	Allerding and Associates	Ph. (Home)	
Contact person	Patricia de Kobbe	Ph. (Work)	9382 3000
Postal address	125 Hamersley Road	Ph. (Mobile)	0402162741
Town/suburb	Subiaco WA Postcode	Fax	
Email	patricia@allerdingassoc.com		
Applicant signature	<i>P de Kobbe</i>	Date	30/9/2020
Name and position	Patricia de Kobbe (Town Planner)	(if signing on behalf of a company or agency)	

Property details

Crown Reserve No.			
Certificate of title description of land:	Lot No	156	Location No
Plan or Diagram	Vol	20124	Folio
		1837	106
Certificate of title description of land:	Lot No		Location No
Plan or Diagram	Vol		Folio
Title encumbrances (e.g. easements, restrictive covenants)	see certificate of title		
Locality of development (house no., street name, suburb, etc)	528 Pinjarra Road, Furnissdale		
Nearest street intersection	Riverside Drive		
Existing building/land use	Dwelling and outbuildings		
Description of proposed development and/or use	Grouped dwelling development		
Nature of any existing buildings and/or use	residential		
Approximate cost of proposed development	\$13.3 million		
Estimated time of completion	1 year		
Is the development within a designated bushfire prone area?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		

If yes, please identify and address the bushfire risk (e.g. by including a BAL assessment(s) or BAL Contour Map and a Bushfire Management Plan with the application). Alternatively a short statement justifying why SPP 3.7 does not apply should be included with the application.

Office use only

Acceptance Officer's Initials	Date Received
Local government reference No.	Commission reference No.

The information and plans provided with this application may be made available by the WAPC for public viewing in connection with the application.

Attachment
Peel Region Scheme
Form 1
Application for Planning Approval

Owners Details


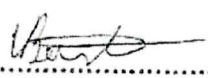
Full Name: Geoffrey Kenneth Marshall Phone: 0412918718
Postal Address: 11 Greenshank Mews, Wannanup 6210
Email: n/a

Signature:  Date 30/9/20


Full Name: Stephen Robert Draper & Karen Anne Draper Phone: 0417185325
Postal Address: 30 Panamuna Drive, Falcon 6210
Email: beachhouseart@bigpond.com

Signature:  Date 30/9/20 Signature:  Date 30/9/20

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Email: raybos42@hotmail.com

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Company: Kemoc Pty Ltd ATF The Laughton Family Trust
Postal Address: 4 Sutton Street, Mandurah 6210
Email: 36chris.l@gmail.com

Signature:  Date: 30/9/20
Christopher Laughton (Director)

Phone: 0415158792



DAP FORM 1

Notice of Development Application to be Determined by a Development Assessment Panel

Planning and Development Act 2005

Planning and Development (Development Assessment Panel) Regulations 2011 – regulations 7, 10 and 21

Application Details

To	Name of local government and/or Western Australian Planning Commission Shire of Murray	
Planning Scheme(s)	Name of planning scheme(s) that applies to the prescribed land Local Planning Scheme No. 4	
Land	Lot number, street name, town/suburb Lot 156 (No. 528) Pinjarra Road, Furnissdale	
Certificate of Title (provide copy)	Volume Number 1837	Folio 106
	Location Number	Plan / Diagram Number 20124
Details of development application made to responsible authority	Summary of Proposal Grouped Housing development	
Development Use	Residential / Commercial / Industrial / Rural / Mixed Use / Other Residential	
Estimated cost of development (GST Exc)	\$ 13.3 million	

Part A – Acknowledgement by Applicant and Landowner

Mandatory Application	<input checked="" type="checkbox"/> I give notice that I understand that this is a mandatory Development Assessment Panel application (regulation 5)
Optional Application	<input type="checkbox"/> I give notice that I have elected to have the development application that accompanies this form determined by a Development Assessment Panel (regulation 6)
Delegated Application	<input type="checkbox"/> I give notice that I understand that this is an application of a class delegated to a Development Assessment Panel for determination (regulation 9)

Applicant Details (to be completed and signed by applicant)

- By completing this notice, I declare that all the information provided in this application is true and correct.
- I understand that the information provided in this notice, and attached forming part of the development application will be made available to the public on the Development Assessment Panel and local government websites.

Name	Patricia de Kobbe	
Company	Allerding and Associates	
Address	Street Number/PO Box number, street name, suburb, state, postcode 125 Hamersley Road, Subiaco WA 6008	
Contact Details	Email patricia@allerdingassoc.com	Phone 9382 3000
Signature		Date 30/9/2020

Landowner Details (to be completed and signed if landowner is different from applicant)			
<ul style="list-style-type: none"> • By completing this notice, consent is provided to submitting this application. • If there are more than two landowners, please provide all relevant information on a separate page. • Signatures must be provided by all registered proprietors or by an authorised agent as shown on the Certificate of Title. • Alternatively, a letter of consent, which is signed by all registered proprietors or by the authorised agent, can be provided. • Companies, apart from sole directors, are required to provide signatories for two directors, a director and the company seal or a director and a company secretary. 			
Company (if applicable)			
Contact Details	<table border="1"> <tr> <td><i>Email</i> (see attached)</td> <td><i>Phone</i></td> </tr> </table>	<i>Email</i> (see attached)	<i>Phone</i>
<i>Email</i> (see attached)	<i>Phone</i>		
Address	<i>Street Number/PO Box number, street name, suburb, state, postcode</i> (see attached)		
Name/s	(see attached)		
Title/s	<table border="1"> <tr> <td><i>Landowner/Sole Director/Director (2 signatures required)</i> (see attached)</td> <td><i>Additional Landowner/ Director/Secretary (if applicable)</i></td> </tr> </table>	<i>Landowner/Sole Director/Director (2 signatures required)</i> (see attached)	<i>Additional Landowner/ Director/Secretary (if applicable)</i>
<i>Landowner/Sole Director/Director (2 signatures required)</i> (see attached)	<i>Additional Landowner/ Director/Secretary (if applicable)</i>		
Signature/s	(see attached)		
Date	(see attached)		

Part B – Acknowledgement by Local Government

Responsible Authority	<input type="checkbox"/> Local Government (LG) <input type="checkbox"/> * Western Australian Planning Commission (WAPC) <input type="checkbox"/> * Dual – Local Government and Western Australian Planning Commission <input type="checkbox"/> Building Management and Works (Department of Finance) – <i>Public Primary School Applications</i>		
* WAPC/DUAL reporting details	<i>If WAPC or DUAL is selected, please provide details of relevant provision (or within covering letter)</i>		
Fees for applications (DAP Regulations - Schedule 1)	\$ Amount that has been paid by the applicant \$ Amount to be paid by local government (<i>delegated applications only - regulation 22</i>)		
Statutory Timeframe (regulation 12)	<input type="checkbox"/> 60 days (advertising not required) <input type="checkbox"/> 90 days (advertising required or other scheme provision)		
LG Reference Number			
Name of planning officer (Report Writer)			
Position/Title			
Contact Details	<table border="1"> <tr> <td><i>Email</i></td> <td><i>Phone</i></td> </tr> </table>	<i>Email</i>	<i>Phone</i>
<i>Email</i>	<i>Phone</i>		
Planning Officer's Signature	<i>Date</i>		

Please refer to the [Guidance Note: Lodging a DAP Application](#) for further information.


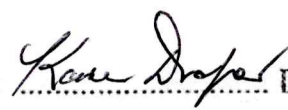
Attachment
DAP FORM 1

Land Owner Details


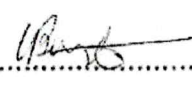
Full Name: Geoffrey Kenneth Marshall Phone: 0412918718
Postal Address: 11 Greenshank Mews, Wannanup 6210
Email: n/a

Signature:  Date 30/9/20

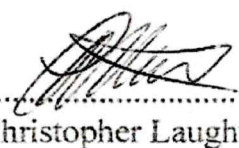
Full Name: Stephen Robert Draper & Karen Anne Draper Phone: 0417185325
Postal Address: 30 Panamuna Drive, Falcon 6210
Email: beachhouseart@bigpond.com

Signature:  Date 30/9/20 Signature:  Date 30/9/20

Full Name: Raymond Barry Bostelman & Helen Louise Bostelman
Postal Address: 2C Clydesdale Street, Alfred Cove 6154 Phone: 0419922467
Email: raybos42@hotmail.com

Signature:  Date 29/9/20 Signature:  Date: 29/9/20

Company: Kemoc Pty Ltd ATF The Laughton Family Trust
Postal Address: 4 Sutton Street, Mandurah 6210
Email: 36chris.l@gmail.com

Signature:  Date: 30/9/20
Christopher Laughton (Director)

Phone: 0415158792

Annexure 2
Certificate of Title

WESTERN



AUSTRALIA

REGISTER NUMBER 156/D20124	
DUPLICATE EDITION 2	DATE DUPLICATE ISSUED 10/12/2003

RECORD OF CERTIFICATE OF TITLE
UNDER THE TRANSFER OF LAND ACT 1893

VOLUME 1837 FOLIO 106

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.



REGISTRAR OF TITLES

LAND DESCRIPTION:

LOT 156 ON DIAGRAM 20124

REGISTERED PROPRIETOR:
(FIRST SCHEDULE)

GEOFFREY KENNETH MARSHALL OF 7 HERA COURT, SAN REMO
IN 3/10 SHARE
STEPHEN ROBERT DRAPER
KAREN ANNE DRAPER
BOTH OF 30 PANAMUNA DRIVE, FALCON
AS JOINT TENANTS IN 2/10 SHARE
RAYMOND BARRY BOSTELMAN
HELEN LOUISE BOSTELMAN
BOTH OF 2C CLYDESDALE STREET, ALFRED COVE
AS JOINT TENANTS IN 1/10 SHARE
KEMOC PTY LTD OF 4 SUTTON STREET, MANDURAH
IN 4/10 SHARE
AS TENANTS IN COMMON

(T L302648) REGISTERED 3/5/2010

LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:
(SECOND SCHEDULE)

1. *L302649 MORTGAGE TO NATIONAL AUSTRALIA BANK LTD REGISTERED 3/5/2010.

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required.
* Any entries preceded by an asterisk may not appear on the current edition of the duplicate certificate of title.
Lot as described in the land description may be a lot or location.

-----END OF CERTIFICATE OF TITLE-----

STATEMENTS:

The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land and the relevant documents or for local government, legal, surveying or other professional advice.

SKETCH OF LAND: 1837-106 (156/D20124)
PREVIOUS TITLE: 1289-718
PROPERTY STREET ADDRESS: 528 PINJARRA RD, FURNISSDALE.

END OF PAGE 1 - CONTINUED OVER

RECORD OF CERTIFICATE OF TITLE

REGISTER NUMBER: 156/D20124

VOLUME/FOLIO: 1837-106

PAGE 2

LOCAL GOVERNMENT AUTHORITY: SHIRE OF MURRAY

NOTE 1: 1542412 DEPOSITED PLAN 37776 LODGED

NOTE 2: DUPLICATE CERTIFICATE OF TITLE NOT ISSUED AS REQUESTED BY DEALING
L302649.

Annexure 3

Development Plans



NOTES

- 79 DWELLINGS
 13 - LARGE - BLUE
 37 - MEDIUM - RED
 13 - SMALL - YELLOW
 08 - DUPLEX UNITS - TEAL (x2 DWELLINGS)

TOTAL SITE AREA = 29512m²
 TOTAL LOT NO' = 71
 SITE TO LOT AREA RATIO = 416m²
 AVERAGE LOT AREA = 243m²
 COMMUNAL SPACE AREA = 4607m²
 COMMUNAL SPACE LOT AREA RATIO = 16%

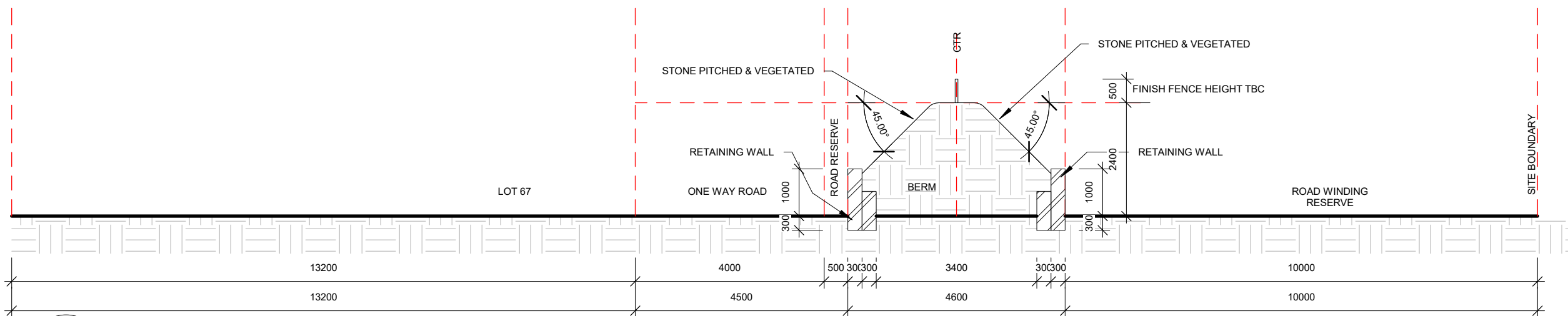
KEY

- TREE
- DRIVEWAY
- LANDSCAPING
- FOOTPATH

DWELLINGS

- 16x A - THE ARALIA
- 02x B - THE BAYBERRY - 8x6
- 11x C - THE CARAWAY - 1x1 - 19x10
- 09x D - THE FOXGLOVE - 2x1 - 19x10
- 0x E - THE GINGER
- 15x F - THE LAVENDER - 2x1 - 20x11.5
- 06x G - THE NETTLE - 2x2 - 20x12.5
- 07x H - THE PEPPERMINT - 2x1 - 20x11.5
- 10x I - THE ROSEMARY - 3x2 - 20x12.5
- 03x J - THE SANTOLINA - 3x1 - 20x12.5

*LOT BOUNDARIES DELINEATED BY 1800mm HIGH FENCING



2
A001

Berm 45 Pitch

1 : 100

*CONFIRM ALL DIMENSIONS ON SITE



RICHARD HAMMOND ARCHITECT
 16/342 SOUTH TERRACE, SOUTH FREMANTLE
 0438 918 753 | RICHARD@HRARCHITECTS.COM.AU

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No.	Description	Date
8	Masterplan Revision 8	20.03.16
9	Masterplan 8 with New House Letters	20.04.06
10	Revision 9 - Acoustic Barriers	20.05.27
11	R10 - Minor Site Revisions to satisfy R60 provisions	20.08.14

PROVIDENCE MANDURAH
 607 PINJARRA RD
 FURNISSDALE

MASTERPLAN R10		A-015	
Project number	-	Scale@A3	As indicated
Date	20.08.14		
Drawn by	RHA		
Checked by	RHA		

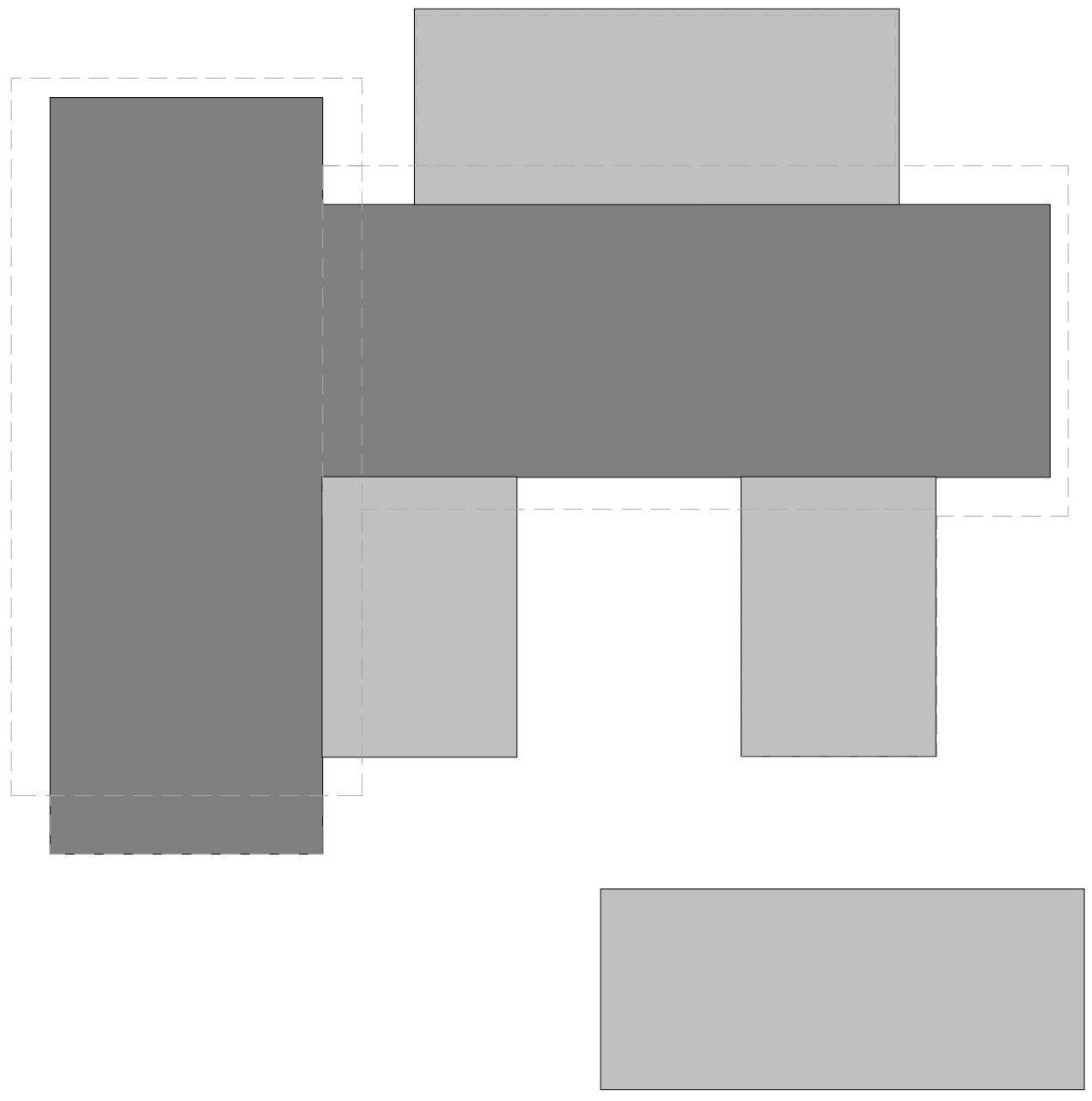
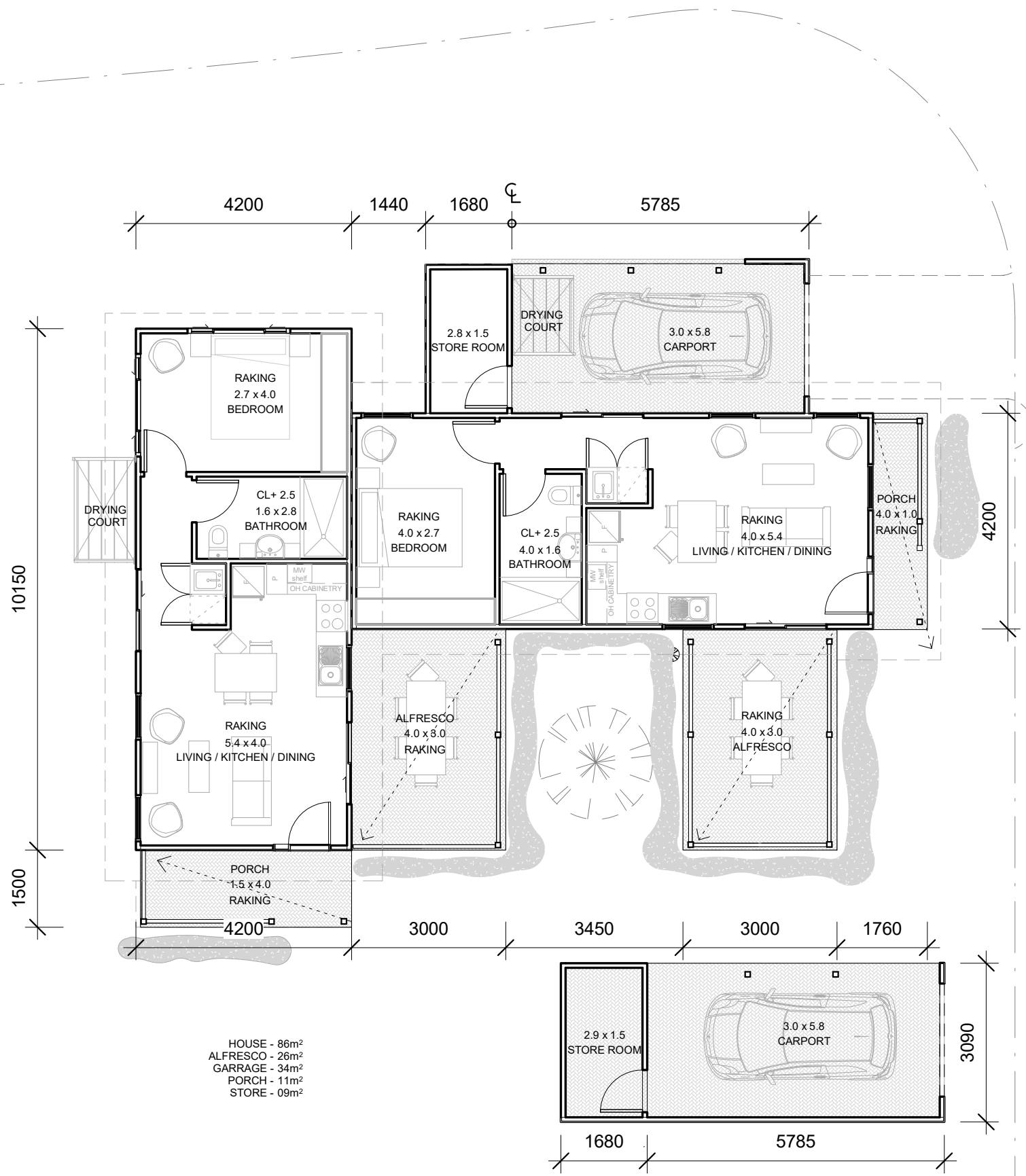
PROVIDENCE - FURNISSDALE VILLAGE - LOT SCHEDULE 20.08.14 - TO BE READ IN CONJUNCTION WITH MASTERPLAN R10

Lot Number	Dwelling Type	Dwelling Type (Standard/Custom)	Garage (G) /Carport	G/C AREA (m ²)	Dwelling Setback to Road	Carport Setback to Road (mm)	Garage Setback to Road (mm)	G/C Setback to Path (mm)	GARAGE DISPENSATION CLAIM	SINGLE or DOUBLE G/C	G/C WIDTH (mm)	LOT WIDTH (mm)	FRONTAGE G/C RATIO (%)	Dwelling PR Area (m ²)	Lot Area m ²	Open Space Area m ²	Open Space %	Alfresco m ² Roofed	Outdoor Living Area m ²	Boundary Setback Left mm	Boundary Setback Right mm	Boundary Setback Rear mm
1a	A (The Aralia)	Standard	Carport	17 m ²	9000	3000		1850		SINGLE	3000 mm	9325	32%	43 m ²	194	151 m ²	78%	12 m ²	16 m ²	1800		1650
1b	A (The Aralia)	Standard	Carport	17 m ²	9000	3000		1850		SINGLE	3000 mm	9325	32%	43 m ²	180	137 m ²	76%	12 m ²	16 m ²		1150	7500
2	C (The Caraway)	Standard	Carport	16 m ²	5000	5100		3400		SINGLE	2700 mm	8400	32%	55 m ²	172	117 m ²	68%	14 m ²	16 m ²	1500	2700	2100
3	J (The Santolina)	Standard	Garage	31 m ²	3800		3650	2700	Y	DOUBLE	5600 mm	12600	44%	112 m ²	261	149 m ²	57%	9 m ²	16 m ²	1500	2700	1500
4	H (The Peppermint)	Custom	Garage	32 m ²	4200		5800	4600		DOUBLE	5700 mm	11900	48%	88 m ²	245	157 m ²	64%	17 m ²	30 m ²	1600	1900	1700
5	I (The Rosemary)	Standard	Garage	34 m ²	3800		3000	1800	Y	DOUBLE	5700 mm	12000	48%	100 m ²	240	140 m ²	58%	21 m ²	26 m ²	1700	1900	1500
6	H (The Peppermint)	Standard	Garage	34 m ²	4200		4100	2900	Y	DOUBLE	5700 mm	11500	50%	88 m ²	229	141 m ²	62%	17 m ²	22 m ²	1600	1500	2800
7	F (The Lavender)	Custom	Garage	36 m ²	6200		3000	1800	Y	DOUBLE	6000 mm	11700	51%	85 m ²	232	147 m ²	63%	13 m ²	22 m ²	2100	2400	1200
8	I (The Rosemary)	Standard	Garage	34 m ²	4200		3000	1800	Y	DOUBLE	5700 mm	11300	50%	100 m ²	234	134 m ²	57%	21 m ²	31 m ²	1700	1700	1500
9	C (The Caraway)	Standard	Carport	15 m ²	4200	4500				SINGLE	2700 mm	8800	31%	55 m ²	181	126 m ²	70%	14 m ²	16 m ²	1800	2700	2100
10	D (The Foxglove)	Standard	Garage	27 m ²	6200		4500			SINGLE	3300 mm	9200	36%	57 m ²	194	137 m ²	71%	14 m ²	22 m ²	1100	3300	4700
11	F (The Lavender)	Standard	Garage	36 m ²	4500		4500			DOUBLE	6000 mm	10600	57%	85 m ²	223	138 m ²	62%	14 m ²	22 m ²		2400	1000
12	I (The Rosemary)	Standard	Garage	34 m ²	4500		4500			DOUBLE	5700 mm	12200	47%	100 m ²	256	156 m ²	61%	21 m ²	35 m ²	1700	2100	1000
13	C (The Caraway)	Standard	Carport	20 m ²	4400	3300				SINGLE	3400 mm	9600	35%	55 m ²	200	145 m ²	73%	14 m ²	24 m ²	1500	3400	2700
14	J (The Santolina)	Standard	Garage	32 m ²	6700		3000		Y	DOUBLE	5600 mm	12200	46%	112 m ²	256	144 m ²	56%	9 m ²	24 m ²	1500	2300	1000
15	F (The Lavender)	Custom	Carport	34 m ²	5300	3200		2000		DOUBLE	5600 mm	11200	50%	85 m ²	213	128 m ²	60%	13 m ²	24 m ²	1400	2600	1000
16	D (The Foxglove)	Standard	Garage	27 m ²	2800		4700	3500		SINGLE	3300 mm	9100	36%	57 m ²	190	133 m ²	70%	14 m ²	16 m ²	1000	3300	4500
17	C (The Caraway)	Standard	Carport	20 m ²	4700	3000		2100		SINGLE	3400 mm	9100	37%	55 m ²	180	125 m ²	69%	14 m ²	18 m ²	1800	3400	2700
18a	A (The Aralia)	Standard	Carport	17 m ²	10000	6700		5500		SINGLE	3000 mm	12200	25%	43 m ²	198	155 m ²	78%	12 m ²	16 m ²	1000	4000	1000
18b	A (The Aralia)	Standard	Carport	17 m ²	3000	6700		5500		SINGLE	3000 mm	12200	25%	43 m ²	241	198 m ²	82%	12 m ²	16 m ²	10000	1000	
19	D (The Foxglove)	Standard	Garage	27 m ²	3500		3500		Y	SINGLE	3300 mm	10950	30%	57 m ²	184	127 m ²	69%	14 m ²	18 m ²	1700	3300	2700
20	C (The Caraway)	Standard	Carport	20 m ²	3100	4800				SINGLE	3500 mm	10200	34%	55 m ²	203	148 m ²	73%	14 m ²	18 m ²	3800	2100	1500
21	F (The Lavender)	Custom	Garage	36 m ²	1900		1900		Y	DOUBLE	6000 mm	11600	52%	85 m ²	230	145 m ²	63%	13 m ²	22 m ²	2900	1800	2800
22	D (The Foxglove)	Standard	Garage	27 m ²	2700		2700		Y	SINGLE	3000 mm	9600	31%	57 m ²	194	137 m ²	71%	14 m ²	16 m ²	3300	1800	5300
23	C (The Caraway)	Standard	Carport	20 m ²	3500	1500				SINGLE	3400 mm	11600	29%	55 m ²	234	179 m ²	76%	14 m ²	16 m ²	4100	2500	4600
24	C (The Caraway)	Standard	Carport	20 m ²	3500	1500				SINGLE	3900 mm	10000	39%	55 m ²	180	125 m ²	69%	14 m ²	24 m ²	3200	1500	3100
25	G (The Nettle)	Standard	Garage	34 m ²	1500		2500		Y	DOUBLE	5600 mm	13100	43%	88 m ²	240	152 m ²	63%	12 m ²	17 m ²	1500	4400	1600
26	C (The Caraway)	Standard	Garage	20 m ²	2700		5600			SINGLE	3400 mm	10500	32%	55 m ²	210	155 m ²	74%	14 m ²	24 m ²	1700	2100	2400
27	I (The Rosemary)	Standard	Garage	34 m ²	1900		1800		Y	DOUBLE	5700 mm	12200	47%	100 m ²	252	152 m ²	60%	21 m ²	26 m ²	1700	2100	2400
28	F (The Lavender)	Standard	Garage	36 m ²	2700		1800		Y	DOUBLE	6000 mm	11800	51%	85 m ²	244	159 m ²	65%	13 m ²	22 m ²	1500	3100	2100
29	G (The Nettle)	Standard	Garage	34 m ²	2900		1500		Y	DOUBLE	5600 mm	13400	42%	88 m ²	262	174 m ²	66%	12 m ²	17 m ²	1800	3200	3600
30	I (The Rosemary)	Standard	Garage	34 m ²	6500		3300		Y	DOUBLE	5700 mm	13500	42%	100 m ²	276	176 m ²	64%	21 m ²	26 m ²	3300	1700	1200
31	H (The Peppermint)	Standard	Garage	34 m ²	4800		3500		Y	DOUBLE	5700 mm	12500	46%	88 m ²	263	175 m ²	67%	21 m ²	29 m ²	1900	2200	3400
32	I (The Rosemary)	Standard	Garage	34 m ²	1700		1500		Y	DOUBLE	6000 mm	14000	43%	100 m ²	286	186 m ²	65%	21 m ²	36 m ²	2300	3200	6000
33a	A (The Aralia)	Standard	Carport	17 m ²	1500	3000				SINGLE	2700 mm	10350	26%	43 m ²	164	121 m ²	74%	12 m ²	16 m ²	5500	5200	
33b	A (The Aralia)	Standard	Carport	17 m ²	1500	3700		2200		SINGLE	2700 mm	10350	26%	43 m ²	164	121 m ²	74%	12 m ²	16 m ²	3300		2100
34	F (The Lavender)	Custom	Garage	36 m ²	1600		3200		Y	DOUBLE	6000 mm	11500	52%	85 m ²	229	144 m ²	63%	21 m ²	21 m ²	1900	2400	2200
35	I (The Rosemary)	Standard	Garage	34 m ²	1500		2700	1500	Y	DOUBLE	5700 mm	12100	47%	100 m ²	239	139 m ²	58%	21 m ²	25 m ²	2000	1700	1500
36	H (The Peppermint)	Standard	Garage	34 m ²	2800		2700	1500	Y	DOUBLE	5700 mm	12800	45%	88 m ²	259	171 m ²	66%	17 m ²	17 m ²	2800	1600	3900
37	G (The Nettle)	Standard	Garage	34 m ²	1500		2400		Y	DOUBLE	5600 mm	14500	39%	88 m ²	282	194 m ²	69%	12 m ²	18 m ²	4000	2400	2100
38a	A (The Aralia)	Standard	Carport	17 m ²	5800	5800				SINGLE	2700 mm	10350	26%	43 m ²	181	138 m ²	76%	12 m ²	16 m ²	2600		3500
38b	A (The Aralia)	Standard	Carport	17 m ²	1500	3000				SINGLE	2700 mm	10350	26%	43 m ²	230	187 m ²	81%	12 m ²	16 m ²	1000	6300	
39	C (The Caraway)	Standard	Carport	20 m ²	3700	3900				SINGLE	3400 mm	9900	34%	55 m ²	195	140 m ²	72%	14 m ²	31 m ²	1000	4500	1700
40a	A (The Aralia)	Standard	Carport	17 m ²	13200	6400				SINGLE	2700 mm	7700	35%	43 m ²	160	117 m ²	73%	12 m ²	16 m ²	6300	4800	
40b	A (The Aralia)	Standard	Carport	17 m ²	1800	6400				SINGLE	2700 mm	7700	35%	43 m ²	160	117 m ²	73%	12 m ²	16 m ²	1650	2300	2900
41	F (The Lavender)	Standard	Garage	36 m ²	3200		2200		Y	DOUBLE	6000 mm	11100	54%	85 m ²	219	134 m ²	61%	13 m ²	21 m ²	1300	2600	1700
42	D (The Foxglove)	Standard	Carport	27 m ²	1500	2100				SINGLE	3300 mm	12000	28%	57 m ²	162	105 m ²	65%	12 m ²	16 m ²	1500	3300	1000
43	D (The Foxglove)	Standard	Carport	27 m ²	2100	2100				SINGLE	3300 mm	10700	31%	57 m ²	160	103 m ²	64%	12 m ²	16 m ²	1300	4600	1000
44	G (The Nettle)	Standard	Garage	34 m ²	2500		2500		Y	DOUBLE	6000 mm	12400	48%	88 m ²	246	158 m ²	64%	12 m ²	21 m ²	2000	2700	1200
45	F (The Lavender)	Custom	Garage	36 m ²	4500		4500			DOUBLE	6000 mm	17550	34%	85 m ²	247	162 m ²	66%	13 m ²	21 m ²	2500	1600	1500
46	D (The Foxglove)	Standard	Garage	27 m ²	14200		10800			SINGLE	3300 mm	6000	55%	57 m ²	249	192 m ²	77%	14 m ²	27 m ²	4800	4000	1000
47	B (The Bayberry)	Custom	Carport	21 m ²	3100	3100				SINGLE	3000 mm	11383	26%	49 m ²	180	131 m ²	73%	12 m ²	20 m ²	4500	4000	1500
48	H (The Peppermint)	Standard	Carport	34 m ²	1500	2500				DOUBLE	5700 mm	13000	44%	88 m ²	239	151 m ²	63%	12 m ²	18 m ²	2600	2400	2000
49	F (The Lavender)	Custom	Garage	36 m ²	3500		3500		Y	DOUBLE	6000 mm	12000	50%	85 m ²	247	162 m ²	66%	13 m ²	21 m ²	2000	2500	1500
50	J (The Santolina)	Standard	Garage	32 m ²	1500		11000			DOUBLE	5600 mm	6000	93%	112 m ²	326	214 m ²	66%	12 m ²	20 m ²	3600	3400	1800
51	D (The Foxglove)	Standard	Carport	27 m ²	3000	1500				SINGLE	3000 mm	14000	21%	57 m ²	213	156 m ²	73%	14 m ²	25 m ²	1600	3300	3000
52	H (The Peppermint)	Custom	Garage	34 m ²	3800		1500		Y	DOUBLE	5700 mm	14										

HOUSE : 42m²
 ALFRESCO: 12m²
 CARPORT: 17m²
 STORE: 4m²

NOTE:
 SUSPENDED CEILING HEIGHTS
 AT 2.5m

■ SITE BUILT
 ■ PREFABRICATED



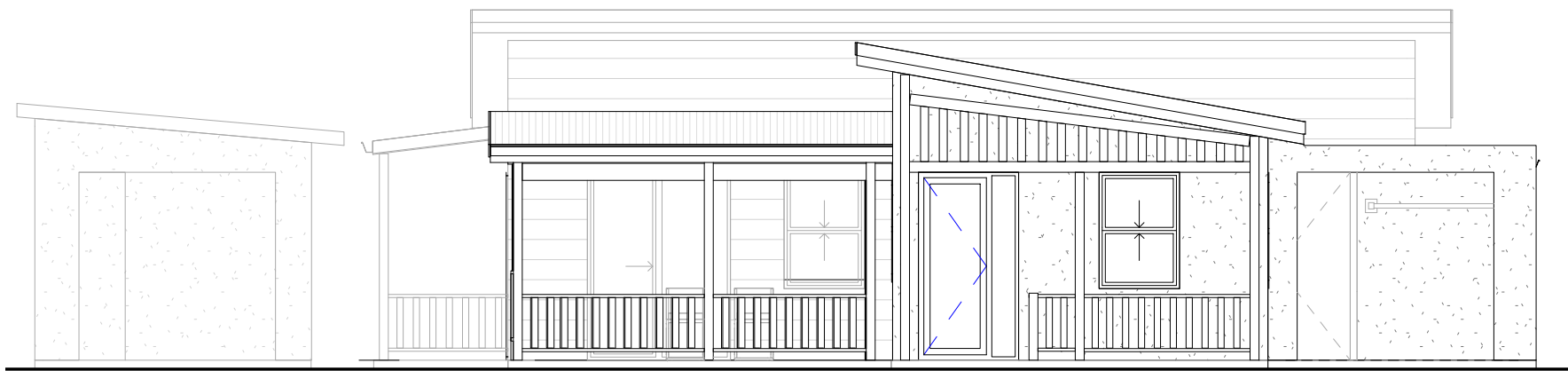
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No.	Description	Date

'The Aralia'
 Providence Lifestyle
 'A'

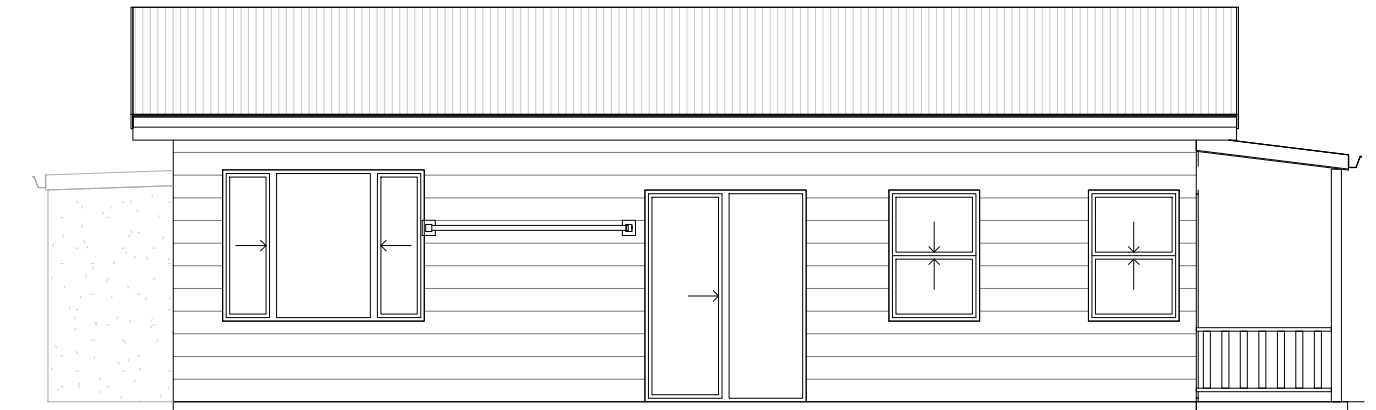
FLOOR PLAN		
Project number	xx	A-100
Date	20.07.14	
Drawn by	RHA	Scale
Checked by	RHA	
		1 : 100



1

FRONT ELEVATION

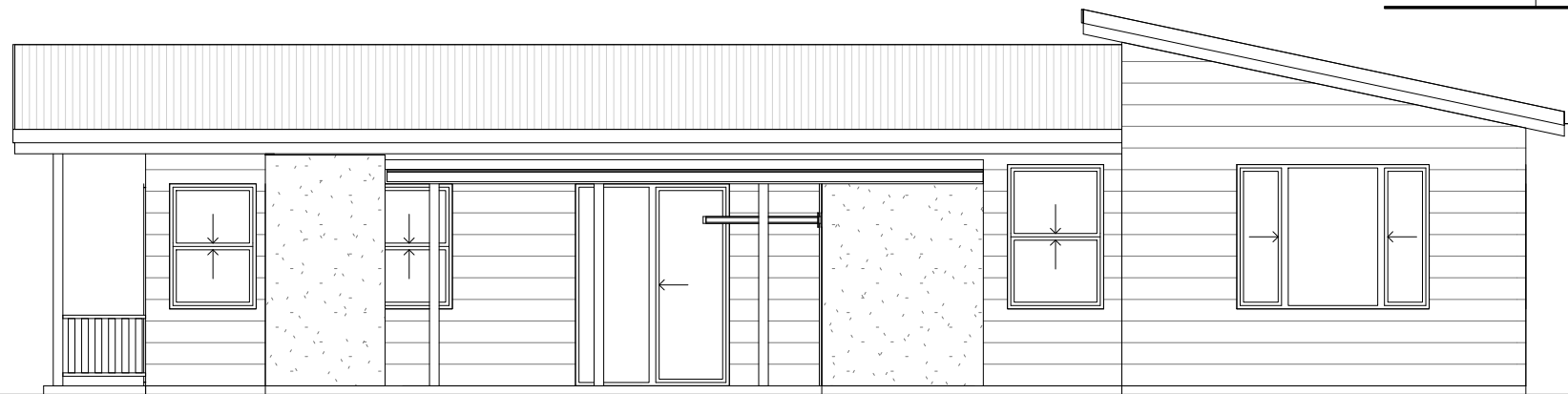
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2

REAR ELEVATION 1

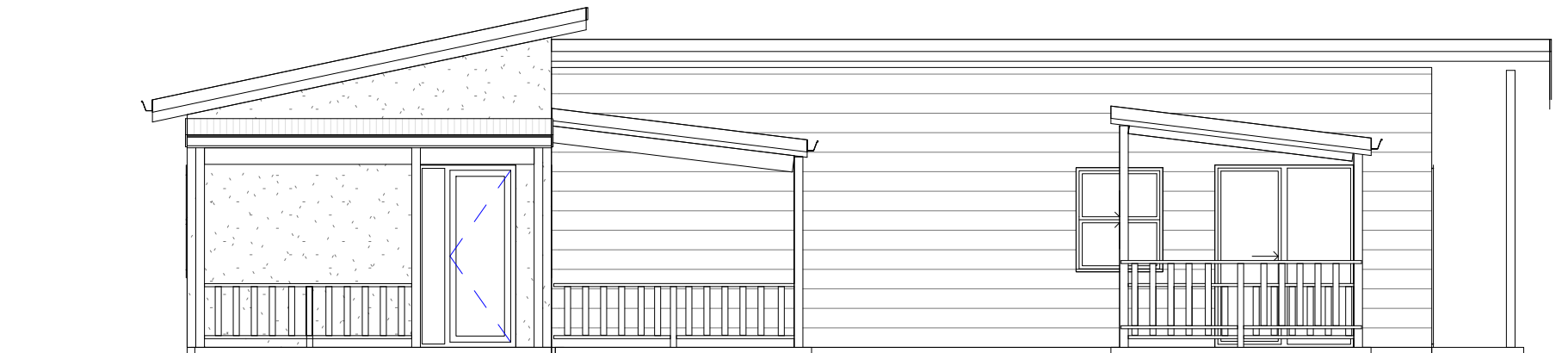
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3

SIDE ELEVATION 1

1 : 75



4

SIDE ELEVATION 2

1 : 75

MATERIALS AND FINISHES

STREET ELEVATIONS TO BE PRIMELINE F.C WEATHERBOARD AND FLAT FIBRE CEMENT SHEET w/ ROLL-ON SAND FINISH TEXTURE

SIDE AND REAR ELEVATIONS TO BE PRIMELINE F.C WEATHERBOARD PAINT FINISH

ALL ROOFS TO BE CUSTOM ORB w/ COLORBOND FASCIA AND GUTTER IN SIMILAR FINISH

PATIO TUBE STRUCTURES TO CARPORT AND ALFRESCO

FINAL COLOUR FINISHES TO BE CONFIRMED



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No.	Description	Date
0	PRELIMINARY	20.03.11
1	HOME NAME UPDATED	20.07.14

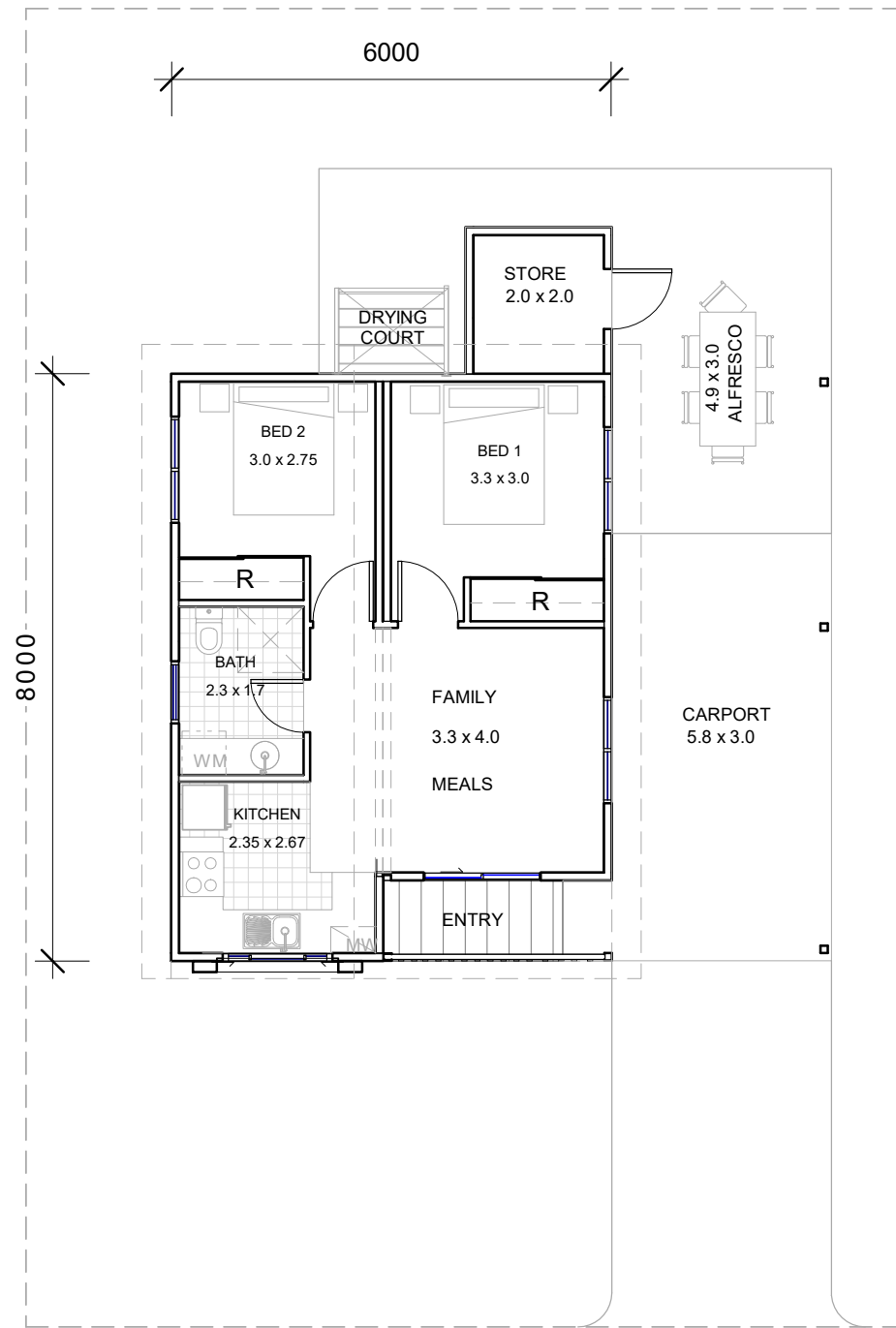
'The Aralia'

Providence Lifestyle

'A'

ELEVATIONS

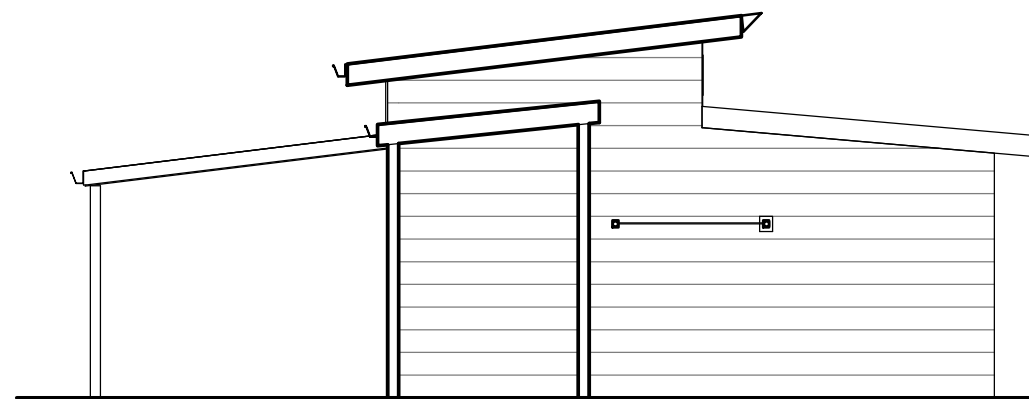
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Date	20.07.14	
Drawn by	RHA	Scale
Checked by	RHA	
		1 : 75



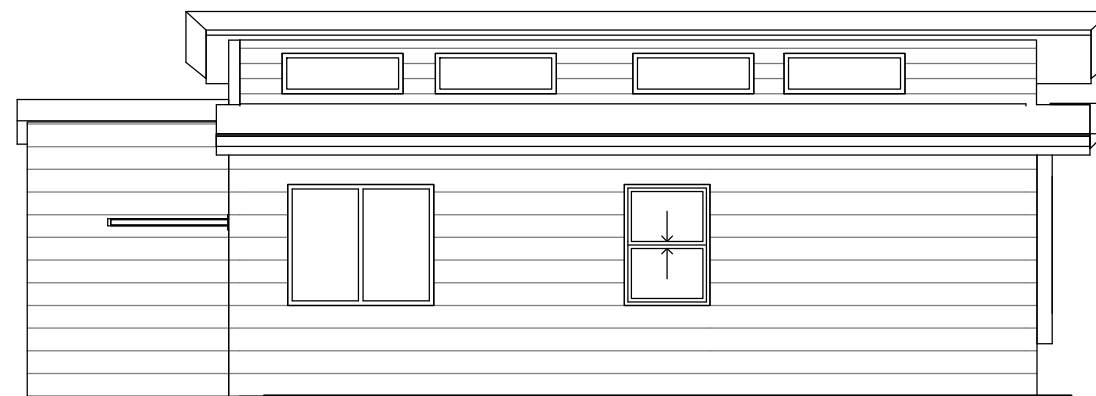
1 FLOOR PLAN 1: 100



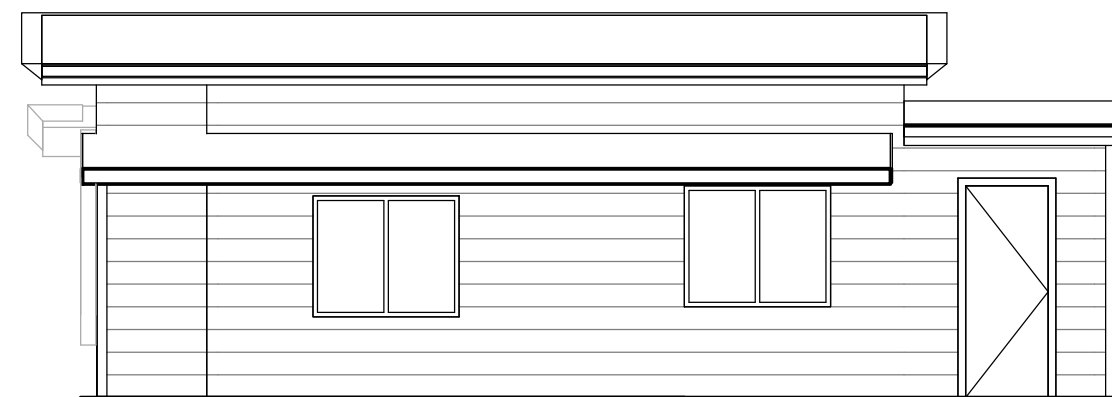
2 STREET ELEVATION 1: 75



3 REAR ELEVATION 1: 75



4 SIDE ELEVATION 1 1: 75



5 SIDE ELEVATION 2 1: 75

MATERIALS AND FINISHES
 STREET ELEVATIONS TO BE PRIMELINE F.C WEATHERBOARD AND FLAT FIBRE CEMENT SHEET w/ ROLL-ON SAND FINISH TEXTURE

SIDE AND REAR ELEVATIONS TO BE PRIMELINE F.C WEATHERBOARD PAINT FINISH

ALL ROOFS TO BE CUSTOM ORB w/ COLORBOND FASCIA AND GUTTER IN SIMILAR FINISH

PATIO TUBE STRUCTURES TO CARPORT AND ALFRESCO

FINAL COLOUR FINISHES TO BE CONFIRMED



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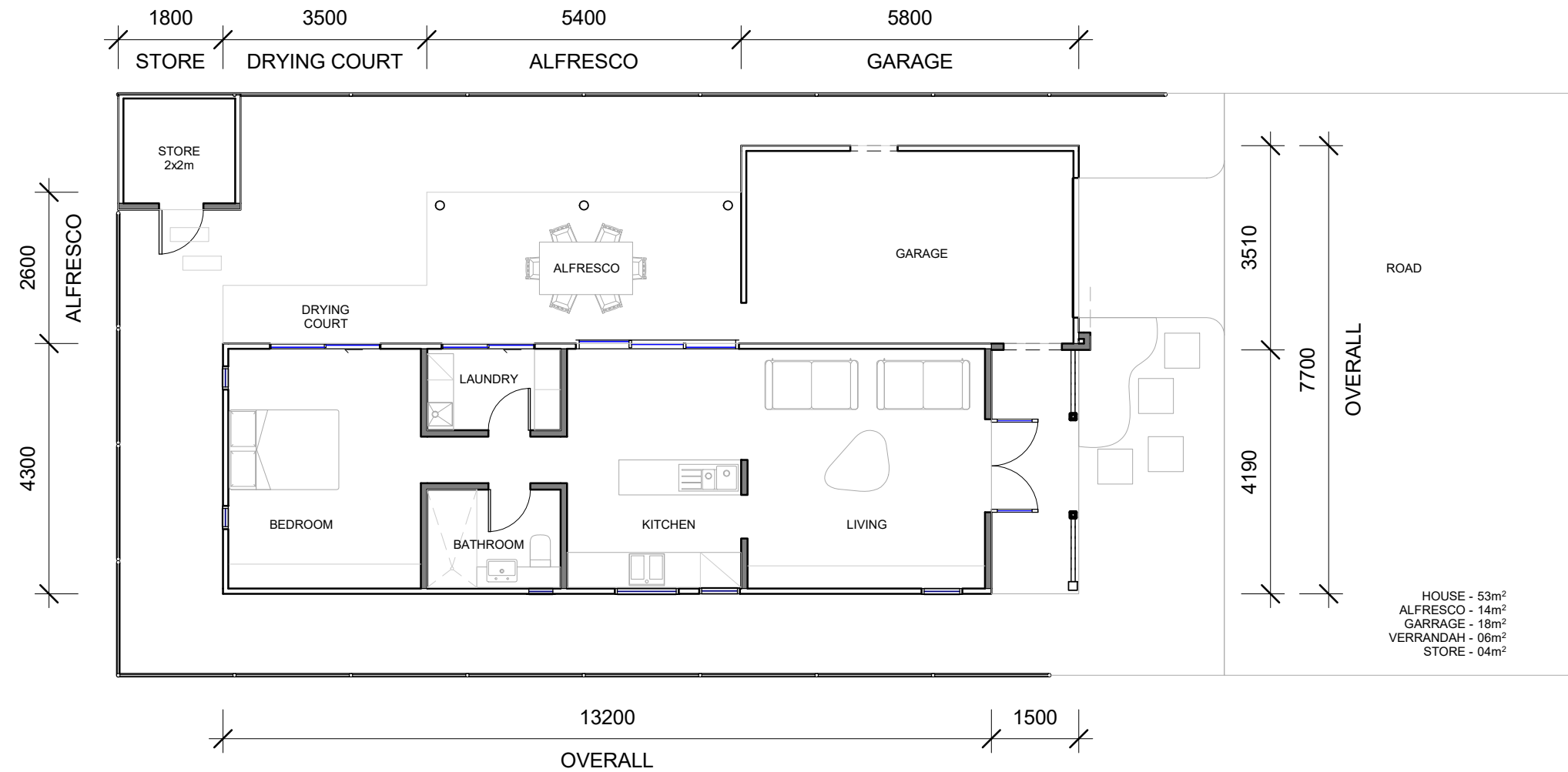
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No.	Description	Date
0	PRELIMINARY	20.03.11
1	HOME NAME UPDATED	20.07.14

'THE BAYBERRY'
 PROVIDENCE LIFESTYLE
 'B'

FLOOR PLAN & ELEVATIONS

Project number	A-100	
Date	20.07.14	
Drawn by	RHA	
Checked by	RHA	Scale@A3 As indicated



1 FLOOR PLAN
 A-101 1:100



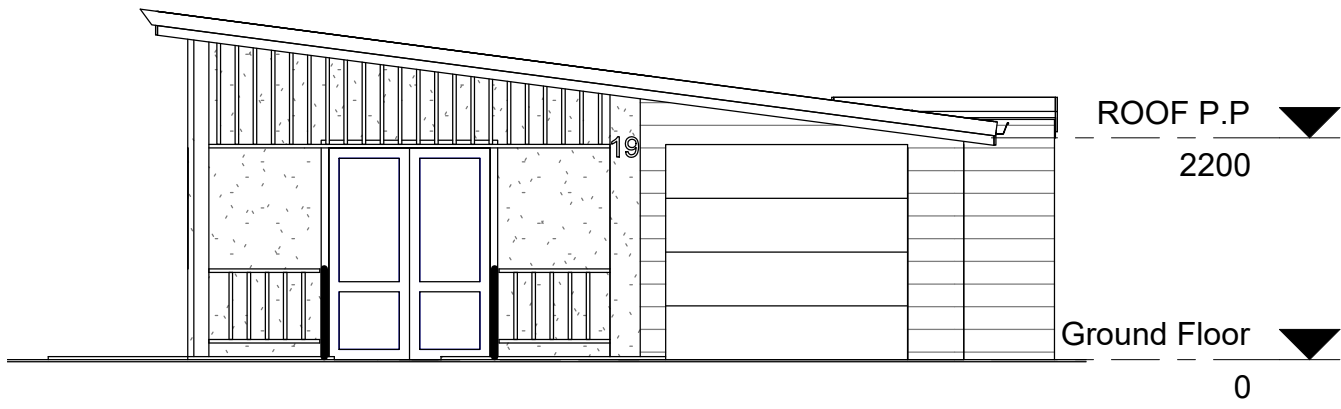
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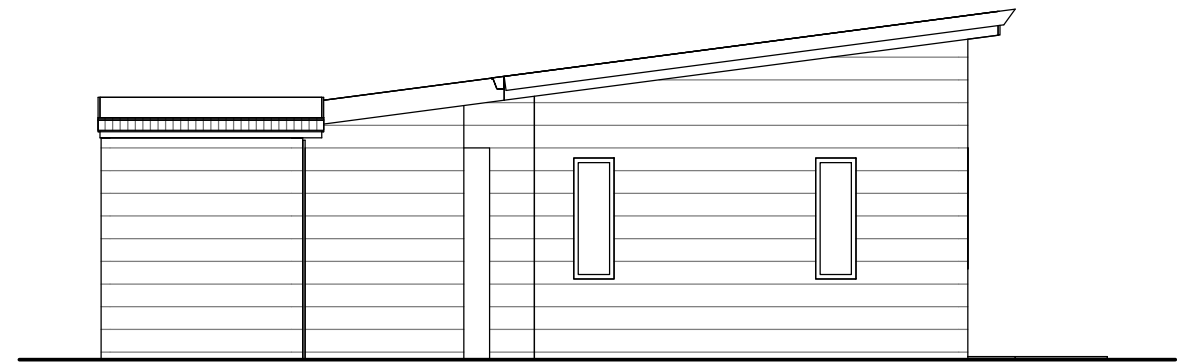
No.	Description	Date
0	PRELIMINARY	20.11.03
1	HOME NAME UPDATED	20.07.14

'THE CARAWAY'
 PROVIDENCE LIFESTYLE
 'C'

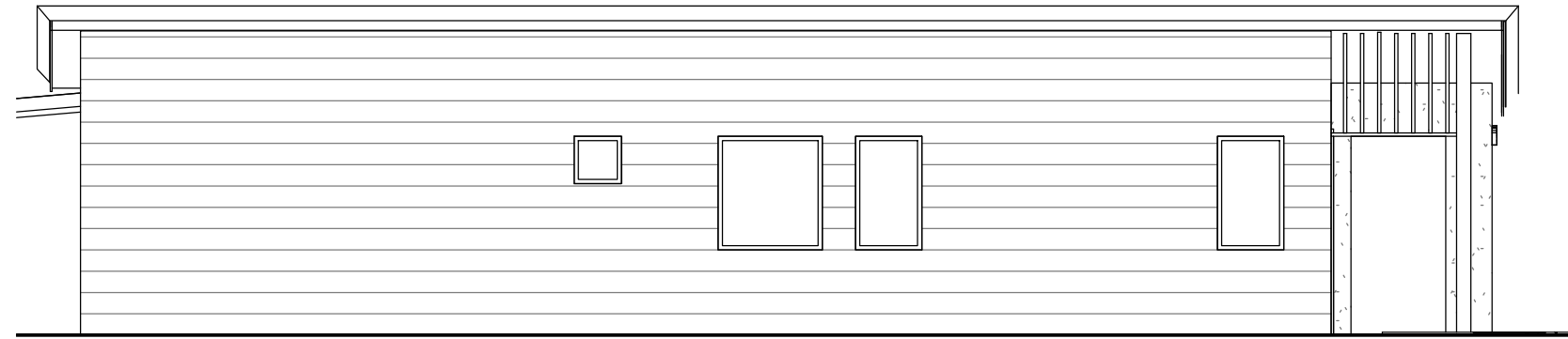
FLOOR PLAN		A-100
Project number	Project Number	
Date	20.07.14	
Drawn by	RHA	
Checked by	RHA	
Scale@A3	1:100	



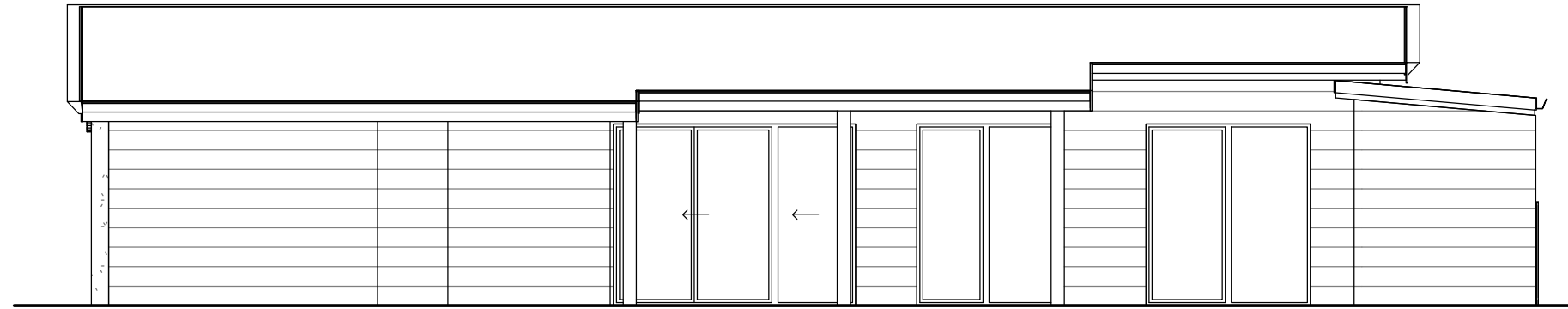
1 STREET ELEVATION
1:75



2 REAR ELEVATION
1:75



3 SIDE ELEVATION 1
1:75



4 SIDE ELEVATION 2
1:75

MATERIALS AND FINISHES
 STREET ELEVATIONS TO BE PRIMELINE F.C WEATHERBOARD AND FLAT FIBRE CEMENT SHEET w/ ROLL-ON SAND FINISH TEXTURE
 SIDE AND REAR ELEVATIONS TO BE PRIMELINE F.C WEATHERBOARD PAINT FINISH
 ALL ROOFS TO BE CUSTOM ORB w/ COLORBOND FASCIA AND GUTTER IN SIMILAR FINISH
 PATIO TUBE STRUCTURES TO CARPORT AND ALFRESCO
 FINAL COLOUR FINISHES TO BE CONFIRMED



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No.	Description	Date
0	PRELIMINARY	20.11.03
1	HOME NAME UPDATED	20.07.14

'THE CARAWAY'
 PROVIDENCE LIFESTYLE
 'C'

ELEVATIONS		A-101
Project number	Project Number	
Date	20.07.14	
Drawn by	RHA	
Checked by	RHA	
Scale@A3	1:75	

MATERIALS AND FINISHES

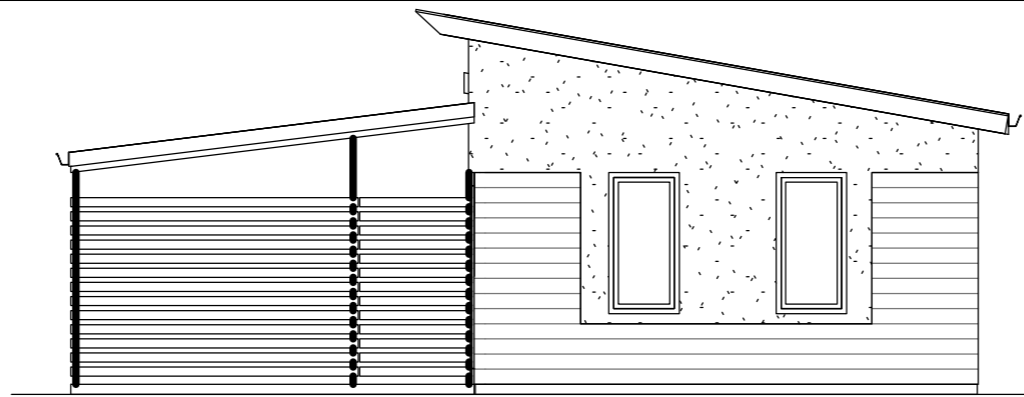
STREET ELEVATIONS TO BE PRIMELINE F.C WEATHERBOARD AND FLAT FIBRE CEMENT SHEET w/ ROLL-ON SAND FINISH TEXTURE

SIDE AND REAR ELEVATIONS TO BE PRIMELINE F.C WEATHERBOARD PAINT FINISH

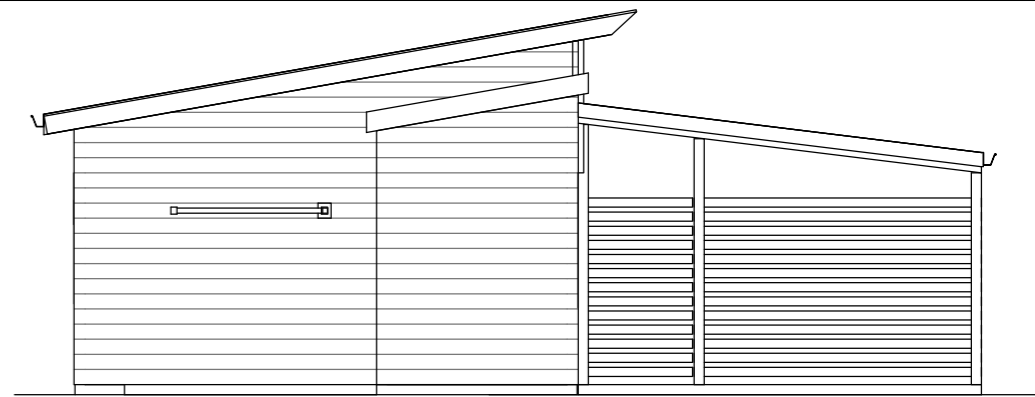
ALL ROOFS TO BE CUSTOM ORB w/ COLORBOND FASCIA AND GUTTER IN SIMILAR FINISH

PATIO TUBE STRUCTURES TO CARPORT AND ALFRESCO

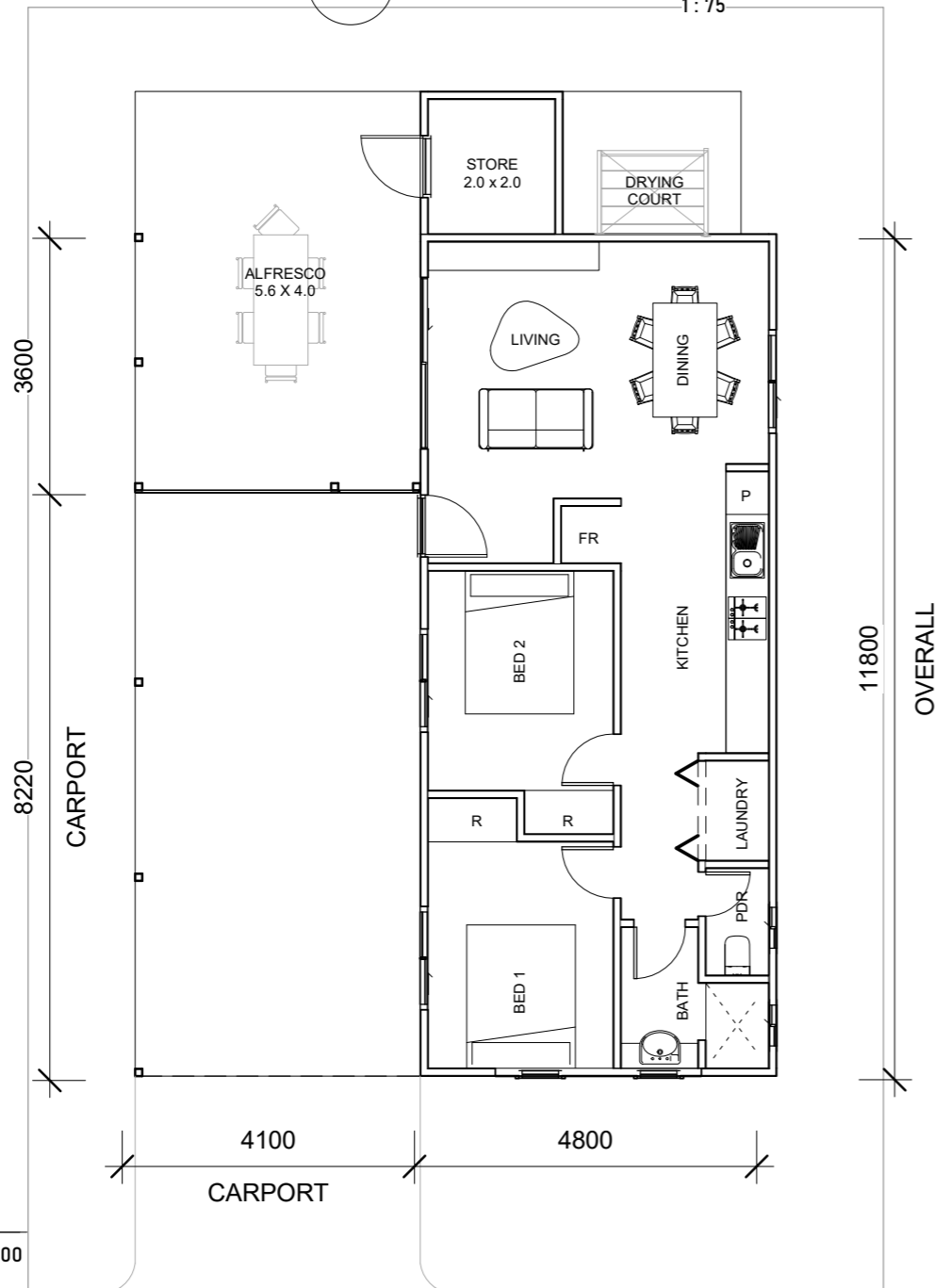
FINAL COLOUR FINISHES TO BE CONFIRMED



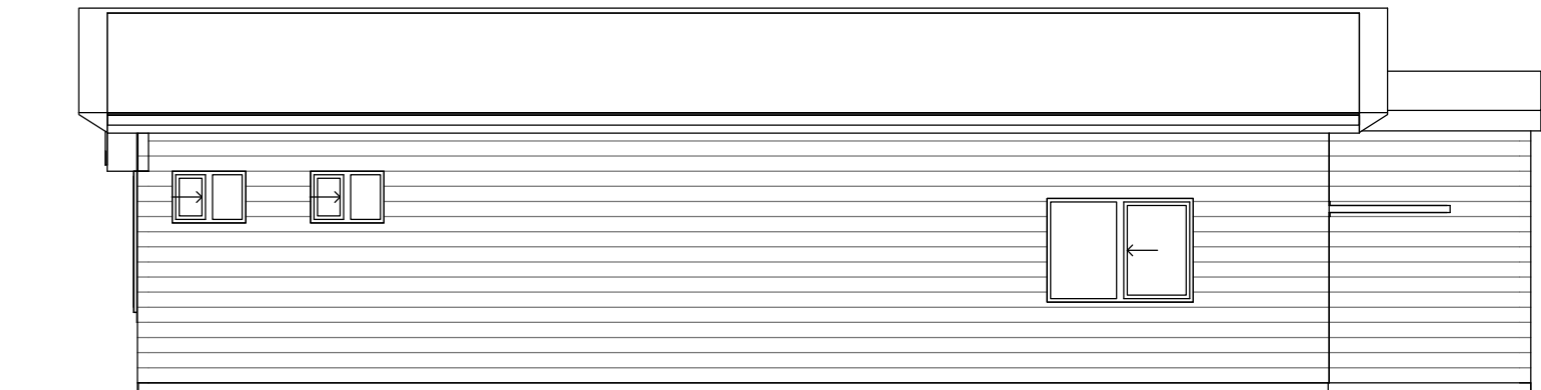
2 STREET ELEVATION
1:75



3 REAR ELEVATION
1:75



1 FLOOR PLAN
1:100



4 SIDE ELEVATION 1
1:75



5 SIDE ELEVATION 2
1:75



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No.	Description	Date
0	PRELIMINARY	20.03.11
1	HOME NAME UPDATED	20.07.14

'THE FOXGLOVE
PROVIDENCE LIFESTYLE
'D'

FLOOR PLAN & ELEVATIONS		
Project number	A100	
Date	20.07.14	
Drawn by	RHA	
Checked by	RHA	Scale@A3 As indicated

MATERIALS AND FINISHES

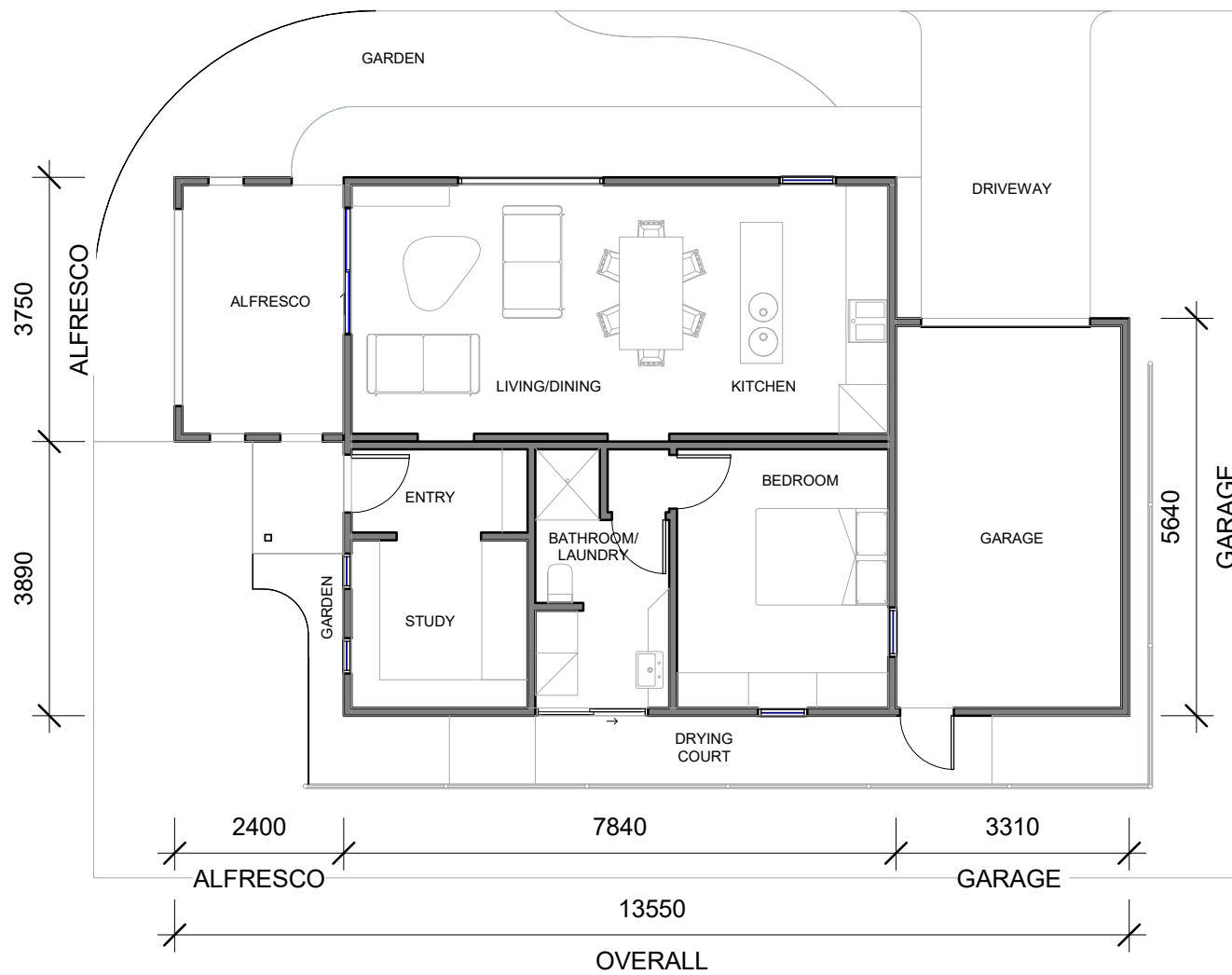
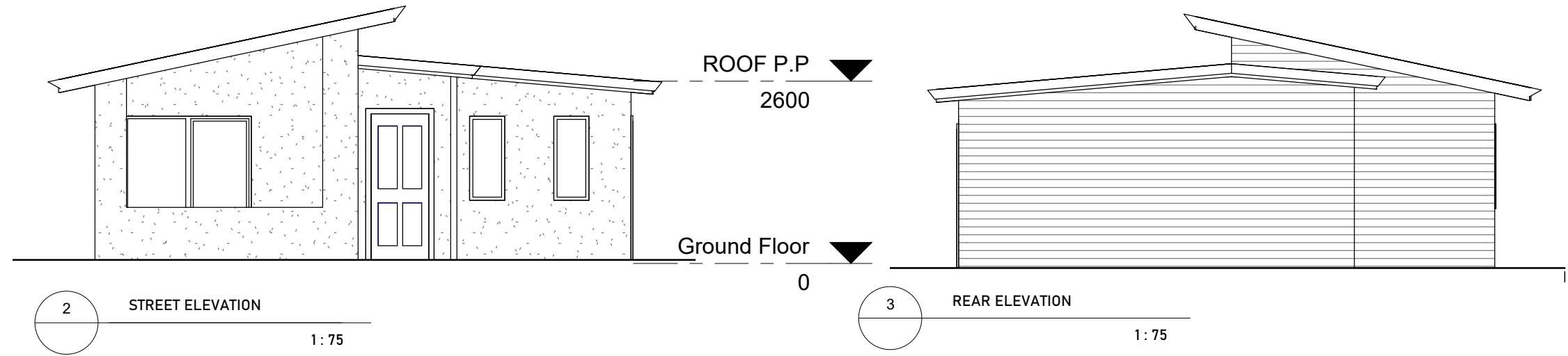
STREET ELEVATIONS TO BE PRIMELINE F.C WEATHERBOARD AND FLAT FIBRE CEMENT SHEET w/ ROLL-ON SAND FINISH TEXTURE

SIDE AND REAR ELEVATIONS TO BE PRIMELINE F.C WEATHERBOARD PAINT FINISH

ALL ROOFS TO BE CUSTOM ORB w/ COLORBOND FASCIA AND GUTTER IN SIMILAR FINISH

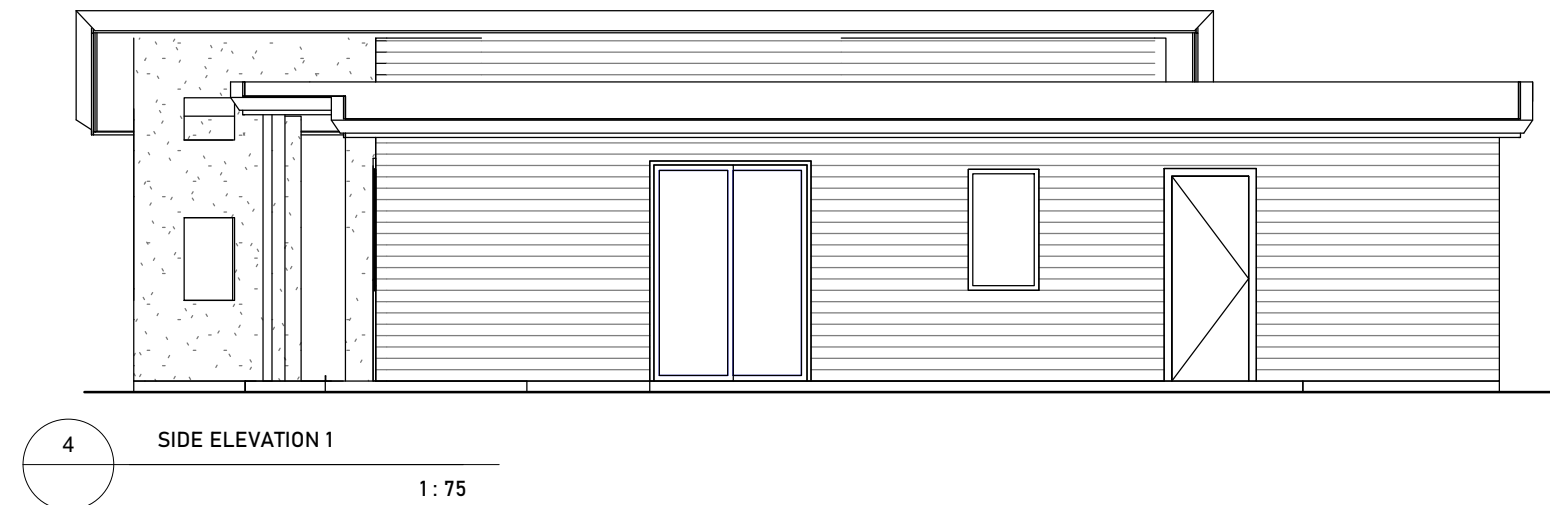
PATIO TUBE STRUCTURES TO CARPORT AND ALFRESCO

FINAL COLOUR FINISHES TO BE CONFIRMED



1 FLOOR PLAN
A-100 1:100

HOUSE - 57m²
ALFRESCO - 08m²
GARRAGE - 17m²
VERRANDAH - 02m²



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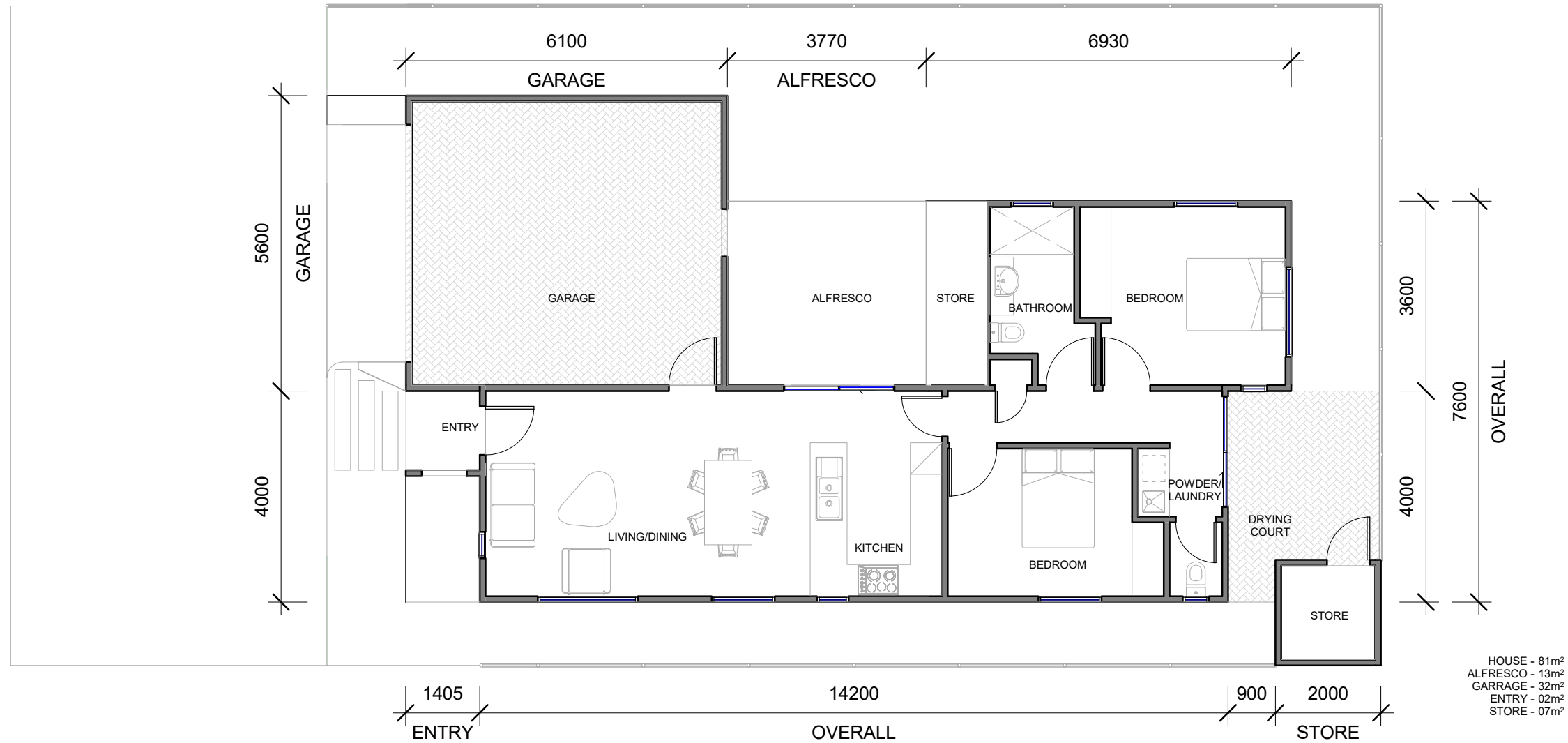
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No.	Description	Date
0	PRELIMINARY	20.03.11
1	HOME NAME UPDATED	20.07.14

THE GINGER
PROVIDENCE LIFESTYLE
'E'

FLOOR PLAN & ELEVATIONS

Project number		A-100
Date	20.07.14	
Drawn by	RHA	
Checked by	RHA	
Scale@A3		As indicated



1 FLOOR PLAN
A-101 1:100



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'THE LAVENDER'

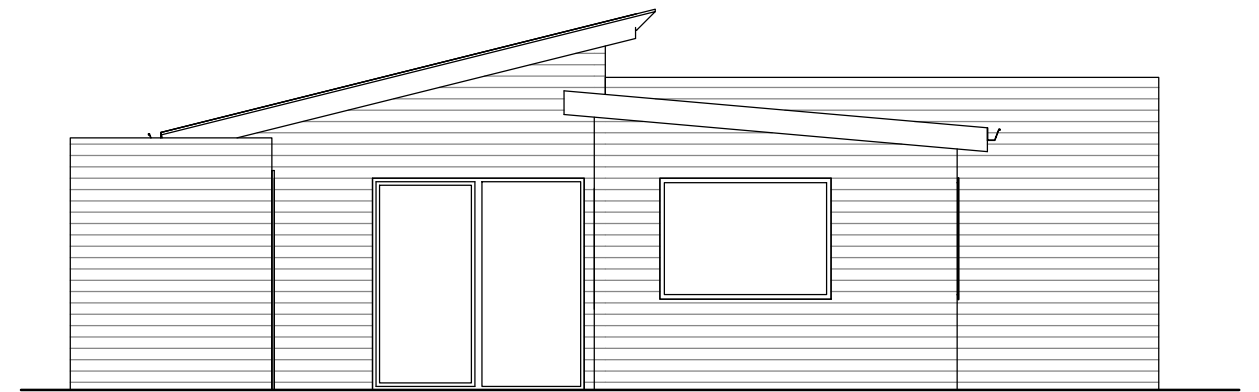
PROVIDENCE LIFESTYLE

'F'

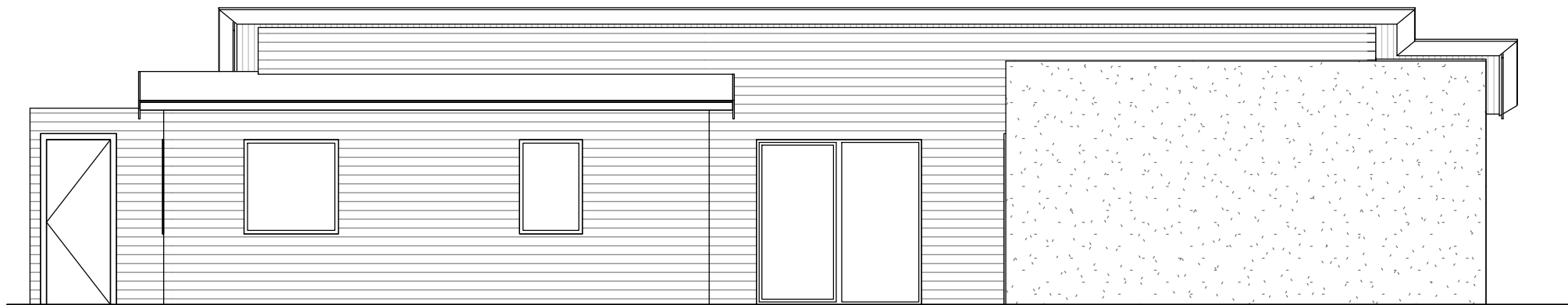
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Project number		
Date	20.07.14	
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Checked by	RHA	
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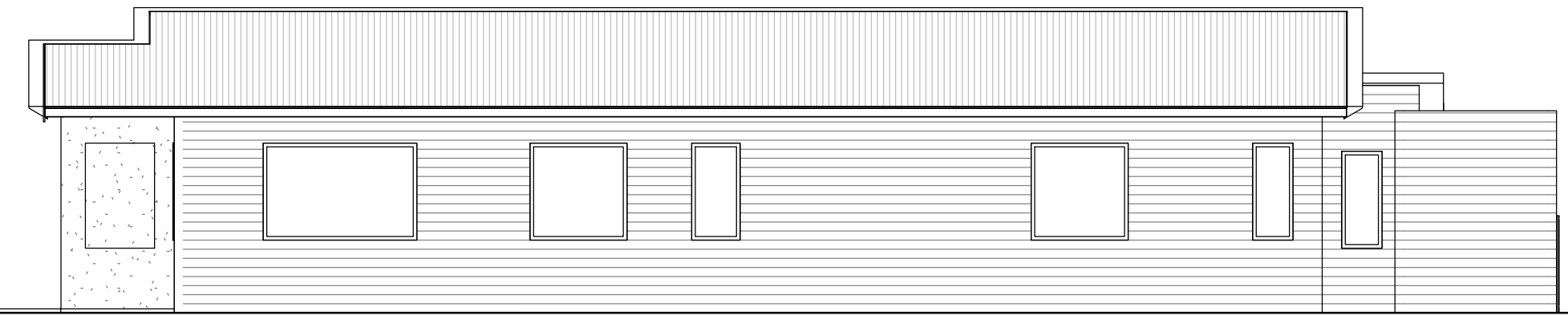
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1:75



2 REAR ELEVATION
1:75



3 SIDE ELEVATION 1
1:75



4 SIDE ELEVATION 2
1:75

MATERIALS AND FINISHES
 STREET ELEVATIONS TO BE PRIMELINE F.C WEATHERBOARD AND FLAT FIBRE CEMENT SHEET w/ ROLL-ON SAND FINISH TEXTURE
 SIDE AND REAR ELEVATIONS TO BE PRIMELINE F.C WEATHERBOARD PAINT FINISH
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FINAL COLOUR FINISHES TO BE CONFIRMED



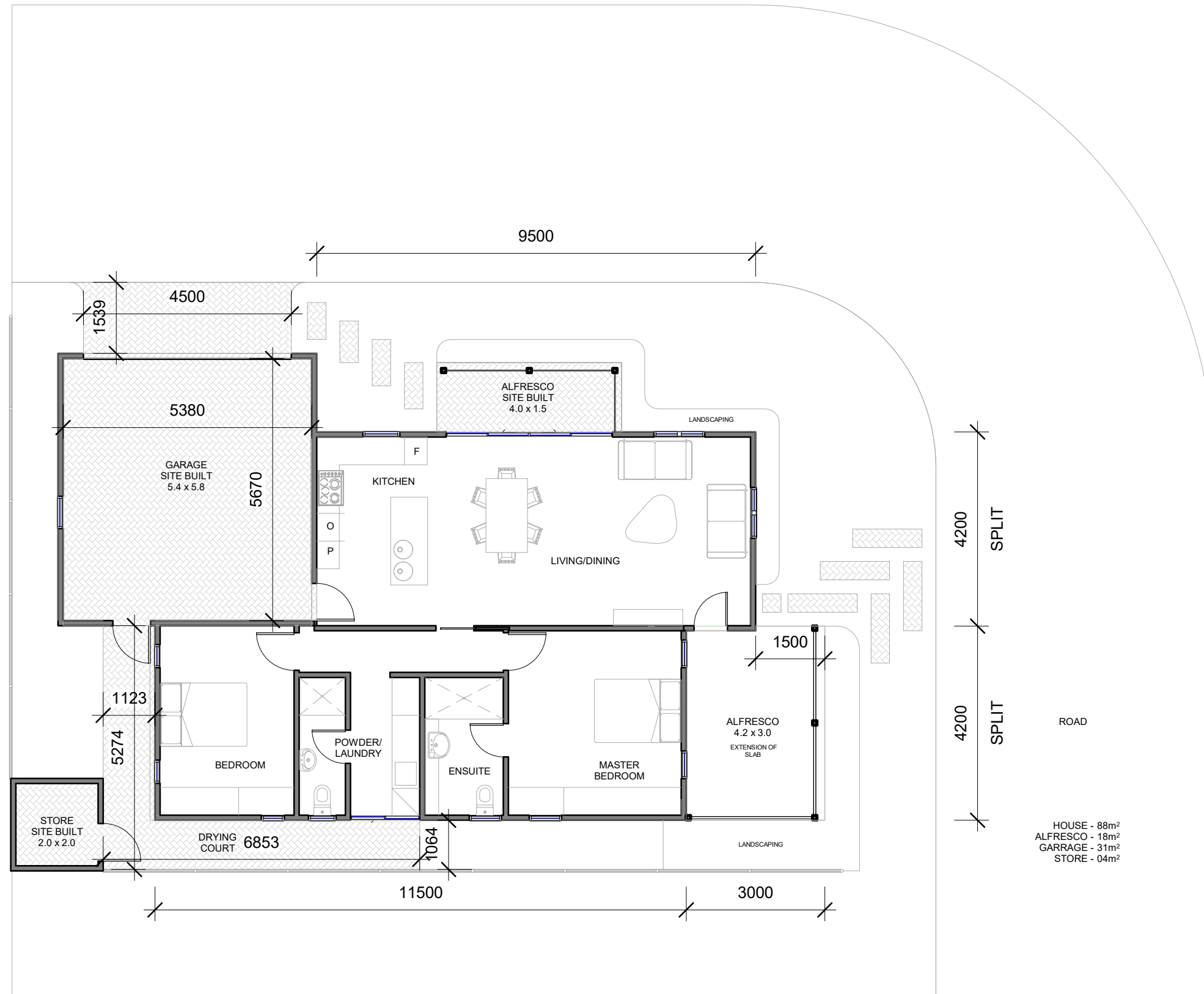
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1	HOME NAME UPDATED	20.07.14

'THE LAVENDER'
 PROVIDENCE LIFESTYLE
 'F'

ELEVATIONS		
Project number		A- 101
Date	20.07.14	
Drawn by	RHA	
Checked by	RHA	
Scale@A3		1:75



HOUSE - 88m²
 ALFRESCO - 18m²
 GARRAGE - 31m²
 STORE - 04m²

1 FLOOR PLAN
 A-102 1:100



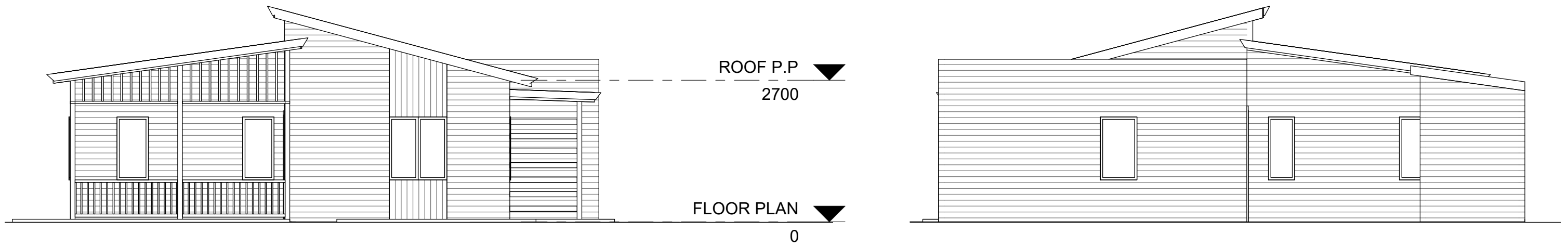
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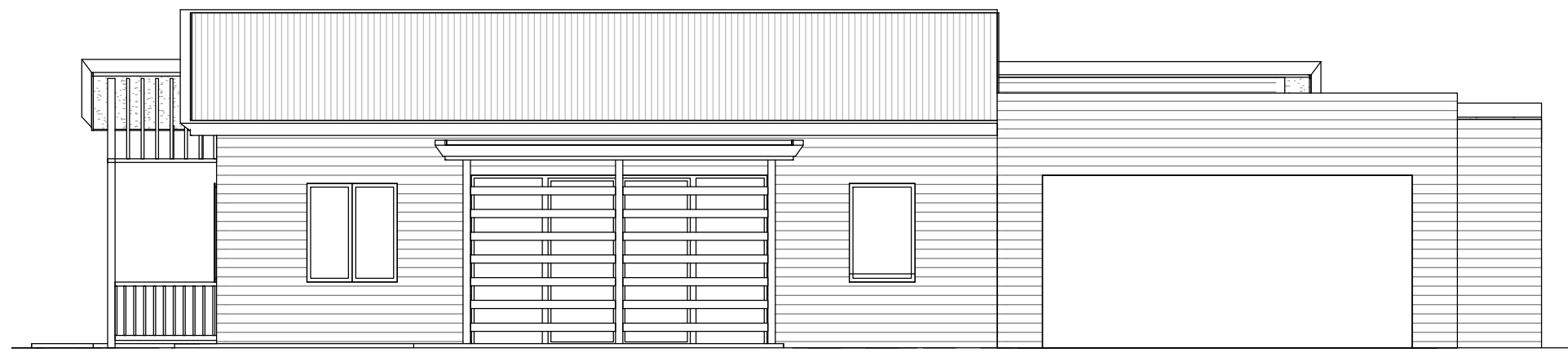
'THE NETTLE'
 PROVIDENCE LIFESTYLE
 'G'

FLOOR PLAN		A-101	
Project number		A-101	1:100
Date	20.07.14		
Drawn by	RHA	Scale@A3	
Checked by	RHA		

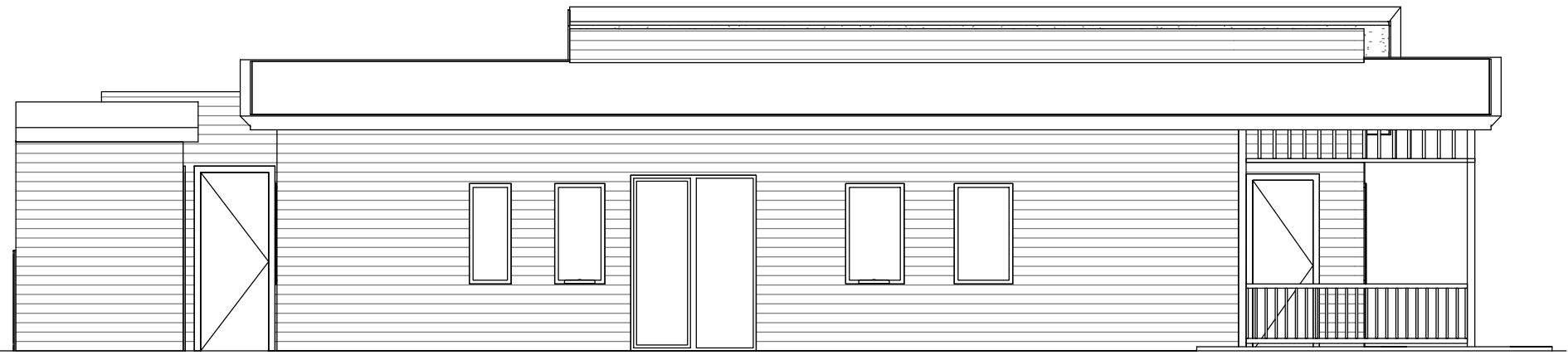


1 STREET ELEVATION
1: 75

2 REAR ELEVATION
1: 75



3 SIDE ELEVATION 1
1: 75



4 SIDE ELEVATION 2
1: 75

MATERIALS AND FINISHES
 STREET ELEVATIONS TO BE PRIMELINE F.C WEATHERBOARD AND FLAT FIBRE CEMENT SHEET w/ ROLL-ON SAND FINISH TEXTURE
 SIDE AND REAR ELEVATIONS TO BE PRIMELINE F.C WEATHERBOARD PAINT FINISH
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 PATIO TUBE STRUCTURES TO CARPORT AND ALFRESCO
FINAL COLOUR FINISHES TO BE CONFIRMED



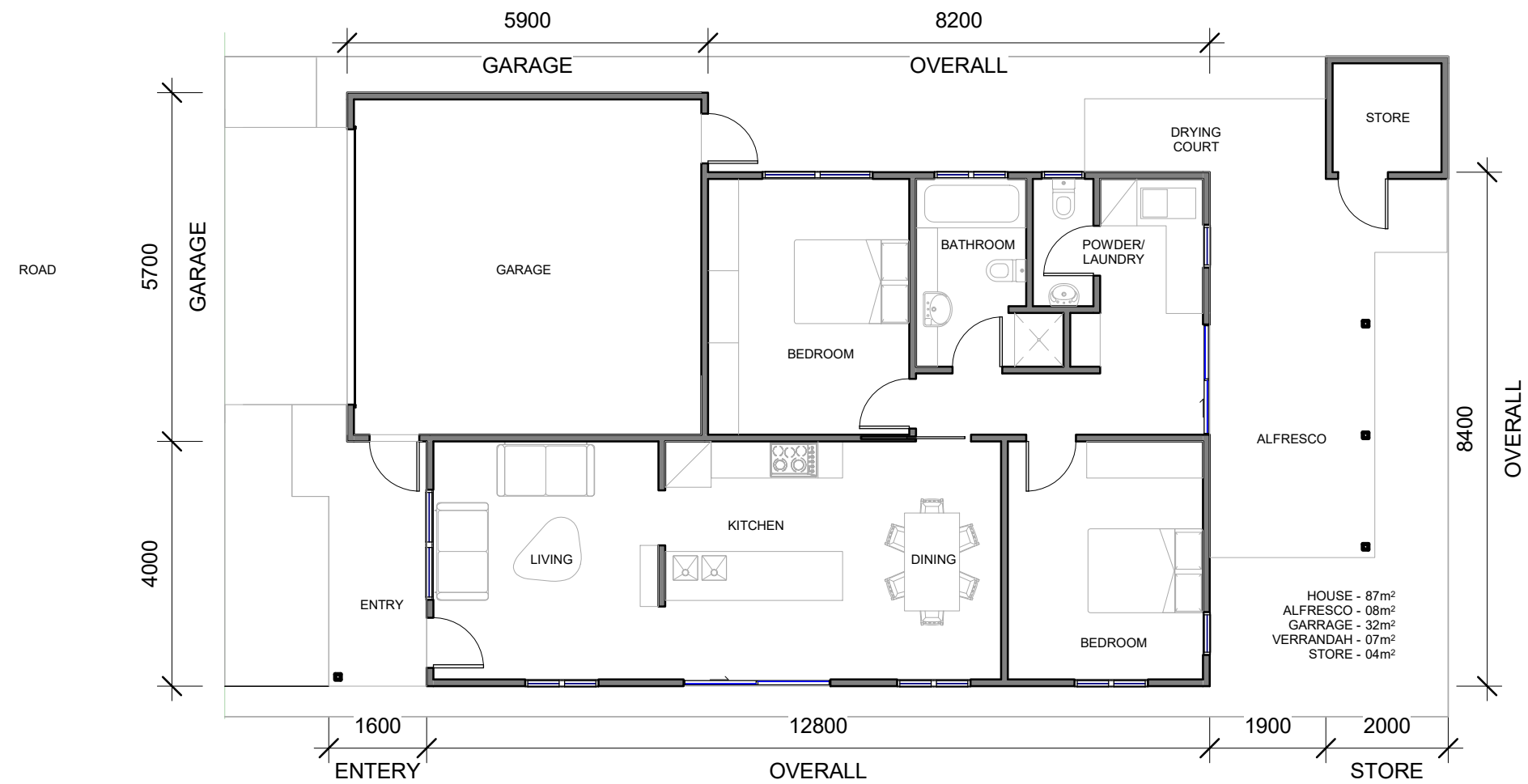
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0	PRELIMINARY	20.03.11
1	HOME NAME UPDATED	20.07.14

'THE NETTLE'
 PROVIDENCE LIFESTYLE
 'G'

ELEVATIONS		
Project number		A-102
Date	20.07.14	
Drawn by	RHA	
Checked by	RHA	
Scale@A3		1: 75



1 FLOOR PLAN
A-101 1:100



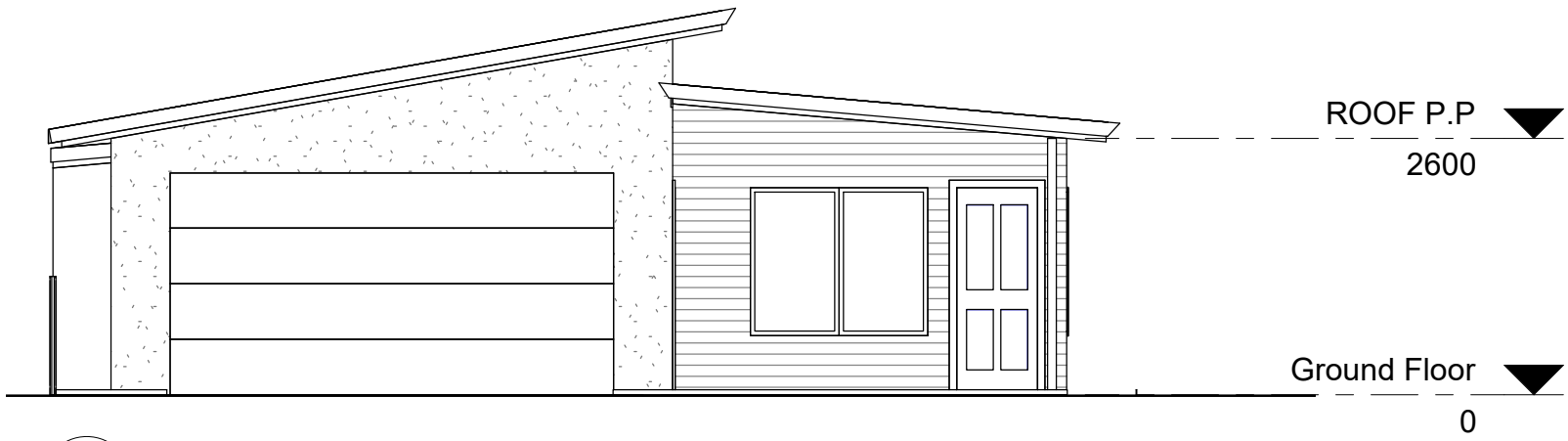
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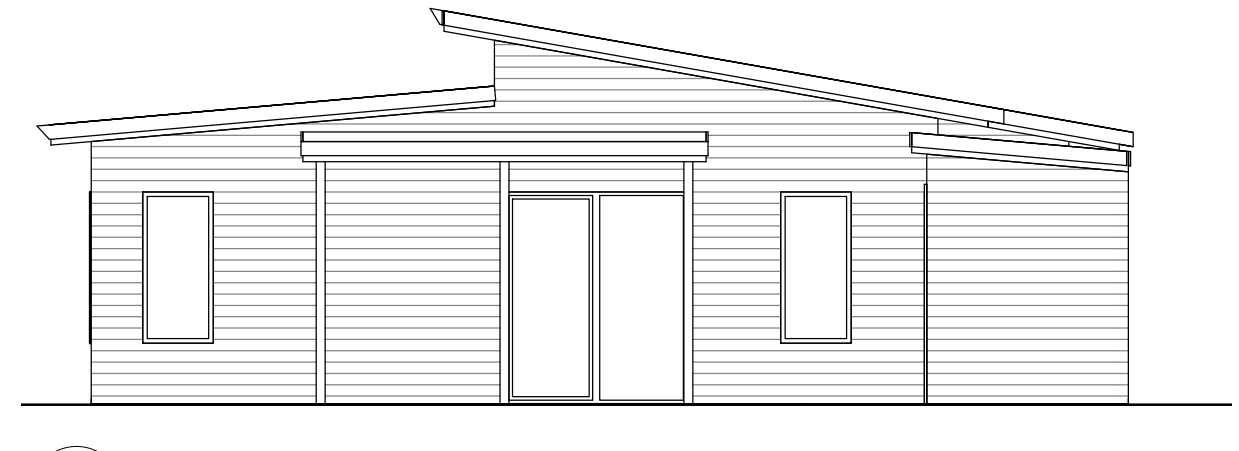
No.	Description	Date
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1	HOME NAME UPDATED	20.07.14

'THE PEPPERMINT'
PROVIDENCE LIFESTYLE
'H'

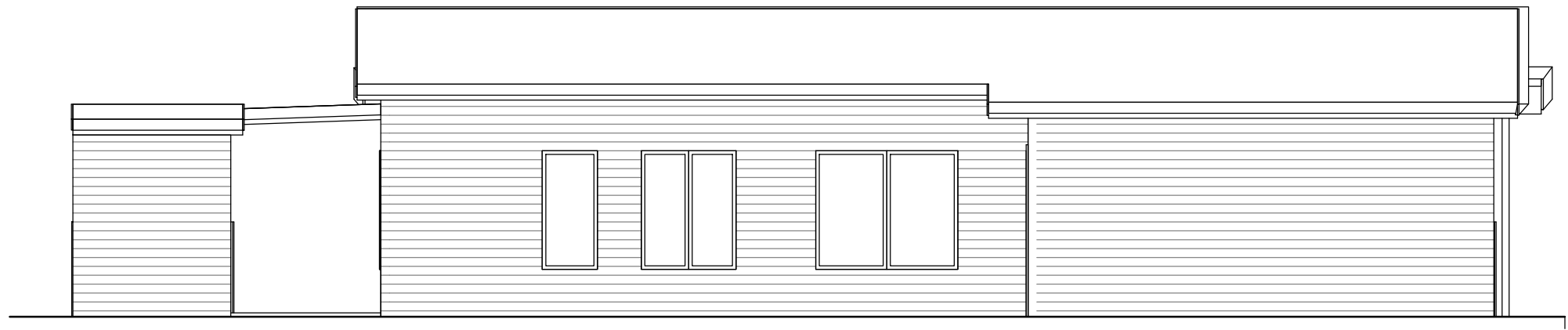
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Project number		A-100	
Date	20.07.14		
Drawn by	RHA		
Checked by	RHA		
Scale@A3		1:100	



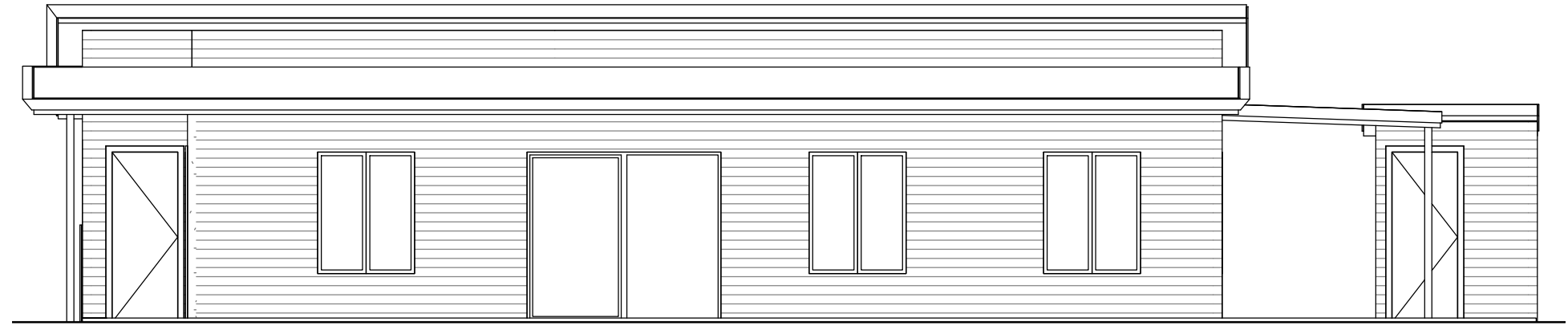
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1:75



2 REAR ELEVATION
1:75



3 SIDE ELEVATION 1
1:75



4 SIDE ELEVATION 2
1:75

MATERIALS AND FINISHES
 STREET ELEVATIONS TO BE PRIMELINE F.C WEATHERBOARD AND FLAT FIBRE CEMENT SHEET w/ ROLL-ON SAND FINISH TEXTURE
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FINAL COLOUR FINISHES TO BE CONFIRMED



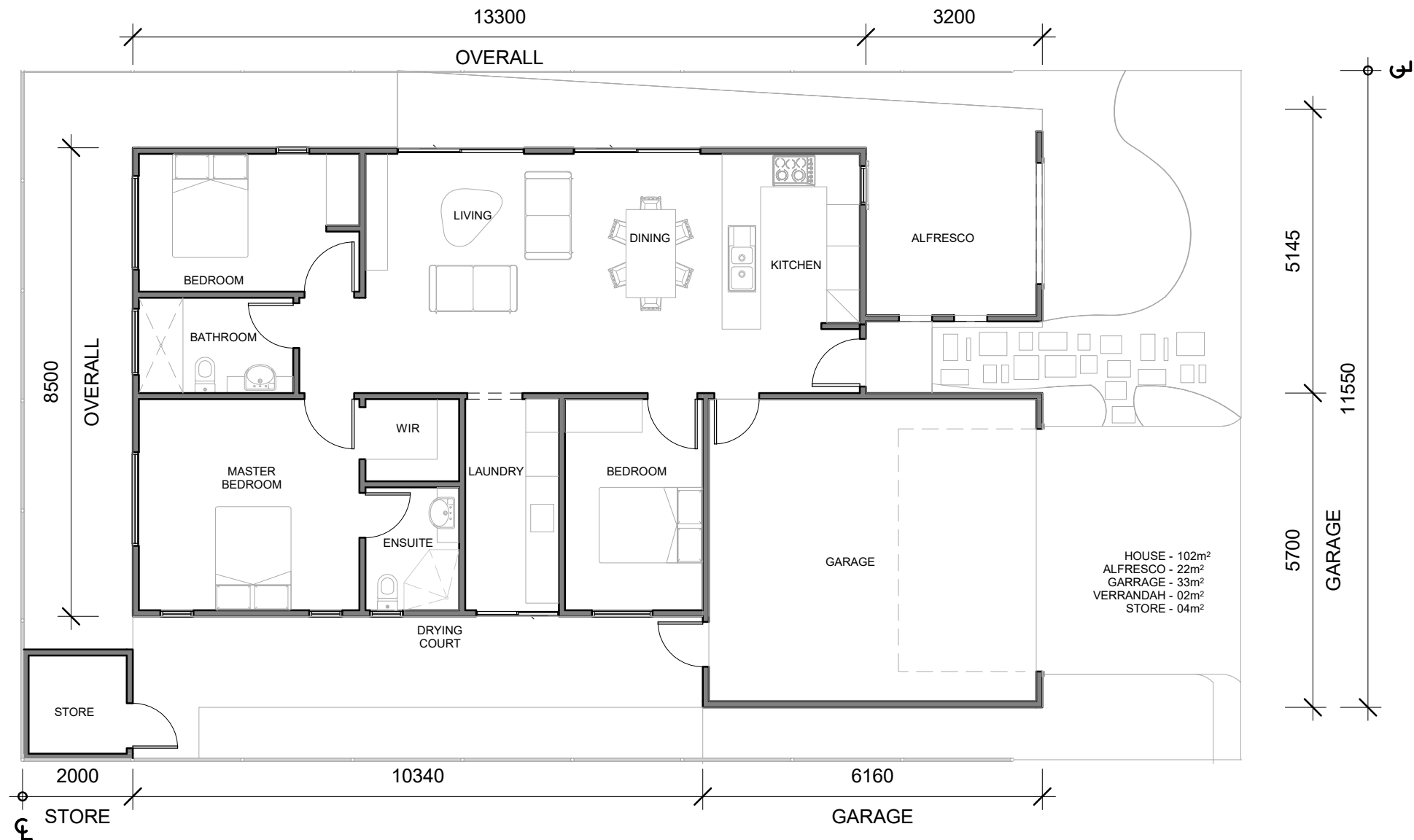
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No.	Description	Date

'THE PEPPERMINT'
 PROVIDENCE LIFESTYLE
 'H'

ELEVATIONS		
Project number	A-101	
Date	20.07.14	
Drawn by	RHA	
Checked by	RHA	Scale@A3
		1:75



1 FLOOR PLAN
A - 101 1 : 100



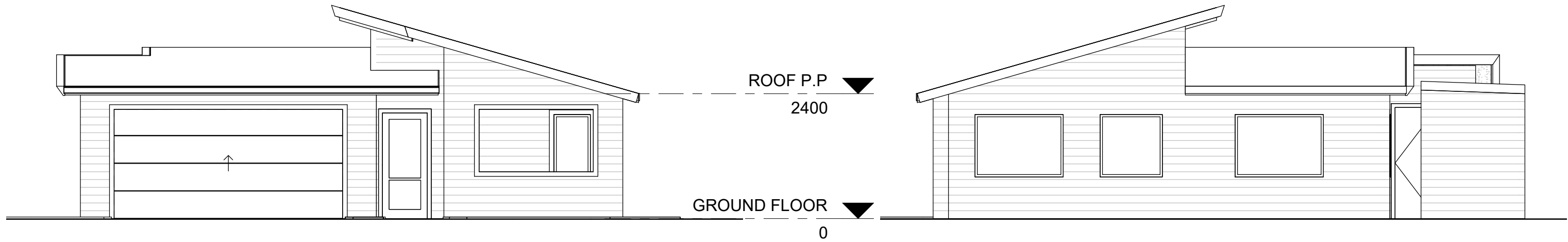
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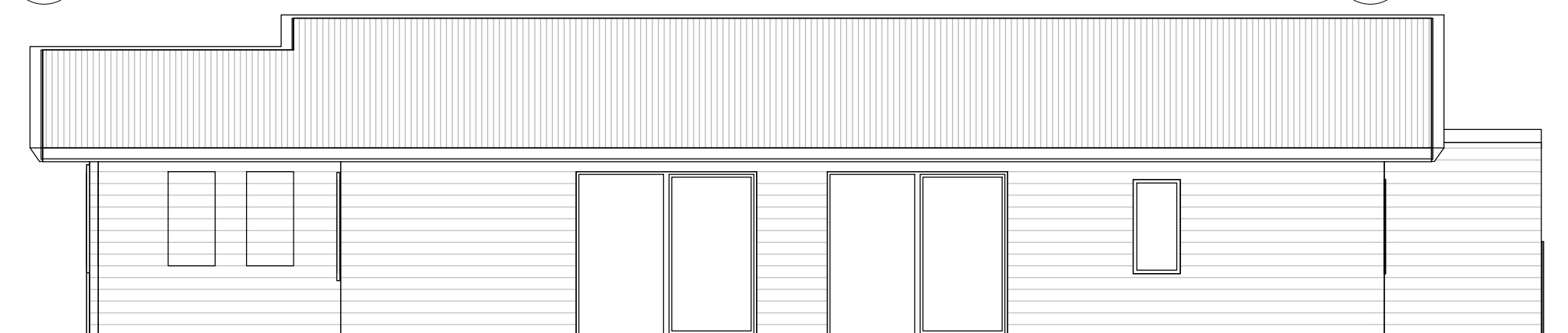
'THE ROSEMARY
PROVIDENCE LIFESTYLE
'I'

FLOOR PLAN		A - 100
Project number		
Date	20.07.14	
Drawn by	RHA	
Checked by	RHA	
Scale@A3	1 : 100	

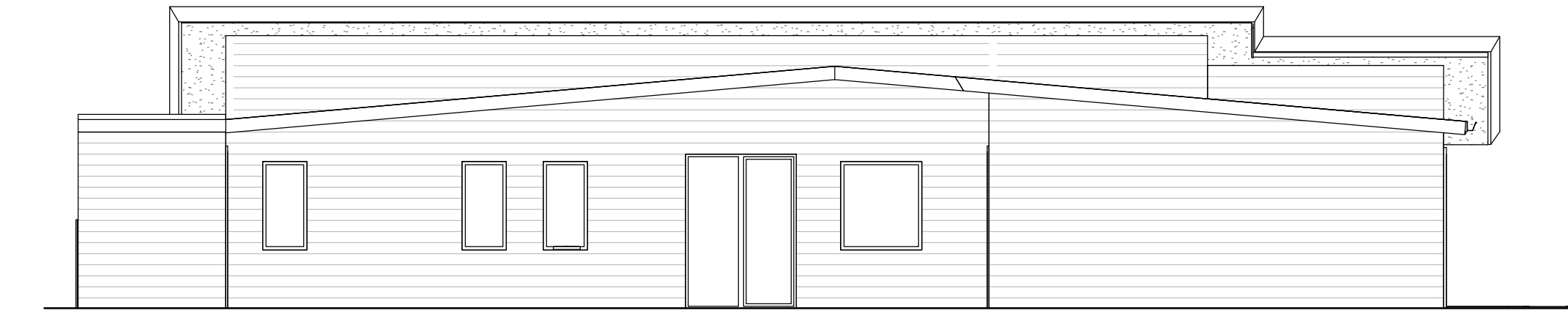


1 STREET ELEVATION
1:75

2 REAR ELEVATION
1:75



3 SIDE ELEVATION 1
1:75



4 SIDE ELEVATION 2
1:75

MATERIALS AND FINISHES
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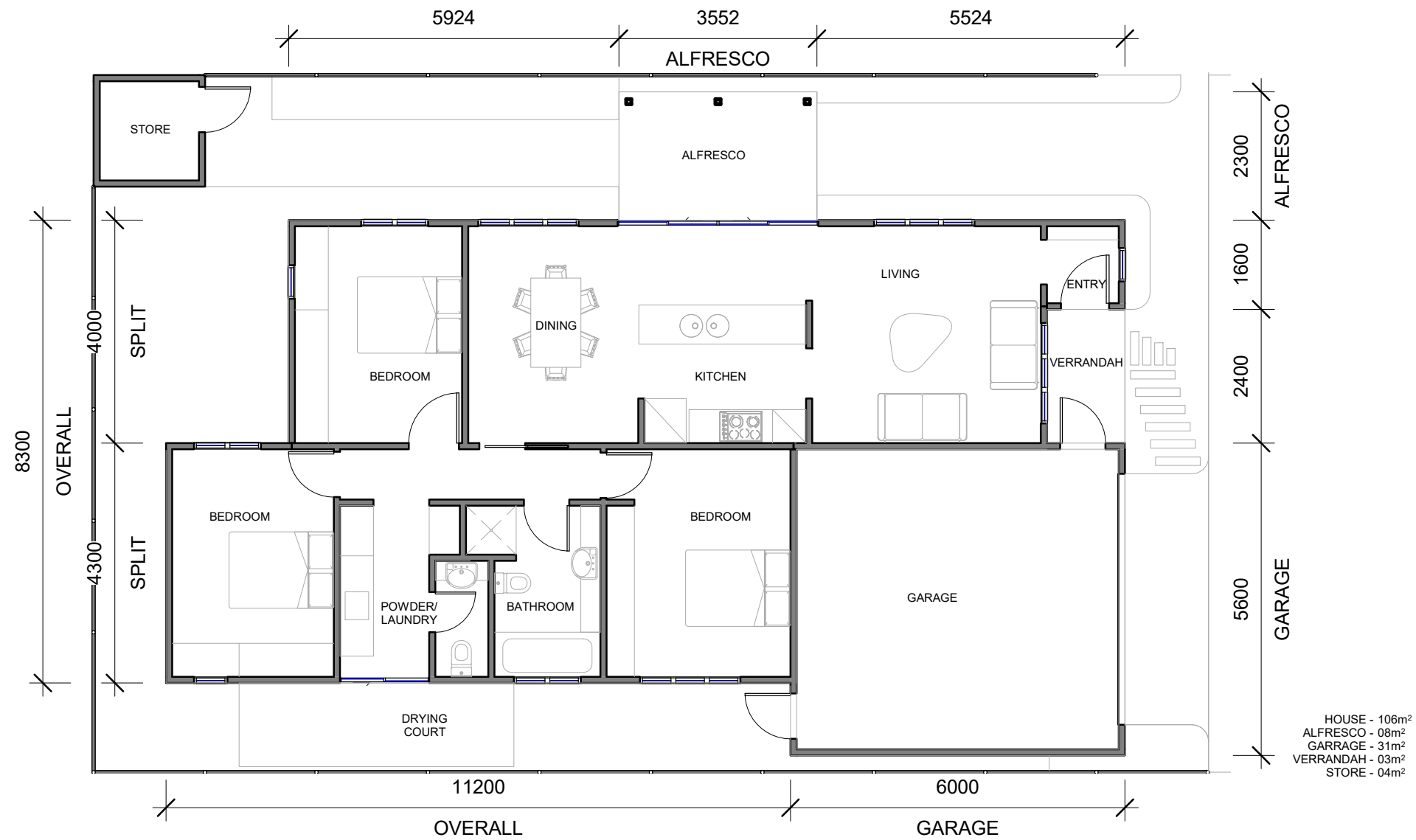
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No.	Description	Date

'THE ROSEMARY
 PROVIDENCE LIFESTYLE
 'I'

ELEVATIONS		
Project number		A - 101
Date	20.07.14	
Drawn by	RHA	
Checked by	RHA	
	Scale@A3	1:75



1 FLOOR PLAN
A-101 1:100



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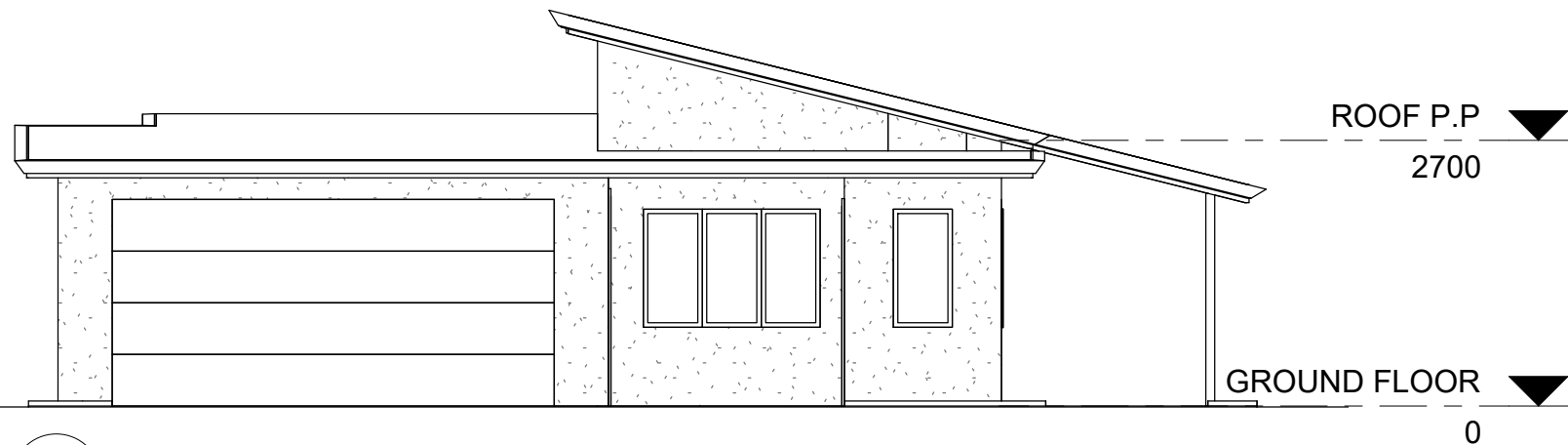
No.	Description	Date
0	PRELIMINARY	20.03.11
1	HOME NAME UPDATED	20.07.14

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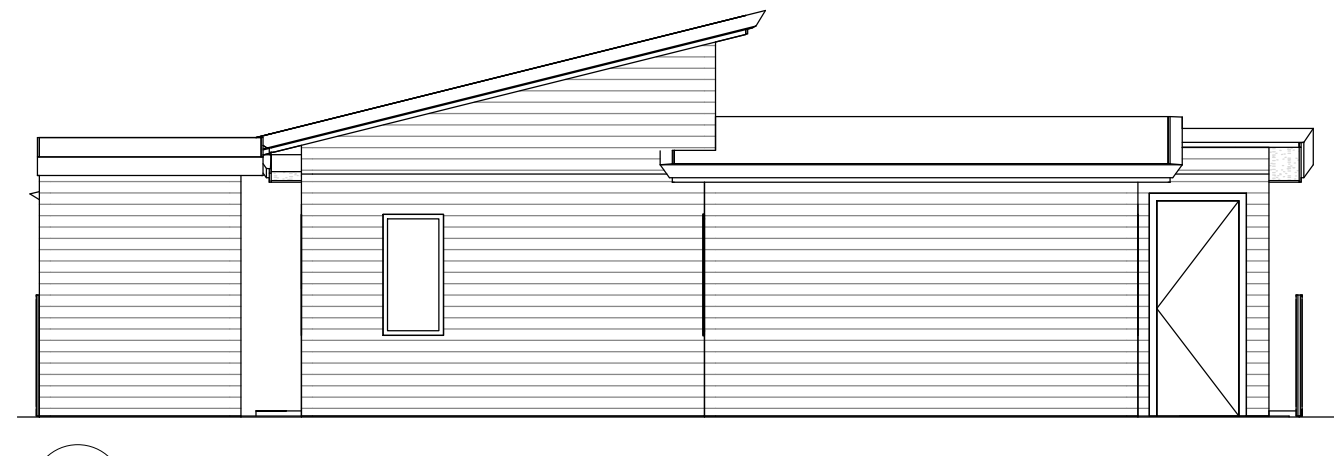
PROVIDENCE LIFESTYLE

'J'

FLOOR PLAN		A-100
Project number		
Date	20.07.14	
Drawn by	RHA	
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Scale@A3	1:100	



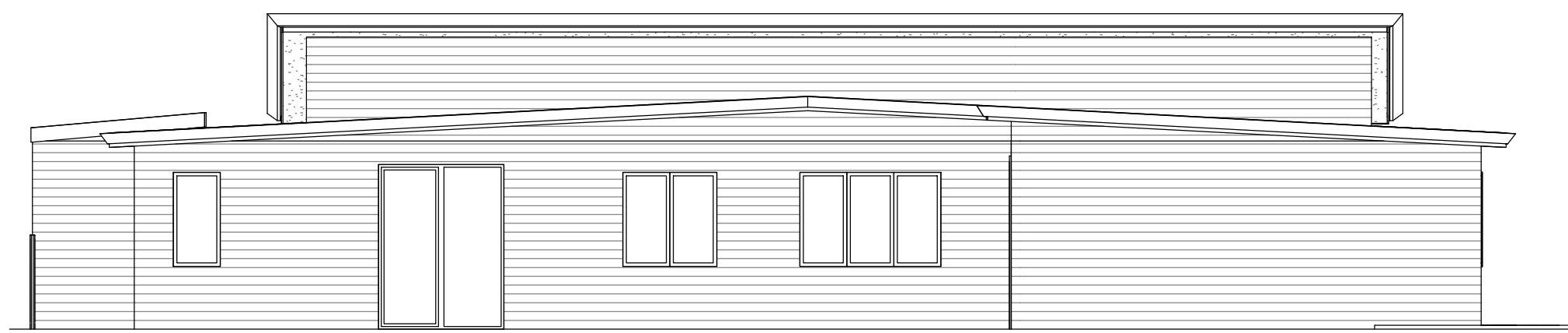
1 STREET ELEVATION
1:75



2 REAR ELEVATION
1:75



3 SIDE ELEVATION 1
1:75



4 SIDE ELEVATION 2
1:75

MATERIALS AND FINISHES
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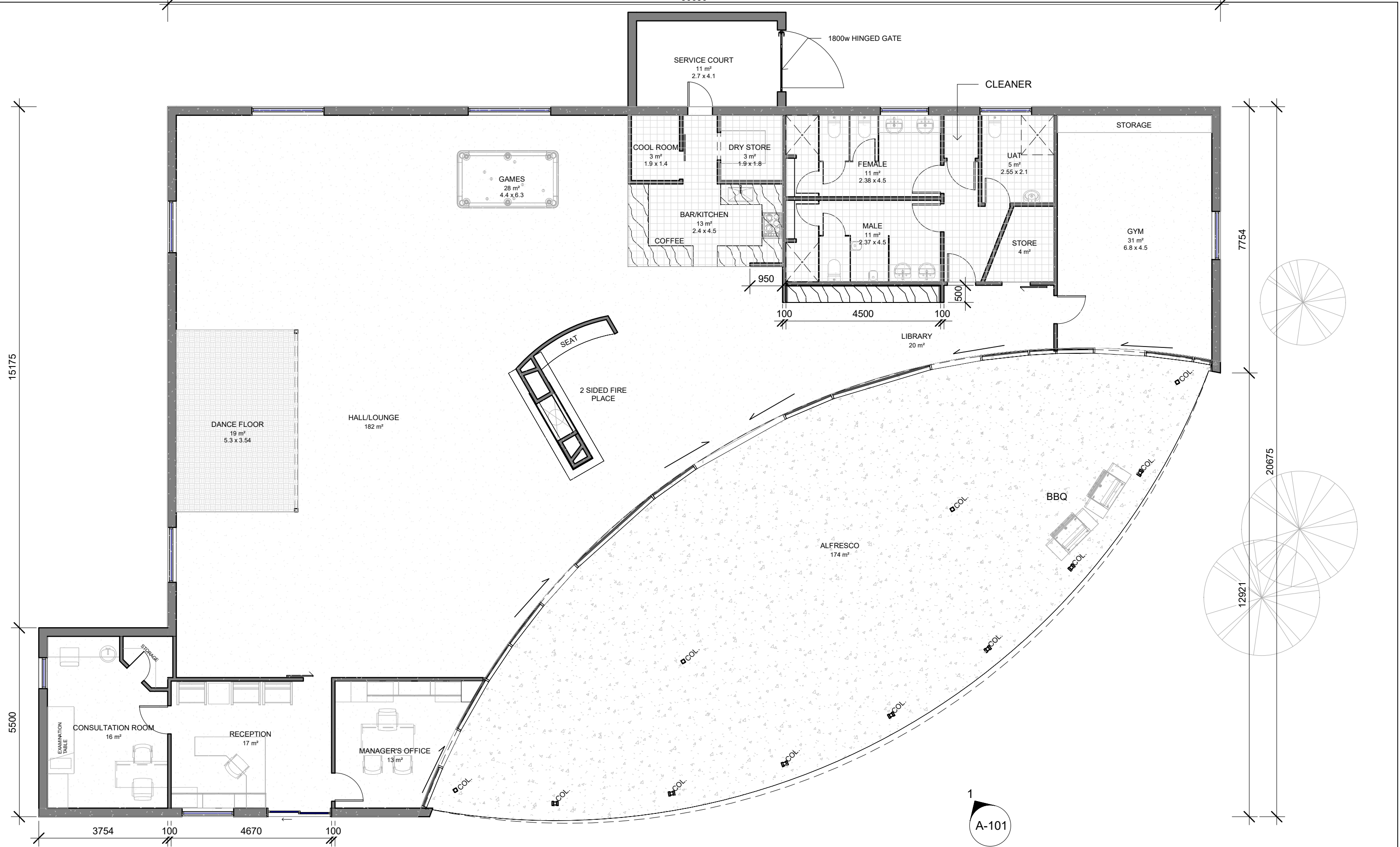
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No.	Description	Date

'THE SANTOLINA'
 PROVIDENCE LIFESTYLE
 'J'

ELEVATIONS		
Project number		A- 101
Date	20.07.14	
Drawn by	RHA	
Checked by	RHA	
	Scale@A3	1:75



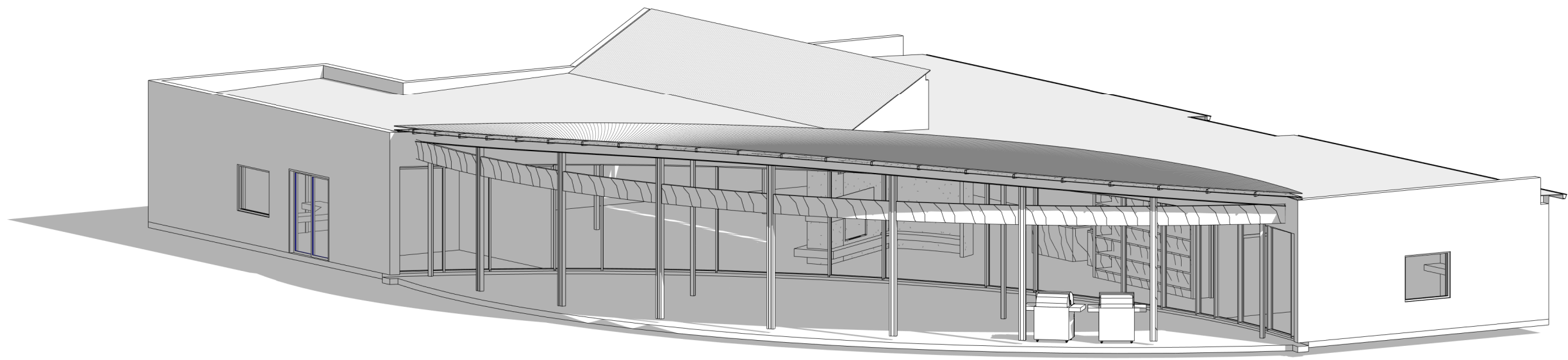
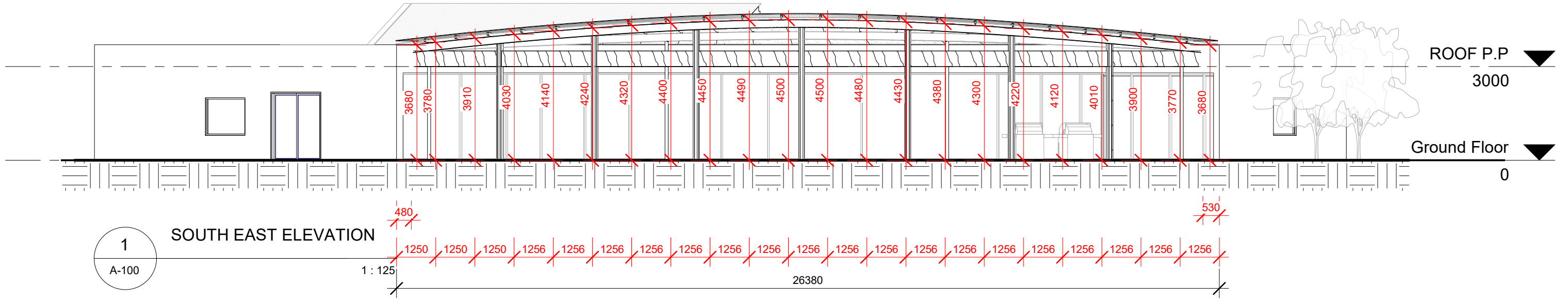
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No.	Description	Date

FURNISSDALE LIFESTYLE VILLAGE
CLUBHOUSE

GROUND PLAN EXTENSION			
Project number	xx	A-102	
Date	17.02.20		
Drawn by	Author		
Checked by	Checker		
		Scale@A3	1 : 100



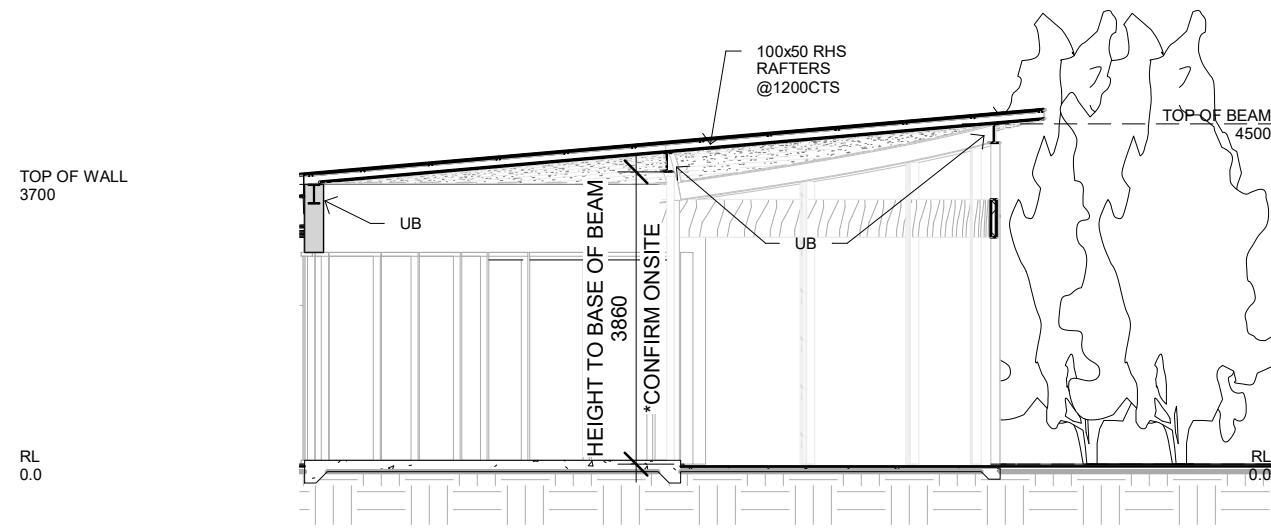
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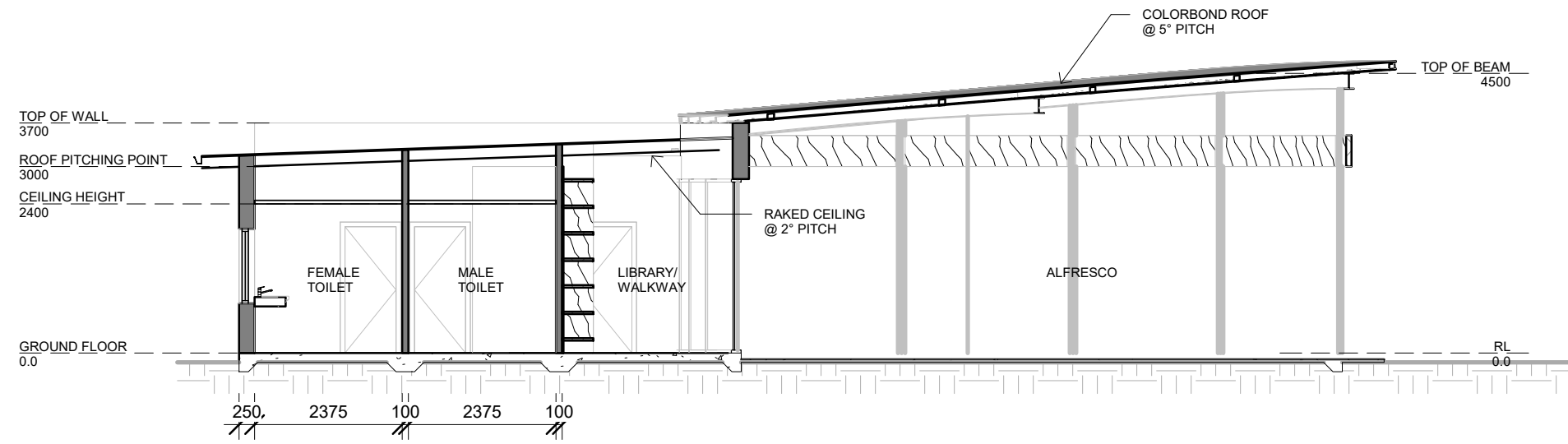
FURNISSDALE LIFESTYLE VILLAGE
CLUBHOUSE

ELEVATION			
Project number	xx	A-101	1 : 125
Date	17.02.20		
Drawn by	RHA		
Checked by	RHA		
Scale@A3			



1 Alfresco Roof Section

1 : 100



2 Bathroom Alfresco Section

1 : 100



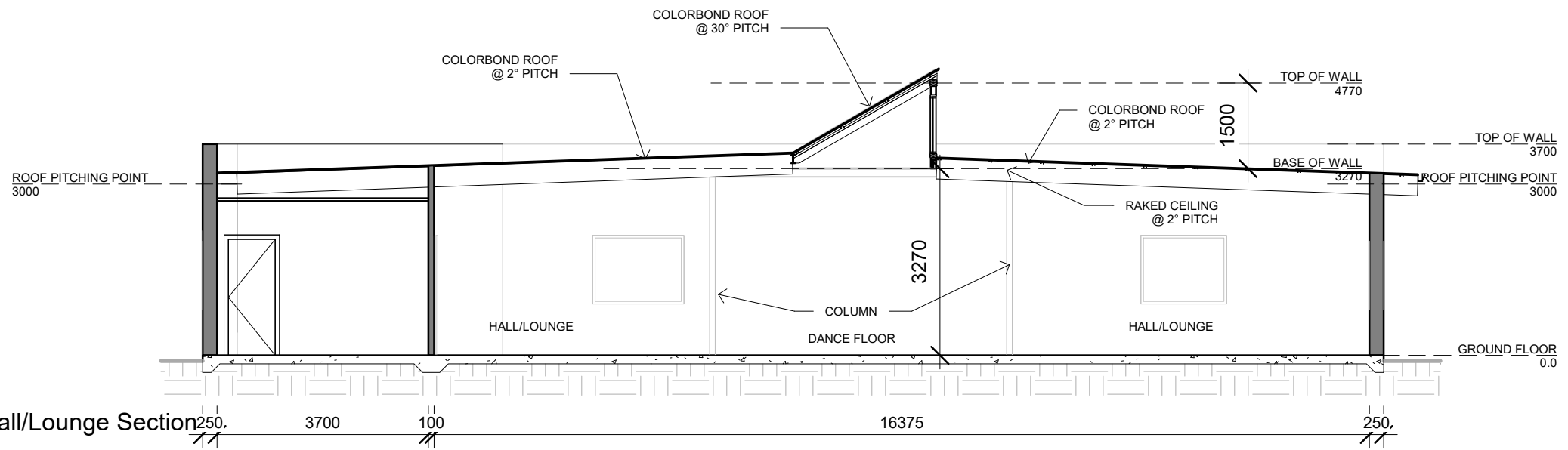
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No.	Description	Date

FURNISSDALE LIFESTYLE VILLAGE
CLUBHOUSE

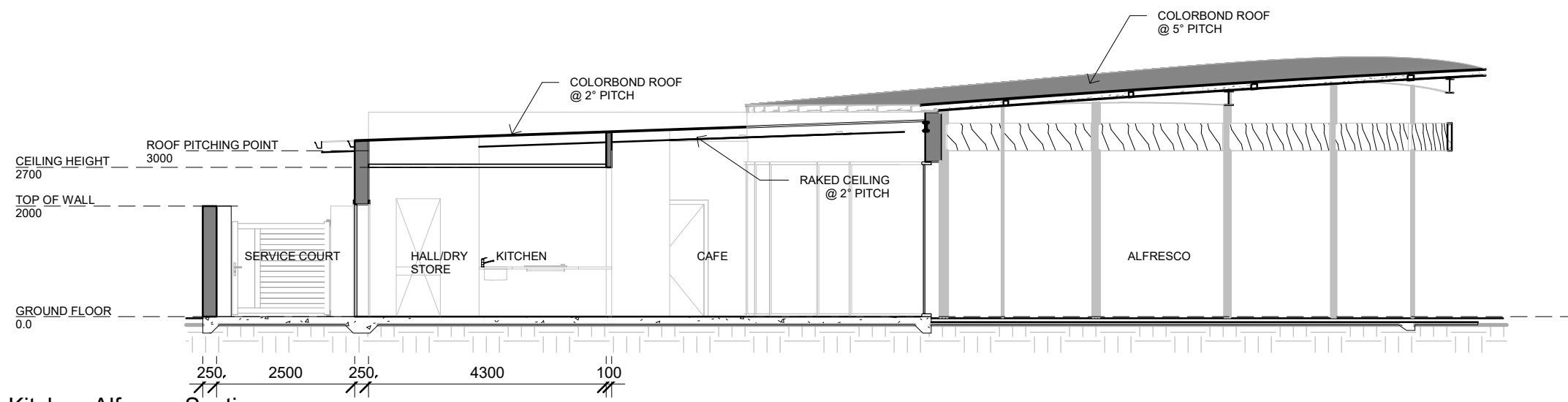
SECTIONS 1		
Project number	xx	A401
Date	17.02.20	
Drawn by	Author	
Checked by	Checker	
Scale@A3	1 : 100	



1
A201

Hall/Lounge Section

1 : 100



2

Kitchen Alfresco Section

1 : 100



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No.	Description	Date

FURNISSDALE LIFESTYLE VILLAGE
CLUBHOUSE

SECTIONS 2		
Project number	xx	A402
Date	17.02.20	
Drawn by	Author	
Checked by	Checker	
Scale@A3		1 : 100

Annexure 4
Geotechnical Study

Report on
GEOTECHNICAL STUDY
PROPOSED LIFESTYLE VILLAGE
607 PINJARRA ROAD, FURNISSDALE

Submitted to:

Kastle WA
Level 1, 247 Oxford Street
LEEDERVILLE WA 6007

www.galtgeo.com.au
50 Edward Street
OSBORNE PARK WA 6017
T: +61 (8) 6272-0200

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FIGURES

FIGURE 1: SITE AND LOCATION PLAN

APPENDICES

- APPENDIX A: SITE PHOTOGRAPHS
- APPENDIX B: TEST PIT REPORTS
- APPENDIX C: INFILTRATION TEST RESULTS
- APPENDIX D: UNDERSTANDING YOUR REPORT

1. INTRODUCTION

This report presents the outcomes of Galt Geotechnics Pty Ltd's (Galt's) geotechnical study for the proposed lifestyle village at 607 Pinjarra Road, Furnissdale ("the site"). The location of the site relative to the surrounding area is shown on Figure 1, Site and Location Plan.

2. SITE DESCRIPTION AND PROPOSED DEVELOPMENT

The site is roughly rectangular in plan and covers an area of approximately 2.8 ha. The site is bounded by a caravan park to the north west, a rural residential property to the south west, Riverside Drive to the south east and Pinjarra Road to the north east.

Published contour information shows the ground surface slopes gently down from about RL 3.5 in the north east corner to about RL 2.0 m AHD in the south west corner.

The site is relatively clear with spreads of trees throughout. The northern corner of the site is occupied by a residence and associated out buildings. We noted a possible old well near the northeast corner of site.

We have not been provided a proposed layout or any details of the development however we assume that the lifestyle village will comprise:

- ✦ a number of single or double storey residential buildings; and
- ✦ associated roads, infrastructure and landscaped areas.

We assume the buildings will be of masonry and/or steel construction and supported on shallow footings and a slab-on-ground.

3. PROJECT OBJECTIVES

The objectives of the study were to:

- ✦ assess subsurface soil and groundwater conditions across the site;
- ✦ provide a site classification(s) in accordance with AS 2870-2011 "Residential Slabs and Footings";
- ✦ recommend appropriate site preparation procedures including compaction criteria;
- ✦ assess the permeability of the soils at the site for potential on-site disposal of stormwater by infiltration; and
- ✦ provide a subgrade California bearing ratio (CBR) value for pavement thickness design by others.

4. FIELDWORK

Fieldwork was carried out on 3 April 2020 and comprised:

- ✦ excavation of test pits at 13 locations (TP01 to TP13) extending to depths ranging from 1.9 m to 2.7 m;
- ✦ testing with a Perth sand penetrometer (PSP) adjacent to each test pit, extending to depths ranging from 1.05 m to 1.95 m; and
- ✦ infiltration tests using the 'inverse auger hole' technique at 2 locations (IT01 & IT02), at depths of 0.87 m and 0.93 m respectively.

General

A geotechnical engineer from Galt selected and positioned the test locations, observed the test pitting, logged the materials encountered and conducted the permeability and penetrometer testing.

The approximate test locations are shown on Figure 1, Site and Location Plan. Photographs of the site taken during the study are presented in Appendix A, Site Photographs.

Details of the tests are presented in Table 1: Summary of Tests.

Table 1: Summary of Tests

Test Name	Test Depth (m)	Reason for Termination	Depth to Groundwater (m)	Stratigraphy ²
TP01	2.3	Collapse	GNE ¹	SAND
TP02	2.4	Target Depth		
TP03	2.6			
TP04	2.6			
TP05	2.6			
TP06	2.0			
TP07	2.6	Target Depth		
TP08	1.9	Collapse		
TP09	2.7	Target Depth		
TP10	2.7			
TP11	2.7			
TP12	2.6			
TP13	2.7			

Notes: 1. GNE – Groundwater not encountered within investigated depth.
2. A surface layer of TOPSOIL: SAND was present at all test locations.

Test Pits

Test pits were excavated using an 8 tonne, JCB 3CX tractor mounted backhoe equipped with a 0.45 m wide toothed bucket. The backhoe was supplied and operated by ANH Contracting. Test pit reports along with a method of soil description and abbreviations used on the reports are presented in Appendix B, Test Pit Reports.

Perth Sand Penetrometer Testing

Perth sand penetrometer (PSP) tests were carried out adjacent to each test pit. Results of the PSP testing are presented in Table 2. The tests were conducted in accordance with test method AS 1289 6.3.3 although to a greater depth than the 0.45 m covered by the standard. Furthermore, blow counts are reported per 150 mm interval.

Table 2: Summary of Perth Sand Penetrometer Test Results (blows / 150 mm)

Depth (mm)	Location												
	TP01	TP02	TP03	TP04	TP05	TP06	TP07	TP08	TP09	TP10	TP11	TP11	TP13
0-150	SET	SET	SET	SET	SET	SET	SET	SET	SET	SET	SET	SET	SET
150-300	2	2	2	3	3	2	2	2	2	4	1	1	1
300-450	3	2	1	4	3	2	3	1	2	4	1	1	2
450-600	3	2	2	3	5	2	4	2	3	3	2	2	1
600-750	3	2	2	4	5	2	4	2	3	4	3	1	2
750-900	4	3	3	4	4	2	3	3	4	3	3	2	2
900-1050	4	3	3	5	3	2	4	3	3	3	3	3	3
1050-1200			4			4		3					
1200-1350			5			4		3					
1350-1500			7			4		3					
1500-1650			5			4		4					
1650-1800			5			5		5					

Note: Highlighted values indicate loose and very loose sand.

Infiltration Tests

Infiltration tests were undertaken using the ‘inverse auger hole’ method described by Cocks¹. The results of the infiltration testing are presented in Appendix C, Infiltration Test Results and are summarised in Table 3: Summary of Infiltration Test Results.

Table 3: Summary of Infiltration Test Results

Test Name/ Test Location	Pipe Embedment (m)	Stratigraphy	Minimum Unsaturated Permeability ¹ , k (m/day)		
			Test 1	Test 2	Test 3
IT01	0.87	SAND	>15	>15	>15
IT02	0.93	SAND	>15	>15	>15

Notes: 1. Permeabilities greater than 15 m/day are not shown due to the inaccuracy of the method in highly permeable soils.

5. SOIL CONDITIONS

5.1 Geology

The Pinjarra sheet of the 1:50,000 scale Urban Geology series map indicates that the area is underlain by Bassendean Sand.

The findings of our investigation indicate that subsurface conditions are consistent with the geology.

¹ Cocks, G (2007), “Disposal of Stormwater Runoff by Soakage in Perth Western Australia”, Journal and News of the Australian Geomechanics Society, Volume 42 No. 3, pp 101-114.

5.2 Subsurface Soil Conditions

The subsurface conditions are relatively consistent across the site and the typical soil profile may be summarised as:

- ❖ TOPSOIL SAND (SP): fine to coarse grained sand, sub-angular to sub-rounded, dark grey to grey, trace fines, trace organics, extending from the surface to depths of around 0.1 m to 0.2 m; overlying
- ❖ SAND (SP): fine to medium grained, sub-angular to sub-rounded, white to pale brown/orange brown, trace fines, extending to maximum investigated depth of 2.7 m.

Variations: 1. Localised layers varying in thickness from about 200 – 400 mm of well cemented sand (likely “coffee rock”) at around 1.3 m depth are present across the site

5.3 Groundwater

The Perth Groundwater Atlas’s (1997 and 2004 editions) do not extend to the site. However, given the Serpentine River is within 200 m to 300 m of the site, we expect the maximum groundwater elevation to be close to the level of the river. We therefore expect groundwater to within about 1.5 m of the current ground surface.

6. GEOTECHNICAL ASSESSMENT

6.1 Site Classification

We consider that the site is geotechnically capable of supporting the proposed development.

We have assessed the site in accordance with AS 2870-2011 “Residential Slabs and Footings”. We consider that a site classification of “Class A” is appropriate provided that the site preparation measures in Section 6.2 are followed.

Note: AS 2870 is limited to single and double storey residential buildings and is not strictly applicable for the proposed development. This must be taken into account by the structural engineers.

6.2 Site Preparation

The site preparation measures outlined below are aimed at preparation of the site for construction of structures including on-ground slabs, shallow footings and pavements.

- ❖ Demolish existing structures and pavements, including removal of all buried services and footings and dispose off-site.
- ❖ Remove any demolition debris and other deleterious material from site including old footings, slabs, soak wells, buried services, paving and building rubble. We noted an old well in the northeast corner of site.
- ❖ Strip topsoil from grassed areas (where required) of the site and dispose off-site or re-use in landscaping. We recommend a 200 mm thick topsoil strip, or as required to adequately remove all roots. We note thick roots are present to depths of at least 600 mm in some areas across the site.
- ❖ Remove trees (as required) and grub out the associated roots. This may require relatively deep excavations to remove the root systems. Any holes formed during removal must be backfilled with approved fill as outlined in Section 6.4 (where required) and compacted in layers of no greater than 300 mm loose thickness compacted to achieve the minimum density specified in Section 6.3.
- ❖ Moisture condition and compact the exposed sandy ground to achieve the minimum density specified in Section 6.3 to a depth of 0.9 m.
- ❖ Any areas of loose sand or unsuitable material must be removed and replaced with approved fill as outlined in Section 6.4 .

- ✦ Where fill is required to build up levels, use approved fill (see Section 6.4), placed and compacted in layers of no greater than 300 mm loose thickness. Each layer must be placed and compacted to achieve the minimum density specified in Section 6.3.
- ✦ Excavate for pad and strip footings and compact the exposed bases to achieve the density specified in Section 6.3 to a depth of at least 0.9 m below the underside of all footings.

Remediation of Existing Well

The Department of Water and Environmental Regulation has mandatory requirements for decommissioning water bores outlined in Section 18 of the Minimum Construction Guidelines for Water Bores in Australia².

We recommend fully grouting the well as follows:

- ✦ Measure the approximate volume of the well (up to 1.5 m below finished surface level).
- ✦ Fill the well with a highly flowable lean-mix concrete (minimum UCS: 5 MPa). Check that the volume of concrete used is equal to the calculated volume of the well (a significant difference would indicate that voids remain in the well).
- ✦ Remove the casing to the level of the concrete.
- ✦ Backfill with compacted approved fill (as per above site preparation).

6.3 Compaction

Approved granular fill and the *in situ* sand must be compacted using suitable compaction equipment to achieve a dry density ratio (DDR) of at least 95% of maximum modified dry density (MMDD) as determined in accordance with AS 1289.5.2.1 at a moisture content of within 2% of the optimum moisture content (OMC).

Where clean sand (<5% gravel, <5% fines) is used as fill, a Perth sand penetrometer (PSP) may be used for compaction control. The following minimum PSP blow counts may be assumed to correlate to the required DDR:

- ✦ 150 mm-450 mm: 8
- ✦ 450 mm-750 mm: 10
- ✦ 750 mm-900 mm: 6 (or 750 mm-1050 mm: 12)

If difficulties are experienced in achieving the required blow count, an on-site PSP calibration should be undertaken to determine the site-specific blow count required to achieve the required dry density ratio.

Over-excavation and replacement of loose materials must be performed where the minimum dry DDR cannot be achieved.

Fill must be placed in horizontal layers of not greater than 300 mm loose thickness. Each layer must be compacted by suitable compaction equipment, and carefully controlled to ensure even compaction over the full area and depth of each layer.

Compaction Vibrations

Care will need to be taken when compacting in the vicinity of existing services and structures. This is particularly important if vibratory compaction is being carried out. Tynan (1973)³ provides assistance with the selection of compaction equipment for use adjacent to services.

² Refer: https://www.water.wa.gov.au/_data/assets/pdf_file/0005/1796/Minimum-construction-guidelines-for-water-bores-in-Australia-V3.pdf

³ Tynan (1973) Ground Vibration and Damage Effects on Buildings, Australia Road Research Board, Special Report No. 11.

Test Frequency

After compaction, verify that the required level of compaction has been achieved by testing at the base of excavation and through the full depth of any fill and to a minimum depth of 0.9 m. The frequency of testing should be as follows:

- ✦ on each lift of fill at the rate of 1 test per 500 m³ or at least 2 tests per layer (4 tests per layer below the building footprint), whichever is greater;
- ✦ at each spread footing;
- ✦ at 5 m centres below strip footings and retaining walls; and
- ✦ at 10 m centres below on-ground slabs and pavements.

6.4 Approved Fill

Imported granular fill must comply with the material requirements as stated in AS 3798-2007, "Guidelines on Earthworks for Commercial and Residential Developments". We consider that the *in situ* sand is suitable for re-use as structural fill.

Generally, the sand present at the site is suitable for re-use as inert structural fill.

Any organic-rich sand or sand containing significant proportions of fines (>5% of material less than 0.075 mm in size) must not be used as inert structural fill.

Where doubt exists, a geotechnical engineer must be engaged to inspect and approve the use of potential fill materials.

6.5 Stormwater Disposal

The infiltration test results indicate that the minimum unsaturated permeability of the *in situ* sand was greater than 15 m/day.

Notwithstanding the results of the permeability testing, we recommend a design value of permeability (k) not greater than 5 m/day for single soak wells. This is to allow for the variability in materials and reduced permeability as a consequence of:

- ✦ densification of sand during site preparation works;
- ✦ the variability of the natural sands; and
- ✦ clogging of the sand around soak wells and soakage basins over time with fines.

Soak wells should be placed outside a line of 1V:2H extending below the edge of the nearest footing. Discharge from soak wells has been known to promote densification of loose sandy soils, leading to settlements of footings and slabs. Soak wells should be carefully wrapped with geotextile to prevent migration of sand and fines into the soak well.

6.6 Pavement Subgrades

Pavement thickness design may be undertaken assuming a subgrade California bearing ratio (CBR) of 10%. This assumes that the site preparation guidelines in Section 6.2 have been carried out on the subgrade prior to construction of the pavement.

7. CLOSURE

We draw your attention to Appendix D of this report, "Understanding your Report". The information provided within is intended to inform you as to what your realistic expectations of this report should be. This information is provided not to reduce the level of responsibility accepted by Galt, but to ensure that all parties who rely on this report are aware of the responsibilities each assumes in so doing.

GALT GEOTECHNICS PTY LTD



Fred Davenport CPEng

Geotechnical Engineer



Piravin Anandacoomaraswamy

Geotechnical Engineer

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- Legend**
- Site Boundary
 - Infiltration Test
 - + Test Pit
 - ★ Possible Old Well

NOTES
Aerial Imagery and Cadastre sourced from Landgate/SLIP



SCALE	1:1,000	(A3)
DRAWN	CED	
DATE DRAWN	17/04/2020	
CHECKED	FAD	
DATE CHECKED	17/04/2020	
PROJECTION	GDA 1994 MGA Zone 50	

Galt GEOTECHNICS

Galt Geotechnics Pty Ltd
 ACN : 138 490 865
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CLIENT	KASTLE WA		
PROJECT	PROPOSED LIFESTYLE VILLAGE		
LOCATION	607 PINJARRA ROAD FURNISSDALE		
TITLE	SITE & LOCATION PLAN		
Job No	J2001073	Fig No	FIGURE 1
		Rev	A



Appendix A: Site Photographs



Photograph 1: Excavation of test pit at TP04



Photograph 2: Looking southwest from near TP07



Photograph 3: Possible old well in northeast part of site



Photograph 4: Looking east from near TP04



Photograph 5: Looking northwest from near TP07



Photograph 6: Building rubble on the surface near TP10



Appendix B: Test Pit Reports

EXPLANATORY NOTES TO BE READ WITH BOREHOLE AND TEST PIT REPORTS



METHOD OF DRILLING OR EXCAVATION

AC	Air Core	E	Excavator	PQ3	PQ3 Core Barrel
AD/T	Auger Drilling with TC-Bit	EH	Excavator with Hammer	PT	Push Tube
AD/V	Auger Drilling with V-Bit	HA	Hand Auger	R	Ripper
AT	Air Track	HMLC	HMLC Core Barrel	RR	Rock Roller
B	Bulldozer Blade	HQ3	HQ3 Core Barrel	SON	Sonic Rig
BH	Backhoe Bucket	N	Natural Exposure	SPT	Driven SPT
CT	Cable Tool	NMLC	NMLC Core Barrel	WB	Washbore
DT	Diatube	PP	Push Probe	X	Existing Excavation

SUPPORT

T Timbering

PENETRATION EFFORT (RELATIVE TO THE EQUIPMENT USED)

VE	Very Easy	E	Easy	F	Firm
H	Hard	VH	Very Hard		

WATER

▶	Water Inflow	▼	Water Level
◀	Water Loss (complete)		
◁	Water Loss (partial)		

SAMPLING AND TESTING

B	Bulk Disturbed Sample	P	Piston Sample
BLK	Block Sample	PBT	Plate Bearing Test
C	Core Sample	U	Undisturbed Push-in Sample
CBR	CBR Mould Sample		U50: 50 mm diameter
D	Small Disturbed Sample	SPT	Standard Penetration Test
ES	Environmental Soil Sample		Example: 3, 4, 5 N=9
EW	Environmental Water Sample		3,4,5: Blows per 150 mm
G	Gas Sample		N=9: Blows per 300 mm after
HP	Hand Penetrometer		150 mm seating interval
LB	Large Bulk Disturbed Sample	VS	Vane Shear; P = Peak
M	Mazier Type Sample		R = Remoulded (kPa)
MC	Moisture Content Sample	W	Water Sample

ROCK CORE RECOVERY

$$TCR = \text{Total Core Recovery (\%)} = \frac{CRL}{TCL} \times 100$$

$$RQD = \text{Rock Quality Designation (\%)} = \frac{ALC > 100}{TCL} \times 100$$

TCL Length of Core Run

CRL Length of Core Recovered

ALC>100 Total Length of Axial Lengths of Core Greater than 100 mm Long

METHOD OF SOIL DESCRIPTION BOREHOLE AND TEST PIT REPORTS



GRAPHIC LOG & SOIL CLASSIFICATION SYMBOLS

Graphic	USCS	Soil Name
		FILL (various types)
		COBBLES / BOULDERS
	GP	GRAVEL (poorly graded)
	GW	GRAVEL (well graded)
	GC	Clayey GRAVEL
	GM	Silty GRAVEL
	SP	SAND (poorly graded)
	SW	SAND (well graded)
	SC	Clayey SAND

Graphic	USCS	Soil Name
	SM	Silty SAND
	ML	SILT (low liquid limit)
	MH	SILT (high liquid limit)
	CL	CLAY (low plasticity)
	CI	CLAY (medium plasticity)
	CH	CLAY (high plasticity)
	OL	Organic SILT (low liquid limit)
	OH	Organic SILT (high liquid limit)
	Pt	PEAT

NOTE: Dual classification given for soils with a fines content between 5% and 12%.

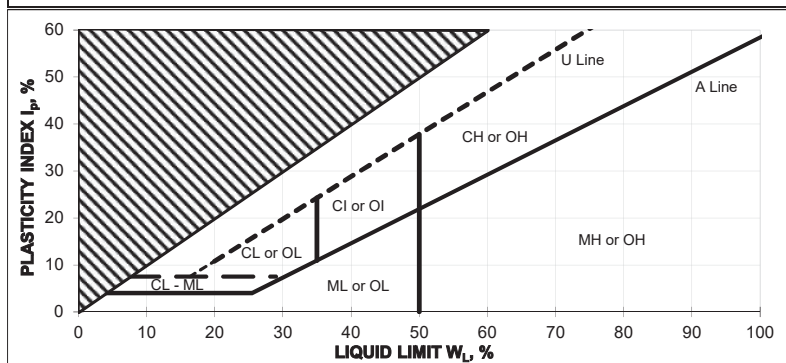
SOIL CLASSIFICATION AND INFERRED STRATIGRAPHY

Soil descriptions are based on AS1726-2017. Material properties are assessed in the field by visual/tactile methods in combination with field and laboratory testing techniques (where used).

NOTE: AS 1726-2017 defines a fine grained soil where the total dry mass of fine fractions (<0.075 mm particle size) exceeds 35%.

PARTICLE SIZE		
Soil Name	Particle Size (mm)	
BOULDERS	>200	
COBBLES	63 to 200	
GRAVEL	Coarse	19 to 63
	Medium	6.7 to 19
	Fine	2.3 to 6.7
SAND	Coarse	0.6 to 2.36
	Medium	0.21 to 0.6
	Fine	0.075 to 0.21
FINES	SILT	0.002 to 0.075
	CLAY	<0.002

PLASTICITY - MODIFIED CASAGRANDE CHART - AS1726-2017



RESISTANCE TO EXCAVATION		
Symbol	Term	Description
VE	Very easy	All resistances are relative to the selected method of excavation
E	Easy	
F	Firm	
H	Hard	
VH	Very hard	

MOISTURE CONDITION	
Symbol	Term
D	Dry
M	Moist
W	Wet








CEMENTATION	
Cementation	Description
Weakly cemented	Soil may be easily disaggregated by hand in air or water
Moderately cemented	Effort is required to disaggregate the soil by hand in air or water

CONSISTENCY		
Symbol	Term	Undrained Shear Strength (kPa)
VS	Very Soft	0 to 12
S	Soft	12 to 25
F	Firm	25 to 50
St	Stiff	50 to 100
VSt	Very Stiff	100 to 200
H	Hard	>200

ORGANIC SOILS	
Material	Organic Content % of dry mass
Inorganic soil	<2%
Organic soil	2% to 25%
Peat	>25%

DENSITY		
Symbol	Term	Density Index (%)
VL	Very Loose	<15
L	Loose	15 to 35
MD	Medium Dense	35 to 65
D	Dense	65 to 85
VD	Very Dense	>85

Job Number: J2011073 Client: Kastle Project: Proposed Lifestyle Village Location: 607 Pinjarra Road, Furnissdale	Contractor: ANH Contracting Machine: JCB3CX Operator: Neil Bucket: 450 mm Rock	Date: 03/04/2020 Logged: PA Checked Date: 17/04/2020 Checked By: FAD
---	---	---

Excavation				Sampling			Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	SOIL CLASS	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
BH	E		0.0				SP	TOPSOIL: SAND, fine to coarse grained, sub-angular to sub-rounded, dark grey to grey, trace fines, trace organics				Trace roots (up to 30 mm diameter) in TP wall up to 700 mm deep
			0.5					SAND: fine to coarse grained, sub-angular to sub-rounded, grey to white, trace fines Becoming fine to medium grained	D	MD		
			1.0									
			1.5				SP					
			2.0					Becoming pale brown				
			2.5									
			3.0					Hole terminated at 2.30 m Terminated due to collapse Groundwater not encountered				

Sketch & Other Observations






Area for sketching and other observations, currently blank.

Comments:

See Explanatory Notes and Method of Soil Description sheets for details of abbreviations and basis of descriptions

Job Number: J2011073 Client: Kastle Project: Proposed Lifestyle Village Location: 607 Pinjarra Road, Furnissdale	Contractor: ANH Contracting Machine: JCB3CX Operator: Neil Bucket: 450 mm Rock	Date: 03/04/2020 Logged: PA Checked Date: 17/04/2020 Checked By: FAD
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Excavation				Sampling			Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	SOIL CLASS	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
BH	E		0.0				SP	TOPSOIL: SAND, fine to coarse grained, sub-angular to sub-rounded, dark grey to grey, trace fines, trace organics				Significant amount of roots (less than 60 mm thick) up to 600 mm deep Trace roots (thin roots less than 10 mm thick) up to 1.3 m deep
			0.5					SAND: fine to coarse grained, sub-angular to sub-rounded, grey to white, trace fines		L		
			1.0					SP	Becoming pale yellow to orange brown		MD	
			1.5							D		
			2.0									
			2.5					Hole terminated at 2.40 m Target depth Groundwater not encountered				
			3.0									

Sketch & Other Observations



Comments:

See Explanatory Notes and Method of Soil Description sheets for details of abbreviations and basis of descriptions

Job Number: J2011073 Client: Kastle Project: Proposed Lifestyle Village Location: 607 Pinjarra Road, Furnissdale	Contractor: ANH Contracting Machine: JCB3CX Operator: Neil Bucket: 450 mm Rock	Date: 03/04/2020 Logged: PA Checked Date: 17/04/2020 Checked By: FAD
---	---	---

Excavation				Sampling			Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	SOIL CLASS	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
BH	E		0.0			[Graphic Log: Topsoil]	SP	TOPSOIL: SAND, fine to coarse grained, sub-angular to sub-rounded, dark grey to grey, trace fines, trace organics				Significant amount of roots (less than 50 mm thick) up to 0.5 m deep Trace thin roots down to 2.0 m deep
			0.5			[Graphic Log: Sand]		SAND: fine to medium grained, sub-angular to sub-rounded, white, trace fines			L / MD	
			1.5			[Graphic Log: Coffee rock]	SP	Becoming grey mottled brown with localised well cemented areas (likely "coffee rock")			D	
			2.0			[Graphic Log: Orange-brown]		Becoming orange-brown			MD / D	
			2.5			[Graphic Log: Termination]		Hole terminated at 2.60 m Target depth Groundwater not encountered			M	

Sketch & Other Observations



Comments:

See Explanatory Notes and Method of Soil Description sheets for details of abbreviations and basis of descriptions

Job Number: J2011073 Client: Kastle Project: Proposed Lifestyle Village Location: 607 Pinjarra Road, Furnissdale	Contractor: ANH Contracting Machine: JCB3CX Operator: Neil Bucket: 450 mm Rock	Date: 03/04/2020 Logged: PA Checked Date: 17/04/2020 Checked By: FAD
---	---	---

Excavation				Sampling			Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	SOIL CLASS	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
BH	E		0.0			[Graphic Log Symbols]	SP	TOPSOIL: SAND, fine to coarse grained, sub-angular to sub-rounded, dark grey, trace fines, trace organics, trace rootlets				Significant amount of roots present in TP wall to 0.3 m Trace small roots present to approximately 1.5 m depth
			0.5			[Graphic Log Symbols]		SAND: fine to medium grained, sub-angular to sub-rounded, white, trace fines		MD		
			1.0			[Graphic Log Symbols]		Becoming pale yellow to orange ----- SP		D		
			2.5			[Graphic Log Symbols]		Hole terminated at 2.60 m Target depth Groundwater not encountered		M		
			3.0									

Sketch & Other Observations









Comments:	See Explanatory Notes and Method of Soil Description sheets for details of abbreviations and basis of descriptions
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Job Number: J2011073
Client: Kastle
Project: Proposed Lifestyle Village
Location: 607 Pinjarra Road, Furnissdale

Contractor: ANH Contracting
Machine: JCB3CX
Operator: Neil
Bucket: 450 mm Rock

Date: 03/04/2020
Logged: PA
Checked Date: 17/04/2020
Checked By: FAD

Excavation				Sampling			Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	SOIL CLASS	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
BH	E		0.0				SP	TOPSOIL: SAND, fine to coarse grained, sub-angular to sub-rounded, dark grey, trace fines, trace organics		MD		Moderate amount of roots (less than 20 mm thick) present in TP wall to 0.4 m depth
			0.5					SAND: fine to medium grained, sub-angular to sub-rounded, white, trace fines				
			1.0									
			1.5				SP	Becoming orange-brown, localised well cemented pockets		D		
			2.0					No cementation				
			2.5									
			3.0					Hole terminated at 2.60 m Target depth Groundwater not encountered				


Sketch & Other Observations



Comments:

See Explanatory Notes and Method of Soil Description sheets for details of abbreviations and basis of descriptions

Job Number: J2011073 Client: Kastle Project: Proposed Lifestyle Village Location: 607 Pinjarra Road, Furnissdale	Contractor: ANH Contracting Machine: JCB3CX Operator: Neil Bucket: 450 mm Rock	Date: 03/04/2020 Logged: PA Checked Date: 17/04/2020 Checked By: FAD
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Excavation				Sampling			Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	SOIL CLASS	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
BH	E		0.0				SP	TOPSOIL: SAND, fine to coarse grained, sub-angular to sub-rounded, dark grey to grey, trace fines, trace organics SAND: fine to medium grained, sub-angular to sub-rounded, white, trace fines		L		
			0.5									
			1.0				SP			D		
			1.5					----- Becoming orange-brown, localised areas of well cemented sand ----- No cementation, pale yellow		MD		
			2.0					Hole terminated at 2.00 m Terminated due to collapse Groundwater not encountered				
			2.5									
			3.0									

Sketch & Other Observations



Comments:

See Explanatory Notes and Method of Soil Description sheets for details of abbreviations and basis of descriptions

Job Number: J2011073 Client: Kastle Project: Proposed Lifestyle Village Location: 607 Pinjarra Road, Furnissdale	Contractor: ANH Contracting Machine: JCB3CX Operator: Neil Bucket: 450 mm Rock	Date: 03/04/2020 Logged: PA Checked Date: 17/04/2020 Checked By: FAD
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Excavation				Sampling			Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	SOIL CLASS	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
BH	E		0.0			[Symbol]	SP	TOPSOIL: SAND, fine to coarse grained, sub-angular to sub-rounded, dark grey, trace fines, trace organics				
			0.5			[Symbol]		SAND: fine to medium grained, sub-angular to sub-rounded, white, trace fines			L / MD	
			1.0			[Symbol]						D
			1.5			[Symbol]	SP	Becoming brown, well cemented sand in localised areas				
			2.0			[Symbol]		Weak to no cementation, orange-brown				
			2.5			[Symbol]						
			3.0					Hole terminated at 2.60 m Target depth Groundwater not encountered				

Sketch & Other Observations



Comments:

See Explanatory Notes and Method of Soil Description sheets for details of abbreviations and basis of descriptions

Job Number: J2011073
Client: Kastle
Project: Proposed Lifestyle Village
Location: 607 Pinjarra Road, Furnissdale

Contractor: ANH Contracting
Machine: JCB3CX
Operator: Neil
Bucket: 450 mm Rock

Date: 03/04/2020
Logged: PA
Checked Date: 17/04/2020
Checked By: FAD

Excavation					Sampling			Field Material Description				
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	SOIL CLASS	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
BH	E		0.0				SP	TOPSOIL: SAND, fine to coarse grained, sub-angular to sub-rounded, dark grey, trace fines, trace organics	D	L		
			0.5				SP	SAND: fine to medium grained, sub-angular to sub-rounded, white, trace fines				
			1.0					----- Becoming orange-brown, localised areas of well cemented sand				
			1.5					----- No cementation		MD		
			2.0					Hole terminated at 1.90 m Terminated due to collapse Groundwater not encountered				
			2.5									
			3.0									

Sketch & Other Observations






Comments:

See Explanatory Notes and Method of Soil Description sheets for details of abbreviations and basis of descriptions

Job Number: J2011073
Client: Kastle
Project: Proposed Lifestyle Village
Location: 607 Pinjarra Road, Furnissdale

Contractor: ANH Contracting
Machine: JCB3CX
Operator: Neil
Bucket: 450 mm Rock

Date: 03/04/2020
Logged: PA
Checked Date: 17/04/2020
Checked By: FAD

Excavation				Sampling			Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	SOIL CLASS	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
BH	E		0.0				SP	TOPSOIL: SAND, fine to coarse grained, sub-angular to sub-rounded, dark grey, trace fines, trace organics	L / MD			Minor scattering of roots (less than 30 mm thick) present in TP wall to 1.0 m deep
			0.5					SAND: fine to medium grained, sub-angular to sub-rounded, white, trace fines				
			1.0					Becoming brown, well cemented sand in localised areas				
			1.5				SP	Orange-brown, no cementation				
			2.0									
			2.5									
			3.0					Hole terminated at 2.70 m Target depth Groundwater not encountered	D - M			

Sketch & Other Observations



Comments:

See Explanatory Notes and Method of Soil Description sheets for details of abbreviations and basis of descriptions

Job Number: J2011073 Client: Kastle Project: Proposed Lifestyle Village Location: 607 Pinjarra Road, Furnissdale	Contractor: ANH Contracting Machine: JCB3CX Operator: Neil Bucket: 450 mm Rock	Date: 03/04/2020 Logged: PA Checked Date: 17/04/2020 Checked By: FAD
---	---	---

Excavation				Sampling			Field Material Description						
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	SOIL CLASS	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS	
BH	E		0.0			[Symbol]	SP	TOPSOIL: SAND, fine to coarse grained, sub-angular to sub-rounded, dark grey				Significant amount of thin roots in top 300 mm Trace roots, up to 30 mm thick to 0.9 m deep	
			0.5			[Symbol]		SAND: fine to medium grained, white, trace fines		MD			
			1.0				[Symbol]		Orange-brown, localised areas of well cemented sand		D		
			1.5				[Symbol]	SP	No cementation				
			2.0			[Symbol]							
			2.5			[Symbol]							
			3.0					Hole terminated at 2.70 m Target depth Groundwater not encountered					




Sketch & Other Observations



[Dotted grid area for sketches and observations]

Comments:	See Explanatory Notes and Method of Soil Description sheets for details of abbreviations and basis of descriptions
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Job Number: J2011073 Client: Kastle Project: Proposed Lifestyle Village Location: 607 Pinjarra Road, Furnissdale	Contractor: ANH Contracting Machine: JCB3CX Operator: Neil Bucket: 450 mm Rock	Date: 03/04/2020 Logged: PA Checked Date: 17/04/2020 Checked By: FAD
---	---	---

Excavation				Sampling			Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	SOIL CLASS	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
BH	E		0.0				SP	TOPSOIL: SAND, fine to coarse grained, sub-angular to sub-rounded, dark grey, trace fines, trace organics SAND: fine to medium grained, white, trace fines		L		Thin roots present to 0.8 m deep in TP wall, several thick roots (less than 50 mm thick) to 0.6 m deep
			0.5					Pale yellow mottled brown, well cemented sand in localised areas		MD		
			1.0				SP	Pale yellow, no cementation				
			1.5									
			2.0									
			2.5									
			3.0					Hole terminated at 2.70 m Target depth Groundwater not encountered				




Sketch & Other Observations



Comments:

See Explanatory Notes and Method of Soil Description sheets for details of abbreviations and basis of descriptions

Job Number: J2011073 Client: Kastle Project: Proposed Lifestyle Village Location: 607 Pinjarra Road, Furnissdale	Contractor: ANH Contracting Machine: JCB3CX Operator: Neil Bucket: 450 mm Rock	Date: 03/04/2020 Logged: PA Checked Date: 17/04/2020 Checked By: FAD
---	---	---

Excavation				Sampling			Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	SOIL CLASS	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
BH	E		0.0				SP	TOPSOIL: SAND, fine to coarse grained, sub-angular to sub-rounded, grey, trace fines, trace organics				Minor scattering of roots (less than 20 mm thick) in TP wall to approximately 0.6 m deep
			0.5					SAND: fine to medium grained, sub-angular to sub-rounded, white, trace fines	VL / L			
			1.0					Becoming pale yellow		L		
			1.5				SP					
			2.0									
			2.5									
			3.0					Hole terminated at 2.60 m Target depth Groundwater not encountered				

Sketch & Other Observations



Area for sketching and additional observations, currently blank.

Comments:

See Explanatory Notes and Method of Soil Description sheets for details of abbreviations and basis of descriptions

Job Number: J2011073 Client: Kastle Project: Proposed Lifestyle Village Location: 607 Pinjarra Road, Furnissdale	Contractor: ANH Contracting Machine: JCB3CX Operator: Neil Bucket: 450 mm Rock	Date: 03/04/2020 Logged: PA Checked Date: 17/04/2020 Checked By: FAD
---	---	---

Excavation				Sampling			Field Material Description					
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED GRAPHIC LOG	SOIL CLASS	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY	DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
BH	E		0.0			[Graphic Log Symbols]	SP	TOPSOIL: SAND, fine to medium grained, sub-angular to sub-rounded, dark grey, trace fines, trace organics				Scattering of roots (less than 20 mm thick) in TP wall to approximately 0.8 m deep
			0.5			[Graphic Log Symbols]		SAND: fine to medium grained, sub-angular to sub-rounded, white, trace fines			L	
			1.0			[Graphic Log Symbols]						
			1.5			[Graphic Log Symbols]	SP					
			2.0			[Graphic Log Symbols]						
			2.5			[Graphic Log Symbols]						
			3.0			[Graphic Log Symbols]		Hole terminated at 2.70 m Target depth Groundwater not encountered			M-W	Groundwater close to base of hole

Sketch & Other Observations



[Dotted grid area for sketches and observations]

Comments:

See Explanatory Notes and Method of Soil Description sheets for details of abbreviations and basis of descriptions



Appendix C: Infiltration Test Results

Permeability Calculation - Inverse Auger Hole Method

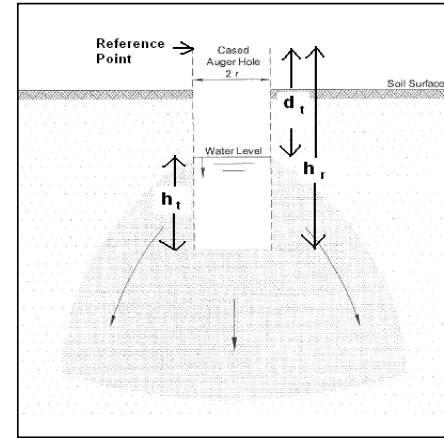
Galt Geotechnics

Spreadsheet author: ORW 17-Oct-09

REFERENCE: Cocks, G. *Disposal of Stormwater Runoff by Soakage in Perth Western Australia*, Journal and News of the Australian Geomechanics Society, Volume 42 No 3 September 2007, pp101-114

Job No: J2001073
Client: Kastle WA
Project: Lifestyle Village
Location: Furnissdale
Calc by: PA

$$K = 1.15r \frac{\log_{10}(h_0 + \frac{1}{2}r) - \log_{10}(h_t + \frac{1}{2}r)}{t - t_0}$$



BH Name: IT01	Parameter	Description	Value	Units
Test Depth: 0.87 m	K	Permeability		m/s
	r	radius of test hole	0.045	m
	t	time since start of measurement		s
	h _r	reference point height above base	1.1	m
	d _t	depth from reference point to water at time t		m
	h _t	Water column height at time t		m
	h ₀	h _t at t=0		m

Test 1

t (s)	d _w (m)	h _t (m)	K (m/s)	K (m/day)
0	0.23	0.87		
20	0.63	0.47	6.7E-04	57.7
40	0.76	0.34	5.1E-04	43.7
60	0.85	0.25	4.4E-04	38.4
80	0.93	0.17	4.3E-04	37.2
100	0.98	0.12	4.1E-04	35.6
120	1.005	0.095	3.8E-04	32.8
140	1.045	0.055	3.9E-04	33.9
160	1.065	0.035	3.9E-04	33.3
180	1.085	0.015	4.0E-04	34.2
AVERAGE			4.5E-04	38.5

Test 2

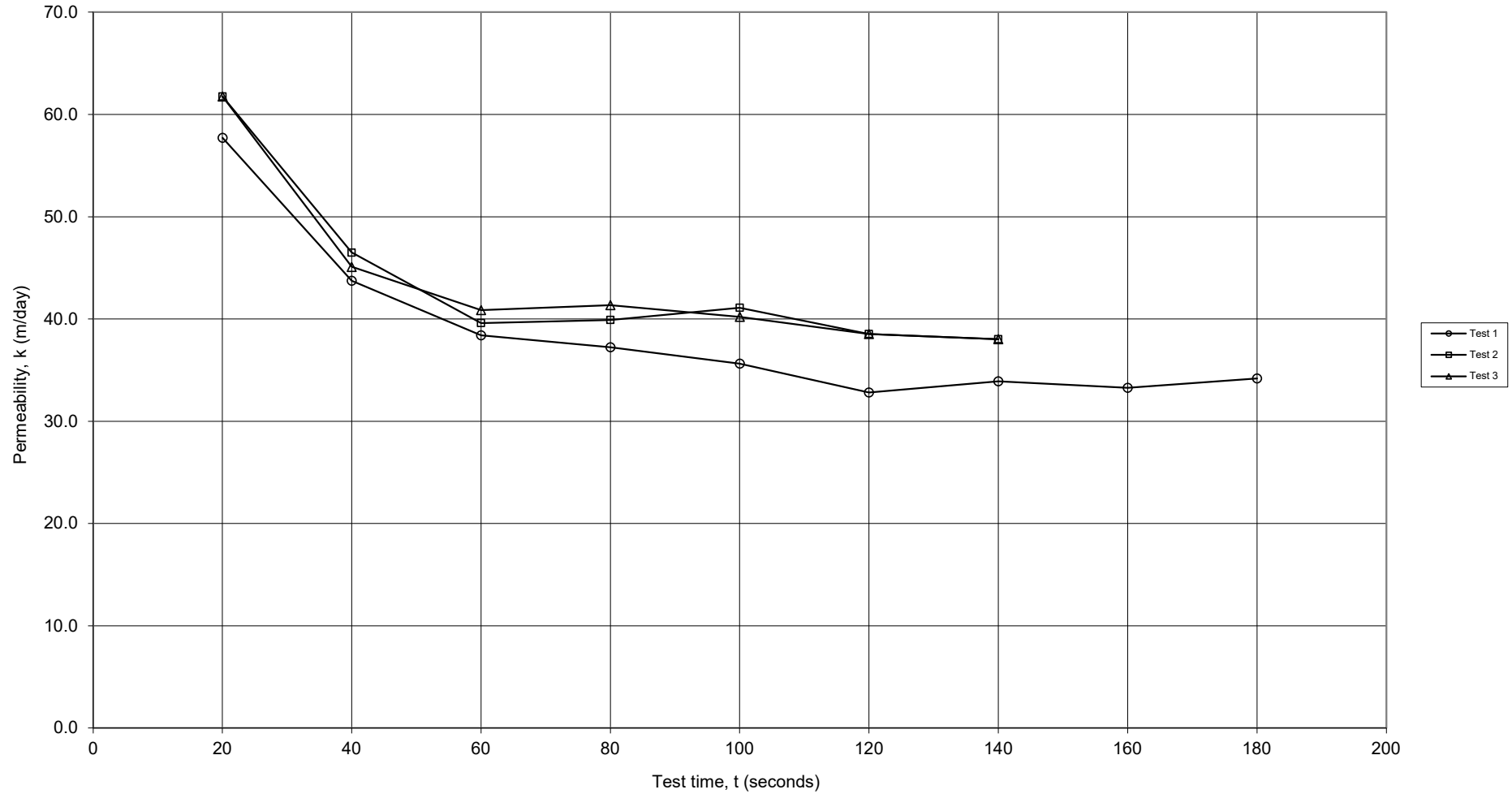
t (s)	d _w (m)	h _t (m)	K (m/s)	K (m/day)
0	0.23	0.87		
20	0.65	0.45	7.1E-04	61.7
40	0.78	0.32	5.4E-04	46.5
60	0.86	0.24	4.6E-04	39.6
80	0.95	0.15	4.6E-04	39.9
100	1.015	0.085	4.8E-04	41.1
120	1.04	0.06	4.5E-04	38.5
140	1.065	0.035	4.4E-04	38.0
AVERAGE			5.0E-04	43.6

Test 3

t (s)	d _w (m)	h _t (m)	K (m/s)	K (m/day)
0	0.23	0.87		
20	0.65	0.45	7.1E-04	61.7
40	0.77	0.33	5.2E-04	45.1
60	0.87	0.23	4.7E-04	40.9
80	0.96	0.14	4.8E-04	41.3
100	1.01	0.09	4.7E-04	40.2
120	1.04	0.06	4.5E-04	38.5
140	1.065	0.035	4.4E-04	38.0
AVERAGE			5.1E-04	43.7

Permeability by Inverse Auger Hole Method

IT01



Permeability Calculation - Inverse Auger Hole Method

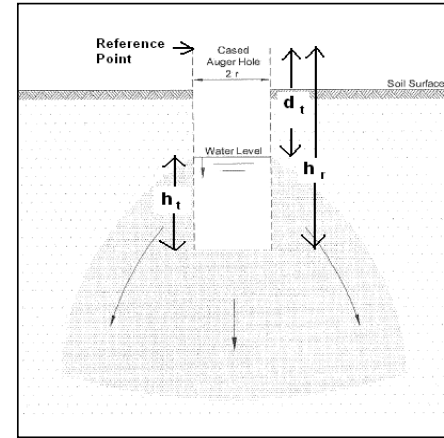
Galt Geotechnics

Spreadsheet author: ORW 17-Oct-09

REFERENCE: Cocks, G. *Disposal of Stormwater Runoff by Soakage in Perth Western Australia*, Journal and News of the Australian Geomechanics Society, Volume 42 No 3 September 2007, pp101-114

Job No: J2001073
Client: Kastle WA
Project: Lifestyle Village
Location: Furnissdale
Calc by: PA

$$K = 1.15r \frac{\log_{10}(h_0 + \frac{1}{2}r) - \log_{10}(h_t + \frac{1}{2}r)}{t - t_0}$$



BH Name: IT02	Parameter	Description	Value	Units
Test Depth: 0.93 m	K	Permeability		m/s
	r	radius of test hole	0.045	m
	t	time since start of measurement		s
	h _r	reference point height above base	1.1	m
	d _t	depth from reference point to water at time t		m
	h _t	Water column height at time t		m
	h ₀	h _t at t=0		m

Test 1

t (s)	d _w (m)	h _t (m)	K (m/s)	K (m/day)
0	0.17	0.93		
20	0.59	0.51	6.5E-04	56.5
40	0.7	0.4	4.6E-04	39.5
60	0.79	0.31	3.9E-04	34.1
80	0.865	0.235	3.7E-04	31.8
100	0.91	0.19	3.4E-04	29.1
120	0.94	0.16	3.1E-04	26.7
140	0.965	0.135	2.9E-04	25.0
160	0.995	0.105	2.8E-04	24.4
180	1.01	0.09	2.7E-04	23.0
AVERAGE			3.7E-04	32.2

Test 2

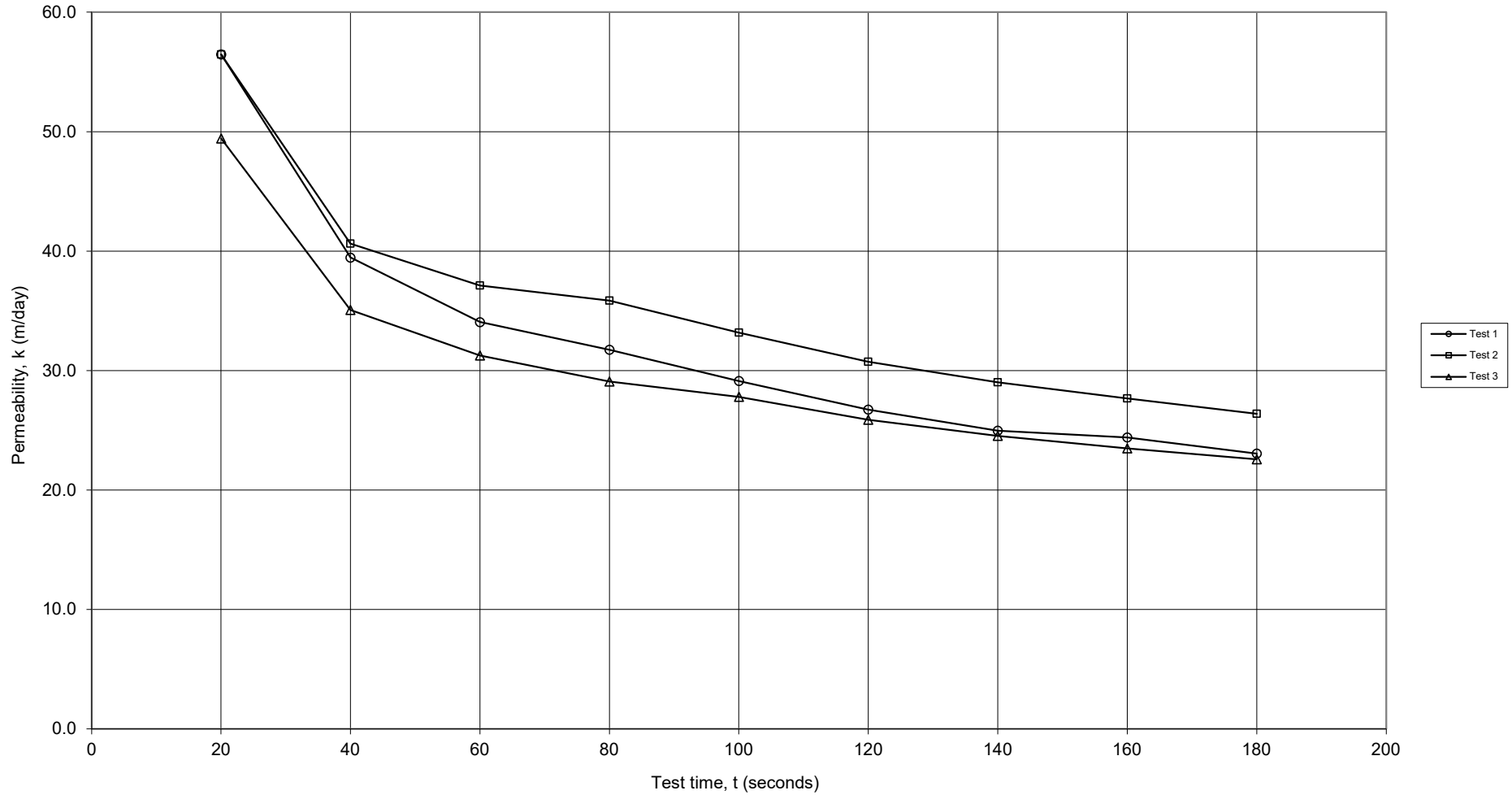
t (s)	d _w (m)	h _t (m)	K (m/s)	K (m/day)
0	0.17	0.93		
20	0.59	0.51	6.5E-04	56.5
40	0.71	0.39	4.7E-04	40.6
60	0.82	0.28	4.3E-04	37.1
80	0.905	0.195	4.1E-04	35.8
100	0.95	0.15	3.8E-04	33.2
120	0.98	0.12	3.6E-04	30.7
140	1.005	0.095	3.4E-04	29.0
160	1.025	0.075	3.2E-04	27.7
180	1.04	0.06	3.1E-04	26.4
AVERAGE			4.1E-04	35.2

Test 3

t (s)	d _w (m)	h _t (m)	K (m/s)	K (m/day)
0	0.17	0.93		
20	0.55	0.55	5.7E-04	49.4
40	0.66	0.44	4.1E-04	35.1
60	0.76	0.34	3.6E-04	31.3
80	0.835	0.265	3.4E-04	29.1
100	0.895	0.205	3.2E-04	27.8
120	0.93	0.17	3.0E-04	25.9
140	0.96	0.14	2.8E-04	24.5
160	0.985	0.115	2.7E-04	23.5
180	1.005	0.095	2.6E-04	22.6
AVERAGE			3.5E-04	29.9

Permeability by Inverse Auger Hole Method

IT02





Appendix D: Understanding your Report

UNDERSTANDING YOUR REPORT

GALT FORM PMP11 Rev3

1. EXPECTATIONS OF THE REPORT

This document has been prepared to clarify what is and is not provided in your report. It is intended to inform you of what your realistic expectations of this report should be and how to manage your risks associated with the conditions on site.

Geotechnical engineering and environmental science are less exact than other engineering and scientific disciplines. We include this information to help you understand where our responsibilities begin and end. You should read and understand this information. Please contact us if you do not understand the report or this explanation. We have extensive experience in a wide variety of projects and we can help you to manage your risk.

2. THIS REPORT RELATES TO PROJECT-SPECIFIC CONDITIONS

This report was developed for a unique set of project-specific conditions to meet the needs of the nominated client. It took into account the following:

- ✦ the project objectives as we understood them and as described in this report;
- ✦ the specific site mentioned in this report; and
- ✦ the current and proposed development at the site.

It should not be used for any purpose other than that indicated in the report. You should not rely on this report if any of the following conditions apply:

- ✦ the report was not written for you;
- ✦ the report was not written for the site specific to your development;
- ✦ the report was not written for your project (including a development at the correct site but other than that listed in the report); or
- ✦ the report was written before significant changes occurred at the site (such as a development or a change in ground conditions).

You should always inform us of changes in the proposed project (including minor changes) and request an assessment of their impact.

Where we are not informed of developments relevant to your report, we cannot be held responsible or liable for problems that may arise as a consequence.

Where design is to be carried out by others using information provided by us, we recommend that we be involved in the design process by being engaged for consultation with other members of the project team. Furthermore, we recommend that we be able to review work produced by other members of the project team that relies on information provided in our report.

3. SOIL LOGS

Our reports often include logs of intrusive and non-intrusive investigation techniques. These logs are based on our interpretation of field data and laboratory results. The logs should only be read in conjunction with the report they were issued with and should not be re-drawn for inclusion in other documents not prepared by us.

4. THIRD PARTY RELIANCE

We have prepared this report for use by the client. This report must be regarded as confidential to the client and the client's professional advisors. We do not accept any responsibility for contents of this document from any party other than the nominated client. We take no responsibility for any damages suffered by a third party because of any decisions or actions they may make based on this report. Any reliance or decisions made by a third party based on this report are the responsibility of the third party and not of us.

5. CHANGE IN SUBSURFACE CONDITIONS

The recommendations in this report are based on the ground conditions that existed at the time when the study was undertaken. Changes in ground conditions can occur in numerous ways including anthropogenic events (such as construction or contaminating activities on or adjacent to the site) or natural events (such as floods, groundwater fluctuations or earthquakes). We should be consulted prior to use of this report so that we can comment on its reliability. It is important to note that where ground conditions have changed, additional sampling, testing or analysis may be required to fully assess the changed conditions.

6. SUBSURFACE CONDITIONS DURING CONSTRUCTION

Practical constraints mean that we cannot know every minute detail about the subsurface conditions at a particular site. We use professional judgement to form an opinion about the subsurface conditions at the site. Some variation to our evaluated conditions is likely and significant variation is possible. Accordingly, our report should not be considered as final as it is developed from professional judgement and opinion.

The most effective means of dealing with unanticipated ground conditions is to engage us for construction support. We can only finalise our recommendations by observing actual subsurface conditions encountered during construction. We cannot accept liability for a report's recommendations if we cannot observe construction.

7. ENVIRONMENTAL AND GEOTECHNICAL ISSUES

Unless specifically mentioned otherwise in our report, environmental considerations are not addressed in geotechnical reports. Similarly, geotechnical issues are not addressed in environmental reports. The investigation techniques used for geotechnical investigations can differ from those used for environmental investigations. It is the client's responsibility to satisfy themselves that geotechnical and environmental considerations have been taken into account for the site.

Geotechnical advice presented in a Galt Environmental report has been provided by Galt Geotechnics under a sub-contract agreement. Similarly, environmental advice presented in a Galt Geotechnics report has been provided by Galt Environmental under a sub-contract agreement.

Unless specifically noted otherwise, no parties shall draw any inferences about the applicability of the Western Australian state government landfill levy from the contents of this document.

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Annexure 5
Environmental and Vegetation Report

MEMORANDUM

From	Martin Bowman	Date	3 April 2020
To	File: Allerding and Associates: Lot 156 Pinjarra Road Furnissdale		
Subject	Clearing Permit Application: Vegetation Survey Report		

1.0 Introduction

A vegetation survey of Lot 156 Pinjarra Road North Furnissdale was conducted by Bowman and Partners Environmental in support of a Clearing Permit application for the land. Clearing of the remnant vegetation within the land is required to enable development of a group housing development, in accordance with its zoning under the City of Mandurah Town Planning Scheme.

This document presents the findings of the survey and vegetation assessment.

2.0 Survey Method

The vegetation survey was conducted in several stages

- (i) Review of recent colour aerial photography of the site followed by a site view on Tuesday 28th January 2020
- (ii) Detailed review of the findings of the report entitled Environmental Assessment -Lots 181, 185, 197, 198,1186 & 1187 Ronlyn Road, 179&180 Riverside Drive North Furnissdale, ENV 2007. This report was prepared in support of the North Furnissdale Structure Plan which was endorsed by Council.
- (iii) Site survey by experienced environmental scientist on Tuesday 3rd March 2020.

3.0 Description of the Site and Findings of Survey

The site is located on the south west side of Pinjarra Road approximately 65 km south of Perth.

Figure 1 depicts the location of the site.

The site and its surrounds comprise flat sandy land associated with the ancestral flood plain and fringe of the Serpentine River.

The modern flow channel of the Serpentine River is located approximately 500 m to the west of the site and the intervening land is a combination of low-lying pastures and patches of remnant vegetation and is mapped as wetland. The site is situated outside the mapped Serpentine River flood fringe and is mapped as upland.

A detailed environmental investigation was conducted by ENV in support of the West Furnissdale Structure Plan which was endorsed by government. The following sections provide extracts from this district scale investigation as they are relevant to Lot 156, supplemented by site specific information for this land based on site inspection during February and March 2020.

3.1 Environmental Geology

3.1.1 Topography and Soils

The site is flat and lies at an elevation of approximately 4m AHD and at district scale slopes gently towards the south west.

The Environmental Geology 1:50,000 series map for the area shows the land is mapped as Pinjarra Plain landform with a surface layer of Bassendean Sand up to several meters depth but variable and underlain by the heavier sediments of the Guildford formation.

Bassendean sands are well drained, and both the types of remnant vegetation and the mapping of the site as upland (ie, not a wetland) indicate that rainfall infiltration occurs readily within the land.

3.2 Groundwater and Surface Water

(i) Surface Water

There are no surface water features within the site. Rainfall infiltration to the surficial sediments then recharge to the unconfined aquifer is the primary hydrological process within the site.

A naturally low depression exists along Riverside Drive. The structure plan reports indicate that during winter, water is present within the depressions and that road runoff from the local road system is collected by this depression, with any flow from high intensity long duration rainfall events being conveyed to the Serpentine River.

(ii) Groundwater

There is an unconfined aquifer developed in the surficial sands supported by rainfall recharge, as well as an inferred regional aquifer at depth within the Guildford formation sediments.

The structure plan reports indicate that the results of ground water monitoring undertaken by the Department of Water indicated the base average annual maximum groundwater levels (AAMGL) ranged from 1.0 m AHD to 1.5m AHD within the Furnissdale West area.

The structure plan report indicate that a bore installed by ENV during 2006 and located immediately to the south of the southern corner of Lot 156 showed a water table at 1.9 m below ground level in September 2007. Peak groundwater levels are expected around this time of the year and this suggests that the highest groundwater is at about this level.

Groundwater flow direction is inferred to be in a west to south west direction, towards the Serpentine River.

3.3 Flora and Vegetation

A comprehensive Flora and Vegetation survey was undertaken by ENV across the Structure Plan area in 2010.

The remaining vegetation was found to be a woodland of *Allocasuarina fraseriana*, *Banksia attenuata*, *Corymbia calophylla*, *Kunzea glabrescens*, *Macrozamia riedlei*, *Hibbertia hypericoides*, *Iridaceae sp.* and the weed *Briza maxima*.

A total of 46 families, 97 genera and 144 taxa were recorded within the survey area (113 native flora taxa and 31 introduced) with the survey concluding that none of the taxa found were of significance. The vast majority of these species were found on sites other than Lot 156.

It is noted that no Endangered or Vulnerable species pursuant to the EPBC Act were located during the ENV survey.

Further, no Priority Flora or Declared Rare Flora were located within the Structure Plan area during the survey.

The vegetation within Lot 156 is consistent with this description but is in degraded to completely degraded condition with effectively no native ground flora remaining, and therefore there are only a few native species remaining.

Whereas the site is approximately 80% cleared the remaining tree vegetation can be described as an open woodland of jarrah and casuarina, with some copses of peppermint and ti-tree shrubland. The canopy cover of the remnant tree vegetation has an area of 1.5 ha.

Figure 2 depicts the canopy coverage of the remnant vegetation as at March 2020, whilst figure 3 presents a vegetation map for the land.

Species recorded during site inspection during March 2020 included, *Eucalyptus marginata*, *Allocasuarina fraseriana*, *Banksia attenuata*, *Agonis flexuosa*, *Macrozamia reidleyi* and *Kunzea glabrescens*.

Given the almost complete absence of ground level vegetation, the generally degraded condition of the and, and the findings of the ENV survey in 2007, it is considered there is negligible potential for the site to presently support any flora of conservation significance.

Plates 1 to 6 present a fair representation of the condition of the vegetation as at March 2020.

3.3.1 Threatened Ecological Communities

The structure plan reports that a search of DBC's Threatened Ecological Community (TEC) database (2015) indicates there are no TEC's known to exist within the structure plan area.

3.4 Wetlands

There are no wetlands located within the site. There is a conservation category wetland located to the west of Lot 156 with its outer mapped edge located approximately 50 m beyond the far western corner of Lot 156

3.5 Fauna

A Fauna Survey was carried out as part of the Environmental Report prepared by ENV in 2007 for the entire Structure Plan area. The survey generally concluded that no Declared Rare, Endangered, Vulnerable or Priority Fauna species were located within the area.

The results of the survey however, suggest that a number of species of fauna which have conservation significance may utilise the site for feeding purposes or as part of a larger home range. These species include:

- Numbat;
- Brush-tailed Phascogale;
- Western False Pipistrelle;
- Greater Long-eared Bat;
- Muir's Corella;
- Forest Red-tailed Black Cockatoo;
- Baudin's Cockatoo; and
- Carnaby's Cockatoo.

The report stated however, that the species listed above are only likely to utilise the area for feeding purposes and more suitable habitat for these species to utilise exists in

abundance in the Pinjarra area. As such, the taxa are not expected to be specifically dependant on the habitats found within the structure plan area.

Site inspection and vegetation condition mapping during March 2020 found that there is a general absence of usable habitat for native fauna within the site. There is no ground level vegetation to provide cover for ground dwelling fauna, and a very sparse tree canopy mainly consisting of mature trees but with an absence of very old trees which could provide hollows for nesting. There are a few Banksia trees however these would provide only very limited foraging resource for Black Cockatoos and it is unlikely that the habitat is of any significant value to these species.

Site survey in March 2020 found an almost complete absence of any native fauna, with only several common bird species including magpies and red wattle birds being observed in very low numbers.

4.0 Conclusions

The vegetation at Lot 156 is in degraded to completely degraded condition with sand, pasture grasses and weeds comprising approximately half the site, and with remnant tree vegetation with effectively no native understory present forming the balance of the site.

There are no known species of native flora or fauna with any special conservation values likely to utilise the site.

As such there are no apparent grounds in relation to conservation values upon which a clearing permit could be reasonably refused.

References

Environmental Assessment -Lots 181, 185, 197, 198,1186 & 1187 Ronlyn Road, 179&180 Riverside Drive North Furnissdale, ENV 2007: Unpublished report to Greg Rowe and Associates.



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Scale: 1:3,000 @ A4
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Job: AA-002-2020
Doc: 001
Date: 10/03/2020
Created: Environmaps
Checked: MB
E: bpe@westnet.com.au

FIGURE 1
LOCATION



LEGEND


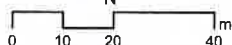
- Site Boundary
- Cadastre
- Tree Canopy Coverage (1.5 ha)

Date of photography: 23.11.2019

LOT 6209

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FIGURE 2
CANOPY COVERAGE


LEGEND

 Site Boundary

 Cadastre

Vegetation

 *Agonis flexuosa*

 *Eucalyptus marginata* and *Allocasuarina fraseriana*

 *Kunzea glabrescens*

 Non indigenous Eucalypts

Date of photography: 23.11.2019



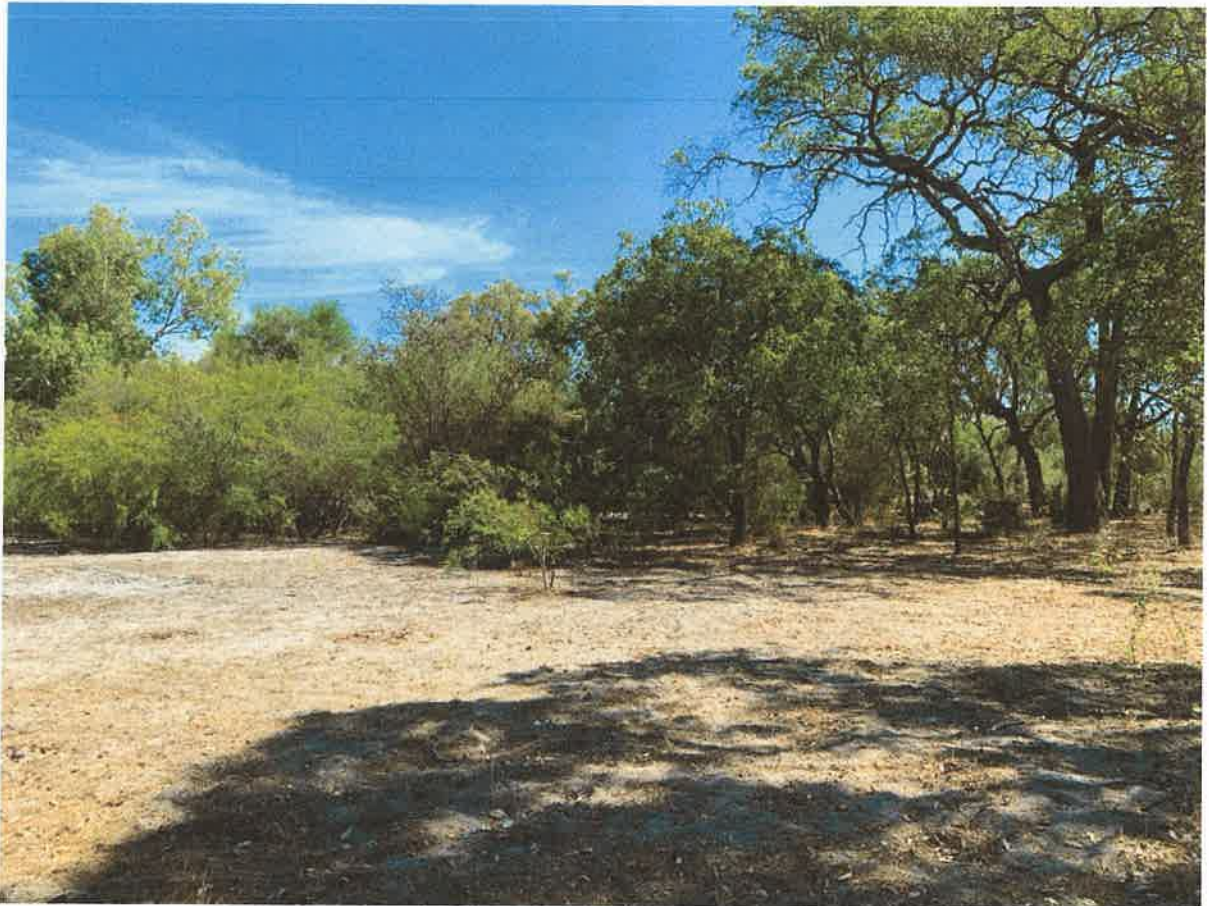


Plate 1 South East Corner looking west

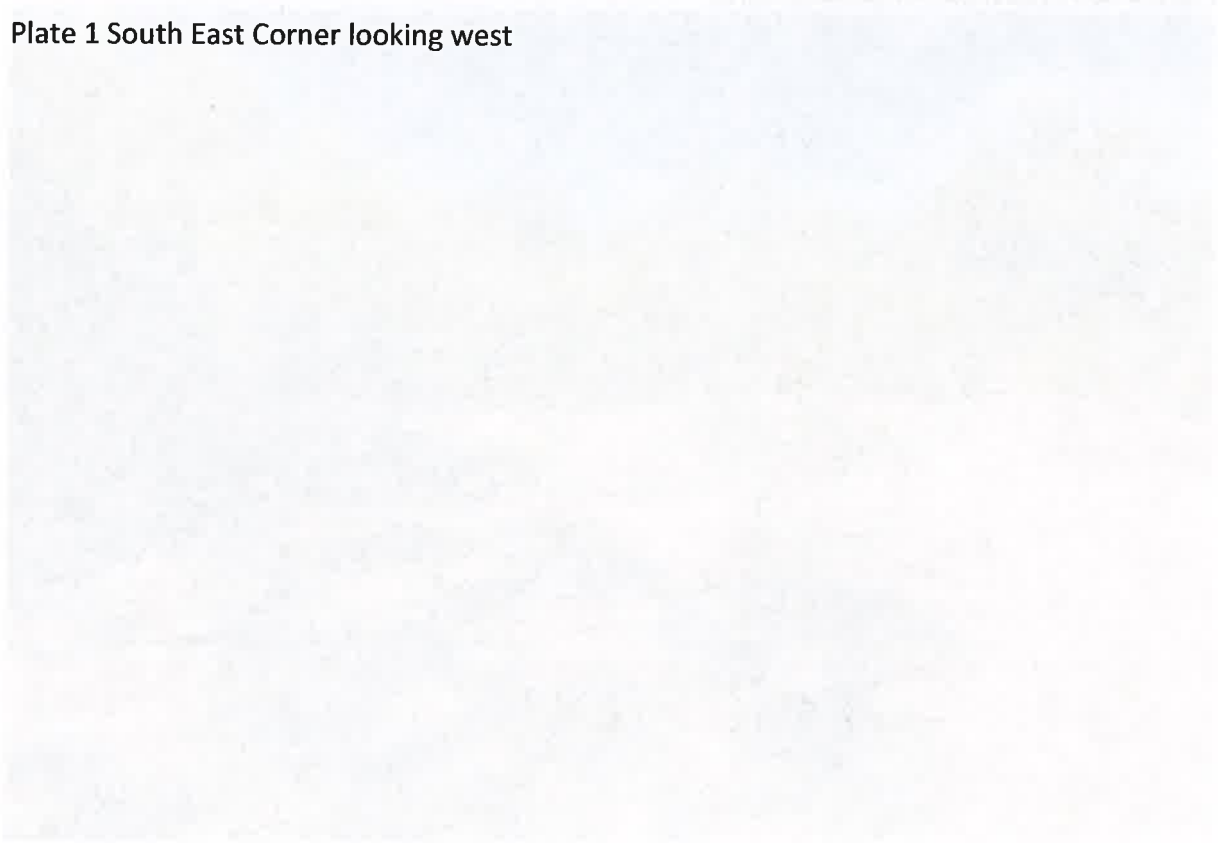




Plate 2 South east corner looking north



Plate 3 South east corner looking south



Plate 4 South west corner looking north

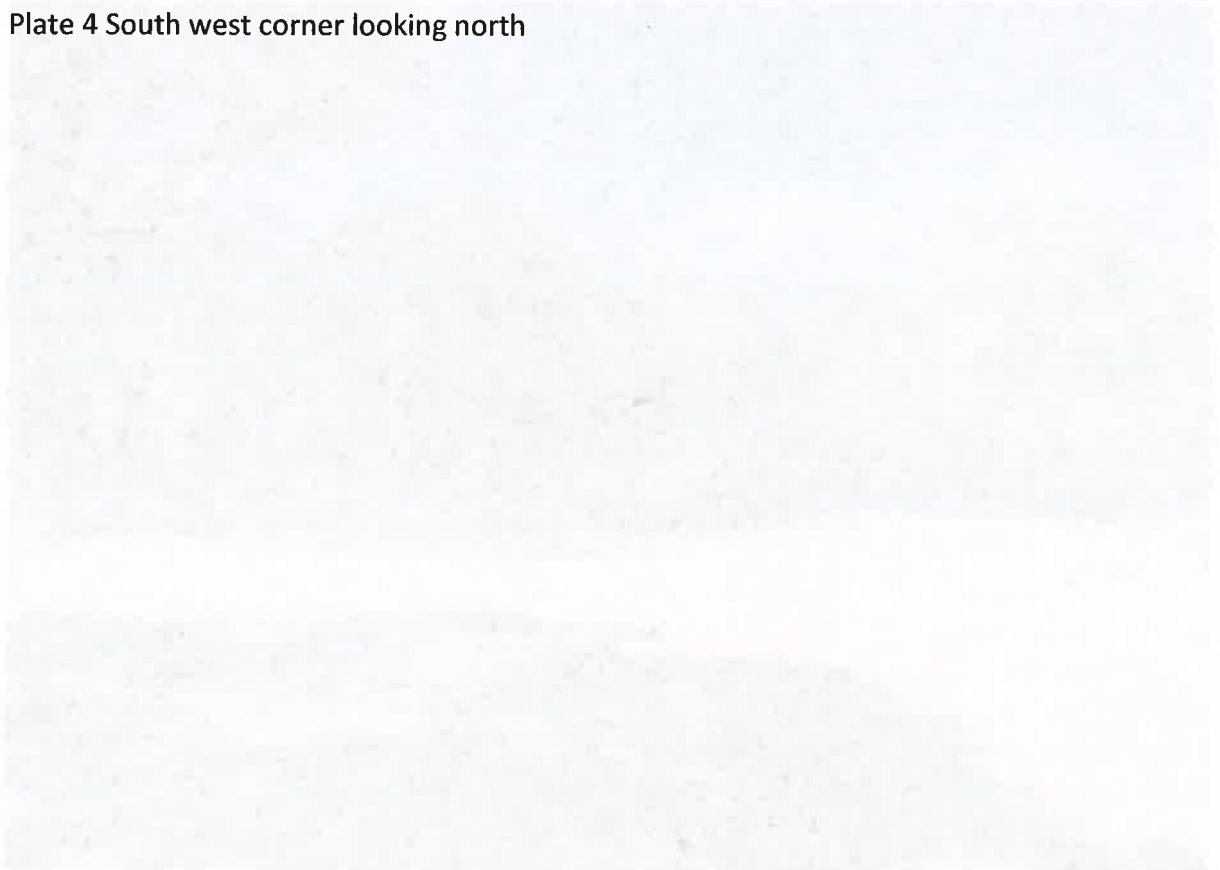




Plate 5 North east corner looking south west



Plate 6 North east corner looking west

Annexure 6
Bushfire Management Plan

Bushfire Management Plan Coversheet

This Coversheet and accompanying Bushfire Management Plan has been prepared and issued by a person accredited by Fire Protection Association Australia under the Bushfire Planning and Design (BPAD) Accreditation Scheme.

Bushfire Management Plan and Site Details

Site Address / Plan Reference: Lot 156 (No. 528) Pinjarra Road

Suburb: Furnissdale

State: WA

P/code: 6209

Local government area: Shire of Murray

Description of the planning proposal: Grouped Dwelling

BMP Plan / Reference Number: NLV FU2 ZB/2009

Version: 2

Date of Issue: 30/09/2020

Client / Business Name: Ecofit Homes Pty Ltd

Reason for referral to DFES

	Yes	No
Has the BAL been calculated by a method other than method 1 as outlined in AS3959 (tick no if AS3959 method 1 has been used to calculate the BAL)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Have any of the bushfire protection criteria elements been addressed through the use of a performance principle (tick no if only acceptable solutions have been used to address all of the BPC elements)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is the proposal any of the following special development types (see SPP 3.7 for definitions)?		
Unavoidable development (in BAL-40 or BAL-FZ)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Strategic planning proposal (including rezoning applications)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Minor development (in BAL-40 or BAL-FZ)	<input type="checkbox"/>	<input checked="" type="checkbox"/>
High risk land-use	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Vulnerable land-use	<input type="checkbox"/>	<input checked="" type="checkbox"/>

If the development is a special development type as listed above, explain why the proposal is considered to be one of the above listed classifications (E.g. considered vulnerable land-use as the development is for accommodation of the elderly, etc.)?

N/A

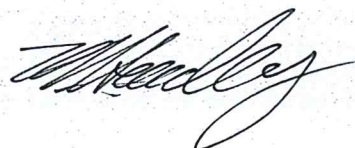
Note: The decision maker (e.g. local government or the WAPC) should only refer the proposal to DFES for comment if one (or more) of the above answers are ticked "Yes".

BPAD Accredited Practitioner Details and Declaration

Name Tom Hockley	Accreditation Level Level 2	Accreditation No. BPAD39692	Accreditation Expiry 31/05/2021
Company Allerding & Associates		Contact No. 9382 3000	

I declare that the information provided within this bushfire management plan is to the best of my knowledge true and correct

Signature of Practitioner



Date 30/09/2020



Bushfire Management Plan

Proposed Grouped Dwelling Development

Lot 156 (No. 528) Pinjarra Road, Furnissdale
Shire of Murray

Prepared for: Providence Lifestyle
Prepared by: Allering and Associates

SEPTEMBER 2020



**Allering
& Associates**

Town Planners, Advocates and Subdivision Designers
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FIGURE 4 – VEGETATION CLASSIFICATOIN MAP
FIGURE 5 – TOPOGRAPHICAL PLAN
FIGURE 6 – BAL CONTOUR MAP
FIGURE 7 – UNDEVELOPABLE DWELLINGS
FIGURE 8 – BUSHFIRE MANAGEMENT STRATEGIES MAP

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APPENDIX 2 – BMP MAPPING
APPENDIX 3 –SHIRE OF MURRAY FIREBREAK
NOTICE AND BUSHFIRE
INFORMATION 2020-2021

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TABLE 2 – WORST CASE BAL FOR PROPOSED BUILDINGS
TABLE 3 – INDICATIVE BAL FOR EACH PROPOSED BUILDING
TABLE 4 – ASSESSMENT AGAINST THE BUSHFIRE
PROTECTION CRITERIA

Document ID: NLV FU2 ZB/2009						
Issue	Date	Status	Prepared by		Approved by	
			Name	Initials	Name	Initials
1	29.09.20	Draft	Tom Hockley BPAD39692 Level 2	TH		
2	30.9.20	Final	Tom Hockley BPAD39692 Level 2	TH	Tom Hockley BPAD39692 Level 2	TH
Site Inspection:		Undertaken on 30 October 2019				
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1.0 EXECUTIVE SUMMARY

This Bushfire Management Plan (BMP) has been prepared to accompany an application for planning approval to the Shire of Murray (the Shire) for a proposed grouped dwelling development at Lot 156 (No. 528) Pinjarra Road, Furnissdale (subject site) comprising 79 dwellings. The application for planning approval has been prepared by Allerding & Associates on behalf of the prospective landowner, Providence Lifestyle.

The subject site is located within an area designated as bushfire prone due to the nature of vegetation within 100m of the site. *State Planning Policy 3.7 – Planning in Bushfire Prone Areas* (SPP3.7) requires that planning proposals on land designated as bushfire prone must be accompanied by an assessment (in the form of a BMP) under the provisions of Clause 6.5 (for development applications) where a Bushfire Attack Level (BAL) rating above BAL-LOW applies. In this instance, due to the presence of classified vegetation within and surrounding the subject site, a BAL rating above BAL-LOW will apply. As the BAL ratings exceed BAL-LOW an assessment against the provisions of SPP3.7 and the *Guidelines for Planning in Bushfire Prone Areas version 1.3* (the Guidelines) has been undertaken.

This BMP demonstrates that the majority of proposed lots will achieve a BAL rating of BAL-29 or lower. However a total of 9 dwellings are currently impacted by BAL-40/BAL-FZ and will be restricted from development until BAL-29 or lower can be achieved. This is likely to take place after the removal of remaining vegetation in Plot 6 (Forest) and Plot 7 (Scrub).

A BAL Contour Map has been prepared to demonstrate the potential radiant heat impacts on the development area during a bushfire event based on the surrounding vegetation remaining within 100 metres of the assessment area after the works are complete. The BAL Contour Map is also used to determine the level of construction required for buildings within 100m of classified vegetation pursuant to Australian Standard AS3959-2018 *Construction of buildings in bushfire-prone areas* (AS3959).

This BMP sets out the immediate and longer term management strategies for bushfire hazards within and surrounding the subject site and provides a basis for an ongoing commitment by the landowner to undertake bushfire risk management measures for the life of the development. When implemented, the management measures contained within this BMP will assist in the preservation of life and the reduction in the impacts of bushfire on property and infrastructure.

2.0 PROPOSAL DETAILS

2.1 Purpose of the BMP

This BMP has been prepared to accompany an application for planning approval to the Shire for a proposed grouped dwelling development at Lot 156 (No. 528) Pinjarra Road, Furnissdale (subject site) comprising 79 dwellings.

The purpose of the BMP is to assess whether the proposed grouped dwelling development at the subject site complies or can be made compliant with the relevant planning controls based on the assessed bushfire risk.

As the ultimate form of the development is known, a BAL Contour Map has been prepared to demonstrate the indicative BAL rating across the subject site and has been determined based on the future state of the site.

In addition, this BMP contains an identification of any bushfire hazard issues arising from the BAL Contour Map, as well as an assessment against the bushfire protection criteria requirements contained within the Guidelines demonstrating compliance within the boundary of the development site.

2.2 Location

The subject site is situated in the suburb of Furnissdale, approximately 66km south of the Perth CBD and approximately 3km east of Mandurah.

A location plan is included at **Figure 1** which identifies the site as being on the southern side of Pinjarra Road.

2.3 Zoning and Land Use

The subject site is zoned 'Urban' under the Peel Region Scheme (PRS) and is zoned 'Residential Development' under the Shire's Town Planning Scheme No. 4 (TPS4). The subject site is also identified within the Furnissdale West Structure Plan as Residential R60 and has been identified within Section 4.3.2 of Part 2 of the Structure Plan as being proposed to facilitate a potential future 'Lifestyle Village'. Further, Section 4.2 of Part 1 of the Structure Plan identifies the bushfire hazards relating to the subject site and notes as follows:

"No subdivision or development, excepting any proposed road or public open space, should be approved in Asset Protection Zone 1 unless it can be demonstrated that the 20 metre wide asset protection zone is not required on Lot 156 Pinjarra Road, Furnissdale."

As outlined on the Department of Fire and Emergency Services (DFES) Western Australian Map of Bush Fire Prone Areas, the entire site is designated as bush fire prone (refer **Figure 2**).

The subject site currently contains an existing dwelling and associated outbuildings. The subject site contains existing native vegetation.

The subject site will require clearing of the existing native vegetation to facilitate the proposed grouped dwelling development. The clearing is subject to a separate Clearing Permit Application which is currently being prepared and will be assessed separately by the Department of Water and Environmental Regulation (DWER).

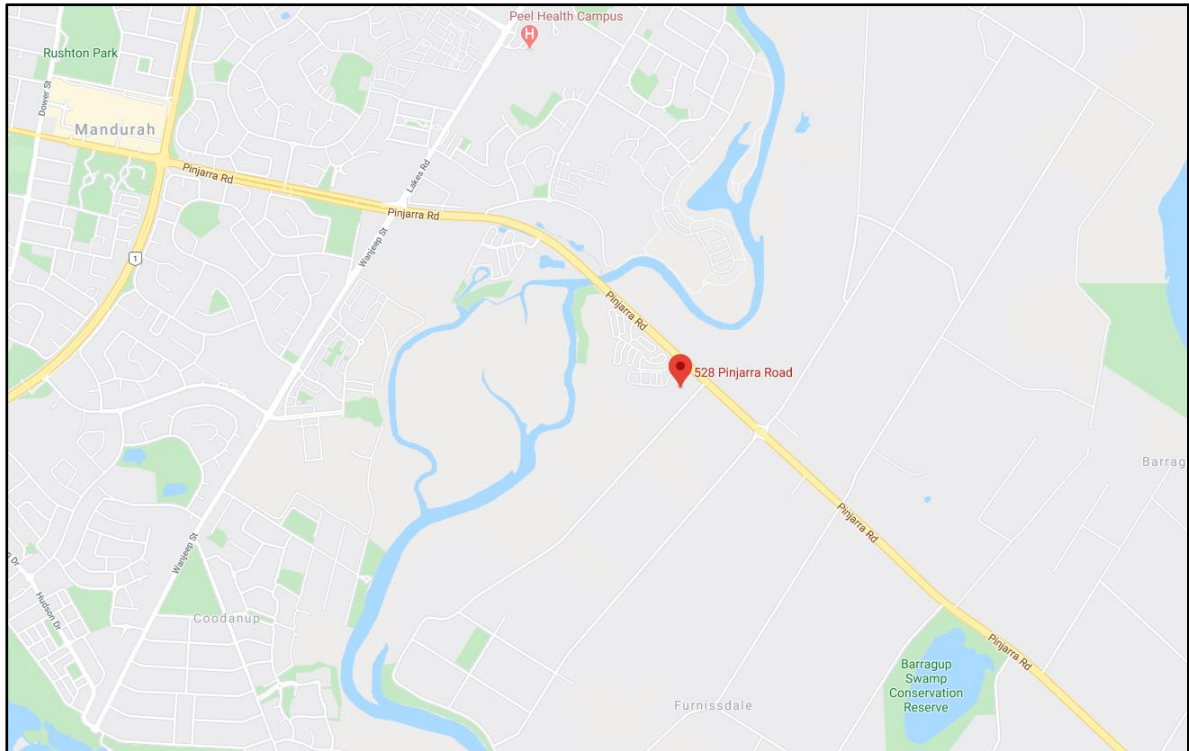


Figure 1 – Location Plan (Source: Google Maps 2020)



Figure 2 – Map of Bushfire Prone Areas (Source: DFES 2020)

2.4 Overview of Proposal

The proposal will ultimately allow for the construction of 79 new grouped dwellings, comprising a combination of dwelling sizes and configurations, including:

- Duplex units;

- 1 bedroom + study;
- 2 bedroom; and
- 3 bedroom.

In addition to the grouped dwellings, the development comprises a centrally located communal club house, bbq and lawn bowls area for the exclusive use of residents of the development.

The subject site will be accessible directly from Riverside Drive, with the main entry point centrally located within the frontage to Riverside Drive. A secondary vehicle access point is located at the southern side of the Riverside Drive frontage. The internal road network and pedestrian circulation will follow a permeable grid road system which has an 8 km per hour speed limit. The proposed internal road network will provide linkages from the houses to the park spaces and to the shared community facilities.

The subject property currently contains native vegetation, the majority of which will require removal as part of the proposed development. However, it is intended that a number of existing trees will be retained around the communal facilities where possible.

A site plan of the proposed grouped dwelling development is included at **Figure 3** and a copy of the relevant plans are included at **Appendix 1**.

This BMP has been prepared to accompany the Application for Planning Approval to the Shire prepared by Allerding & Associates, dated September 2020. In addition, a Clearing Permit Application, dated April 2020, has been prepared by Bowman & Partners Environmental in support of the proposal. Those documents have been considered in the preparation of this BMP.

A Fire Management Plan dated March 2015 was prepared to accompany a Local Structure Plan for Lots 181 - 185, 197-198, 1186 and 1187 Ronlyn Road, Lots 179 and 180 Riverside Drive, and Lots 149, 150 and 156 Pinjarra Road, Furnissdale (Furnissdale West Structure Plan area). That Fire Management Plan does not contain specific recommendations relating to the subject site and has therefore been given only limited consideration in the preparation of this BMP.

2.5 Access

Vehicular access to the subject site is proposed via two separate crossovers from Riverside Drive to the east. Both access points will be sealed and will allow for two way movement.

2.6 Water and Power Supply

The subject site is supplied with mains power and water.

2.7 Bushfire Response Capability

The Fire and Rescue Service stationed at Panton Road, Greenfields and the South Yunderup Fire Station are expected to provide a best-case emergency suppression response time of 30 minutes should a bushfire threaten lives or buildings on or adjacent to the site. It is noted that the Baldivis Volunteer Fire & Emergency Services Station is the closest responder, located approximately 4km to the north-west of the subject site.



Figure 3 – Site Plan

3.0 ENVIRONMENTAL CONSIDERATIONS

On 24 April 2020 Bowman & Partners Environmental, on behalf of the prospective landowner, lodged a Clearing Permit Application to clear 1.5ha of remnant native vegetation in degraded to completely degraded condition. This application was made to facilitate the proposed grouped dwelling development the subject of this BMP. A decision on the Clearing Permit Application is yet to be made by DWER.

The existing vegetation described in the Clearing Permit Application as being approximately 80% cleared and exhibiting effectively no remnant native ground flora. The remaining tree vegetation is described as open woodland of jarrah and casuarina, with some corpses of peppermint and ti-tree shrubland. The canopy cover of the remnant tree vegetation has an area of 1.5ha (Bowman & Partners Environmental, 2020).

3.1 Native Vegetation – Modification and Clearing

The Clearing Permit Application determined that, given the historic clearing which has occurred on the site, the vegetation proposed for clearing is limited in area (1.5ha), is in degraded to completely degraded condition and does not consist of any flora species which have conservation significance (Bowman & Partners Environmental, 2020).

3.2 Revegetation and Landscape Plans

It is understood that the land will be landscaped as part of the proposed grouped dwelling development. However given the density of development, there is limited potential for any future landscaping to result in any significant increase in bushfire threat on dwellings within the subject site.

4.0 BUSHFIRE ASSESSMENT RESULTS

A Method 1 procedure in accordance with AS3959 has been undertaken to inform this bushfire assessment.

4.1 Assessment Inputs

4.1.1 Vegetation Classification

The vegetation classification has been determined within and surrounding the subject site in accordance with Clause 2.2.3 of AS3959. Each distinguishable vegetation plot with the potential to determine the BAL is identified in **Table 1** below with the plots mapped in **Figure 4**. This information has been used to develop the BAL Contour Map at **Figure 6**.

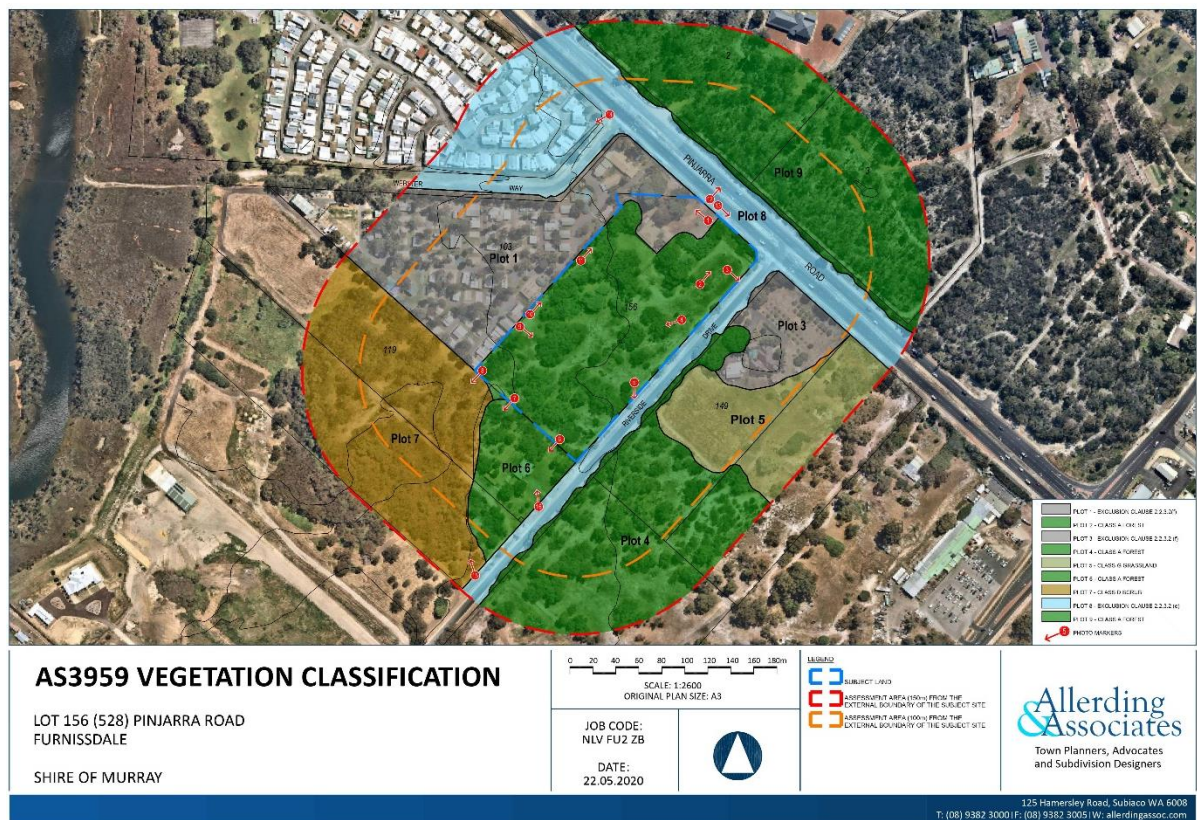


Figure 4 – Vegetation Classification

Table 1: Vegetation Classification

Photo ID	1	Plot	1
Vegetation Classification or Exclusion Clause			
Excludable 2.2.3.2(f) Low Threat Veg			
Description / Justification for Classification			
Plot 1 in the north-west of the subject site contains an existing dwelling and outbuildings surrounded by gardens which are managed in a low threat state. The land to the west of the subject site contains an existing caravan park which contains landscaped lawns and gardens in a low threat state.			
Photo ID	2	Plot	2
Vegetation Classification or Exclusion Clause			
Class A Forest			
Description / Justification for Classification			
Plot 2 comprising the majority of the subject site contains mature vegetation ranging in height from 12m to 16m with a foliage cover of around 60%. Understorey contains grasses, low trees and surface litter in an unmanaged state.			
Photo ID	3	Plot	3
Vegetation Classification or Exclusion Clause			
Excludable 2.2.3.2(f) Low Threat Veg			
Description / Justification for Classification			
Plot 3 to the east of the subject site contains an existing dwelling and outbuildings surrounded by gardens which are managed in a low threat state.			



Photo ID	4	Plot	2
Vegetation Classification or Exclusion Clause			
Class A Forest			
Description / Justification for Classification			
Plot 2 comprising the majority of the subject site contains mature vegetation ranging in height from 12m to 16m with a foliage cover of around 60%. Understorey contains grasses, low trees and surface litter in an unmanaged state.			
Photo ID	5	Plot	4
Vegetation Classification or Exclusion Clause			
Class A Forest			
Description / Justification for Classification			
Plot 4 to the south-east of the subject site, to the east of Riverside Drive, contains mature vegetation ranging in height from 12m to 20m with a foliage cover of around 60%. Understorey contains grasses, low trees and surface litter in an unmanaged state.			
Photo ID	6	Plot	6
Vegetation Classification or Exclusion Clause			
Class G Grassland			
Description / Justification for Classification			
Plot 6 to the south-west of the subject site contains an existing dwelling surrounded by mature vegetation ranging in height from 12m to 15m with a foliage cover of around 60%. Understorey contains grasses and low trees in an unmanaged state.			



Photo ID	7	Plot	7
Vegetation Classification or Exclusion Clause			
Class D Scrub			
Description / Justification for Classification			
Plot 7 to the south of the subject site contains dense scrub of up to 80% foliage cover with vegetation to a height of 6m.			
Photo ID	8	Plot	7
Vegetation Classification or Exclusion Clause			
Class D Scrub			
Description / Justification for Classification			
Plot 7 to the south of the subject site contains dense scrub of up to 80% foliage cover with vegetation to a height of 6m. Some isolated larger trees of up to 12m in height exist within the plot.			
Photo ID	9	Plot	2
Vegetation Classification or Exclusion Clause			
Class A Forest			
Description / Justification for Classification			
Plot 2 comprising the majority of the subject site contains mature vegetation ranging in height from 12m to 16m with a foliage cover of around 60%. Understorey contains grasses, low trees and surface litter in an unmanaged state.			



Photo ID	10	Plot	1
Vegetation Classification or Exclusion Clause			
Excludable 2.2.3.2(f) Low Threat Veg			
Description / Justification for Classification			
(Left of image) Plot 1 in the west of the subject site contains an existing caravan park which contains landscaped lawns and gardens in a low threat state.			
Photo ID	11	Plot	2
Vegetation Classification or Exclusion Clause			
Class A Forest			
Description / Justification for Classification			
Plot 2 comprising the majority of the subject site contains mature vegetation ranging in height from 12m to 16m with a foliage cover of around 60%. Understorey contains grasses, low trees and surface litter in an unmanaged state.			
Photo ID	12	Plot	9
Vegetation Classification or Exclusion Clause			
Class A Forest			
Description / Justification for Classification			
Plot 9 to the north of the subject site, north of Pinjarra Road, contains mature vegetation ranging in height from 10m to 12m with a foliage cover of around 70%. Understorey contains grasses and low trees in an unmanaged state.			



Photo ID	13	Plot	8
Vegetation Classification or Exclusion Clause			
Excludable 2.2.3.2(e) Non Vegetated Areas			
Description / Justification for Classification			
Plot 8 to the north and east of the subject site contains the existing road network in the locality.			
Photo ID	14	Plot	8
Vegetation Classification or Exclusion Clause			
Excludable 2.2.3.2(e) Non Vegetated Areas			
Description / Justification for Classification			
Plot 8 to the north and east of the subject site contains the existing road network in the locality.			
Photo ID	15	Plot	7
Vegetation Classification or Exclusion Clause			
Class D Scrub			
Description / Justification for Classification			
Plot 7 to the south of the subject site contains dense scrub of up to 80% foliage cover with vegetation to a height of 6m. Some isolated larger trees of up to 12m in height exist within the plot.			



Photo ID	16	Plot	6
Vegetation Classification or Exclusion Clause			
Class A Forest			
Description / Justification for Classification			
Plot 6 to the south-west of the subject site contains an existing dwelling surrounded by mature vegetation ranging in height from 12m to 15m with a foliage cover of around 60%. Understorey contains grasses and low trees in an unmanaged state.			



4.1.2 Site Topography and Slope

Based on site observations and available topographical mapping for the broader locality beyond 100m from the edge of the subject site, it has been verified that the majority of the subject site and surrounding land is relatively flat and level. A topographical plan is included at **Figure 5**.



Figure 5 – Topographical Plan (Source: Landgate 2020)

4.2 Assessment Outputs

4.2.1 BAL Assessment

The BAL Assessment was undertaken in accordance with AS3959 Methodology 1 to determine the potential worst case scenario radiant heat impact on the development. **Table 2** below outlines the worst case BAL for each of the vegetation plots based on separation distance to the closest proposed building within the subject site. The indicative BAL for each proposed dwelling is then provided in **Table 3**.

Table 2.1 of AS3959 identifies a Fire Danger Index (FDI) of 80 for Western Australia. Therefore, Table 2.4.3 of AS3959 has been used to develop the BAL Contour Map (refer **Figure 6**) to calculate the BAL for the proposed buildings and inform the standard of building construction required for those buildings to withstand such impacts.

Table 2: Worst Case BAL Table for Proposed Grouped Dwelling Development

Vegetation Plot	Applied Vegetation Classification	Effective Slope Under Classified Vegetation (degrees)	Separation Distance to Classified Vegetation (m)	Bushfire Attack Level
Plot 4	Class A Forest	Flat	22m	29
Plot 6	Class A Forest	Flat	9m	FZ
Plot 7	Class D Scrub	Flat	2m	FZ
Plot 9	Class A Forest	Flat	60m	12.5
Worst case BAL				FZ

Table 3: Indicative BAL Ratings for Proposed Grouped Dwellings

Dwelling/Lot Number	Bushfire Attack Level
10 – 16	Low
4 – 9, 17, 18A, 18B, 22, 23, 28 – 32, 36, 37, 44, 48, 52 – 59, 60A, 60B, 61 – 64, 65A, 65B, 71A, 71B	12.5
3, 21, 35, 43, 45, 49, 66, 70	19
2, 20, 26, 27, 34, 39, 40A, 40B, 41, 42, 46, 47, 50, 51, 67 – 69	29
1A, 1B, 19, 24, 25, 33A, 33B, 38A, 38B	40/FZ

The dwellings listed in **Table 3** and identified in **Figure 7** which are currently impacted by BAL-40/BAL-FZ will be restricted from development until BAL-29 or lower can be achieved. This is likely to take place after the removal of remaining vegetation in Plot 6 (Forest) and Plot 7 (Scrub). Until the required separation distances to achieve an Asset Protection Zone of BAL-29 or lower can be achieved for dwellings 1A, 1B, 19, 24, 25, 33A, 33B, 38A and 38B the development of those dwellings cannot occur.

Whilst the proposed centrally located communal facilities (clubhouse, bbq area and bowling green) have been mapped in **Figure 6** with a BAL of BAL-12.5, these buildings and features do not represent Class 1, 2 or 3 buildings and/or Class 10a buildings or decks associated with a Class 1, 2 or 3 building and are therefore not required under the Building Code of Australia to meet the bushfire construction requirements.

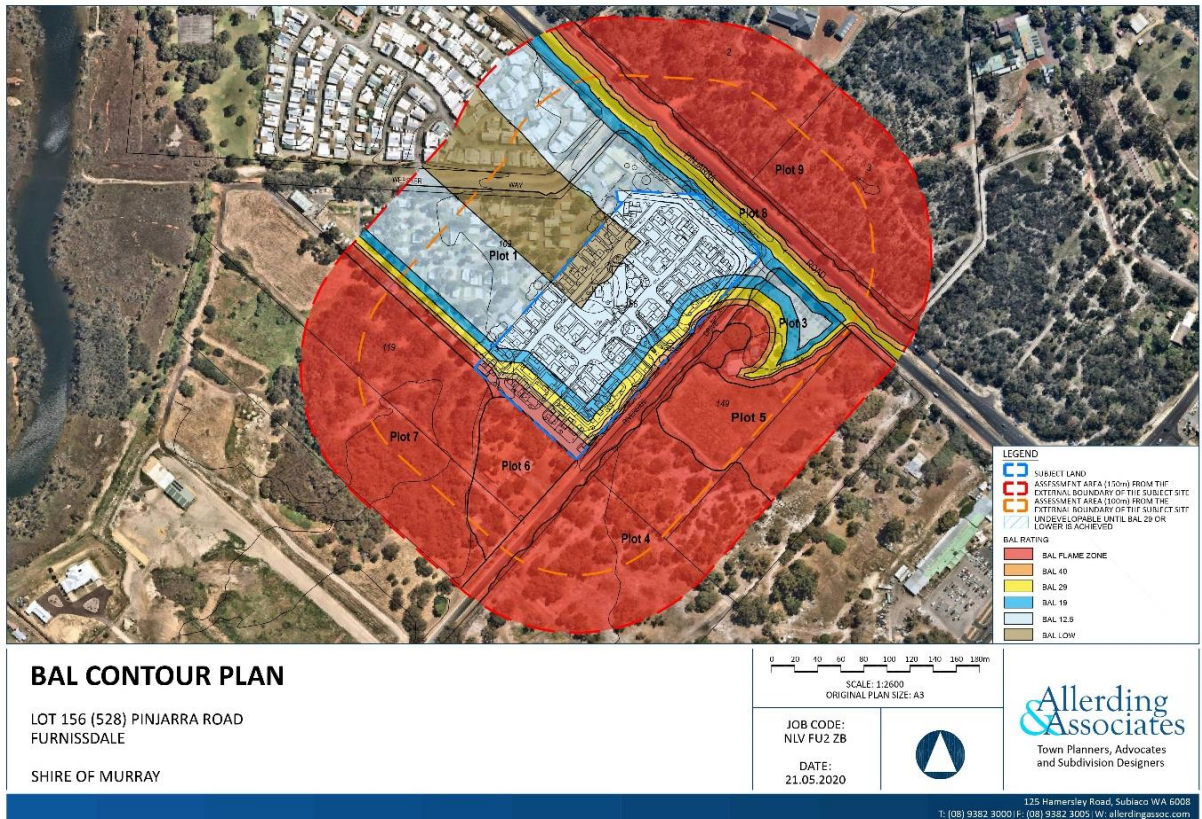


Figure 6 – BAL Contour Map

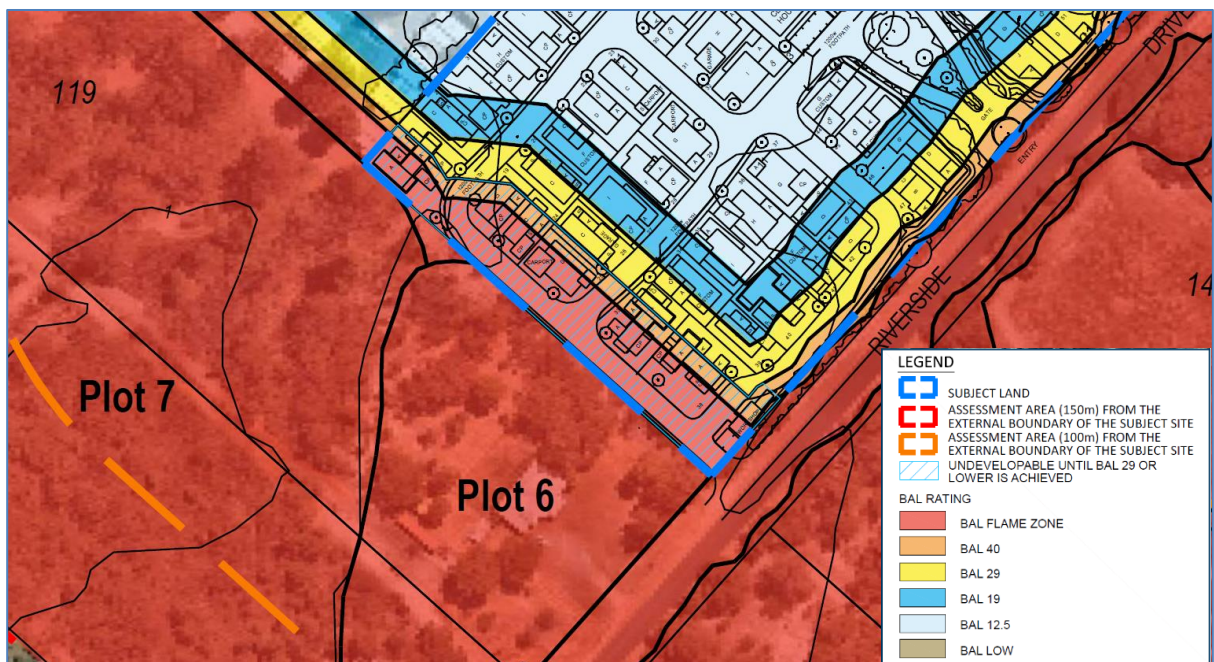


Figure 7 – Undevelopable Dwellings (until BAL-29 or lower is achieved)

5.0 IDENTIFICATION OF BUSHFIRE HAZARD ISSUES

Based on the BAL assessment undertaken as part of this BMP, the highest determined BAL associated with those areas within the subject site where new development is planned to occur is BAL40/FZ. It is noted that these areas represent external exposed parts of the subject site to the south-west (Plots 6 and 7) and south-east (Plot 4) where shelter from a bushfire event is not immediately available. Plots 6 and 7 result in a BAL rating of BAL-40/FZ for a number of proposed dwellings along the south-western boundary of the subject site. It is anticipated that the future development of the neighbouring lot to the south-west of the subject site will reduce the BAL rating for the proposed dwellings located at the interface with this boundary. The construction on these dwellings will be restricted until such time that the neighbouring land to the south-west is developed and/or the separation distance from the vegetation has been increased to BAL29 or lower. Having regard to the other proposed dwellings within the subject site with indicative BAL ratings of BAL29 or lower, it is likely that physical separation from bushfire prone vegetation will be the most effective management measure due to the extent of non-vegetated land within the central portion of the site and in surrounding areas to the north and west.

In a broader context, given that Pinjarra Road physically separates the subject site from the Forest vegetation in Plot 9 to the north, the highest fire risk areas surrounding the subject site exist to the south-west (Plots 6 and 7) and south-east (Plot 4) due to the presence of classified Forest and Scrub which adjoin larger contiguous areas of vegetation within existing rural properties. To the south-east (Plot 4) however, this classified vegetation is positioned adjacent to Riverside Drive and therefore represents an area which is accessible for fire suppression from different directions during a bushfire event and therefore does not pose a significant threat to the development.

The area of classified Forest vegetation in proximity to the subject site to the north of Pinjarra Road (Plot 9) may present opportunities for landscape scale fires and long fire runs, particularly noting the extent of bushland further afield to the north and east. However, as previously stated, these larger areas of classified vegetation within 150m from the boundaries of the subject site to the north will be separated by non-vegetated areas such as roads and footpaths.

Further, surrounding landowners will be required to conform to the Shire of Murray Firebreak Notice and Bushfire Information 2020 – 2021. For surrounding land to the south-west and south-east, land owners/occupiers are required to maintain 3m wide firebreaks immediately inside all external boundaries. It is further noted that for the neighbouring rural land to the immediate south-west of the subject site, the owner/occupier must ensure that all flammable material shall be reduced and maintained to a height of less than 5cm for a distance of 20m immediately inside the installed and maintained firebreak.

Pursuant to Clause 6.5 of SPP3.7, the proposal has been assessed against the bushfire protection criteria requirements contained within the Guidelines. Sections 6.0 and 7.0 of this report demonstrates that the proposal complies with the bushfire protection criteria of the Guidelines and it is therefore considered that the bushfire hazard issues can be effectively managed and mitigated.

6.0 ASSESSMENT AGAINST THE BUSHFIRE PROTECTION CRITERIA

An assessment of the proposal against the bushfire protection criteria of the Guidelines is contained in **Table 4** which demonstrates that the development meets all acceptable solutions.

6.1 Compliance Table

Table 4: Assessment Against the Bushfire Protection Criteria

Bushfire Protection Criteria	Intent	Method of Compliance	Proposed Bushfire Management Strategies	Response
		Acceptable Solutions		
Element 1: Location	To ensure that strategic planning proposals, subdivision and development applications are located in areas with the least possible risk of bushfire to facilitate the protection of people, property and infrastructure.	<p>A1.1 Development location</p> <p>The strategic planning proposal, subdivision and development application is located in an area that is or will, on completion, be subject to either a moderate or low bushfire hazard level, or BAL-29 or below.</p>	<p>The majority of the proposed dwellings have been assessed with a BAL-29 or lower.</p> <p>The proposal includes nine dwellings which have been assessed with indicative BAL ratings of either BAL-40 or BAL-FZ. As noted previously and as demonstrated on Figure 7, these lot will remain undevelopable until BAL-29 or lower can be achieved.</p> <p>Accordingly, the proposed development is appropriately located.</p>	The proposal meets the intent of Element 1 and achieves acceptable solution A1.1.
Element 2: Siting and Design of Development	To ensure that the siting and design of development minimises the level of bushfire impact.	<p>A2.1 Asset Protection Zone (APZ)</p> <p>Every habitable building is surrounded by, and every proposed lot can achieve, an APZ depicted on submitted plans, which meets the following requirements:</p>	<p>The majority of the proposed dwellings within the subject site have been assessed with a BAL-29 or lower and will achieve a radiant heat impact not exceeding 29kW/m² in a bushfire event within the boundaries of the site.</p>	The proposal meets the intent of Element 2 and achieves acceptable solution A2.1.

Bushfire Protection Criteria	Intent	Method of Compliance	Proposed Bushfire Management Strategies	Response
		Acceptable Solutions		
		<ul style="list-style-type: none"> • Width: Measured from any external wall or supporting post or column of the proposed building, and of sufficient size to ensure the potential radiant heat impact of a bushfire does not exceed 29kW/m² (BAL-29) in all circumstances. • Location: the APZ should be contained solely within the boundaries of the lot on which the building is situated, except in instances where the neighbouring lot or lots will be managed in a low-fuel state on an ongoing basis, in perpetuity (see explanatory notes). • Management: the APZ is managed in accordance with the requirements of 'Standards for Asset Protection Zones'. (see Schedule 1). 	<p>This proposal includes nine dwellings which have been assessed with indicative BAL ratings of either BAL-40 or BAL-FZ. As noted previously and as demonstrated on Figure 7, these lot will remain undevelopable until BAL-29 or lower can be achieved.</p> <p>All buildings within the subject site, at time of completion, will be separated from lot boundaries to either achieve a BAL-29 or lower or ensure that an APZ can be successfully established around the building to ensure that the potential radiant heat impact on a building in a bushfire event does not exceed 29kW/m².</p>	

Bushfire Protection Criteria	Intent	Method of Compliance	Proposed Bushfire Management Strategies	Response
		Acceptable Solutions		
Element 3: Vehicular Access	To ensure that the vehicular access serving a subdivision / development is available and safe during a bushfire event.	<p>A3.1 Two access routes</p> <p>Two different vehicular access routes are provided, both of which connect to the public road network, provide safe access and egress to two different destinations and are available to all residents/the public at all times and under all weather conditions.</p>	<p>The subject site will connect to Riverside Drive to the south-east via a constructed and sealed crossover and driveway. Riverside Drive provides safe access and egress via the public road network in two different destinations to the south-west and north-east of the subject site.</p> <p>Within the subject site, two access routes are proposed, one via the main entrance driveway from Riverside Drive and the other via a secondary boat and caravan entrance from Riverside Drive to the south-western end of the front boundary.</p>	The proposal is considered to meet the intent of Element 3 and achieves acceptable solution A3.1.

Bushfire Protection Criteria	Intent	Method of Compliance	Proposed Bushfire Management Strategies	Response
		Acceptable Solutions		
		<p>A3.2 Public road A public road is to meet the requirements in Table 6, Column 1.</p>	<p>Riverside Drive and all connecting public roads have a trafficable surface and horizontal clearance in excess of the minimum requirements of Table 6, Column 1 of the Guidelines. All roads within the subject site also meet the requirements of Table 6, Column 1 of the Guidelines.</p>	<p>The proposal meets the intent of Element 3 and achieves acceptable solution A3.2 though compliance with the vehicular access technical requirements of Table 6, Column 1.</p>
		<p>A3.3 Cul-de-sac (including a dead-end road) A cul-de-sac and/or a dead end road should be avoided in bushfire prone areas. Where no alternative exists (i.e. the lot layout already exists and/or will need to be demonstrated by the proponent), the following requirements are to be achieved:</p> <ul style="list-style-type: none"> • Requirements in Table 6, Column 2; • Maximum length: 200 metres (if public emergency access is provided between cul-de-sac heads maximum length can be increased to 600 metres provided no more than eight lots are serviced and the emergency access way is no more than 600 metres); and • Turn-around area requirements, including a minimum 17.5 metre diameter head. A 	<p>No cul-de-sacs or dead end roads exist in proximity of the subject site.</p>	<p>NA</p>

Bushfire Protection Criteria	Intent	Method of Compliance	Proposed Bushfire Management Strategies	Response
		Acceptable Solutions		
		<p>A3.4 Battle-axe</p> <p>Battle-axe access leg should be avoided in bushfire prone areas. Where no alternative exists, (this will need to be demonstrated by the proponent) all of the following requirements are to be achieved:</p> <ul style="list-style-type: none"> • Requirements in Table 6, Column 3; • Maximum length: 600 metres; and • Minimum width: six metres. 	The subject site is not proposed to be connected to the road network by a battle-axe leg.	NA
		<p>A3.5 Private driveway longer than 50 metres</p> <ul style="list-style-type: none"> • A private driveway is to meet all of the following requirements: • Requirements in Table 6, Column 3; • Required where a house site is more than 50 metres from a public road; • Passing bays: every 200 metres with a minimum length of 20 metres and a minimum width of two metres (i.e. the combined width of the passing bay and constructed private driveway to be a minimum six metres); • Turn-around areas designed to accommodate type 3.4 fire appliances and to enable them to turn around safely every 500 metres (i.e. kerb to kerb 17.5 metres) and within 50 metres of a house; and 	All proposed roads/driveways within the subject site meet the requirements of Table 6, Column 1 of the Guidelines.	NA

Bushfire Protection Criteria	Intent	Method of Compliance	Proposed Bushfire Management Strategies	Response
		Acceptable Solutions		
		<ul style="list-style-type: none"> Any bridges or culverts are able to support a minimum weight capacity of 15 tonnes. All-weather surface (i.e. compacted gravel, limestone or sealed). A3.6 		
		<p>A3.6 Emergency access way An access way that does not provide through access to a public road is to be avoided in bushfire prone areas. Where no alternative exists (this will need to be demonstrated by the proponent), an emergency access way is to be provided as an alternative link to a public road during emergencies. An emergency access way is to meet all of the following requirements:</p> <ul style="list-style-type: none"> Requirements in Table 6, Column 4; No further than 600 metres from a public road; Provided as right of way or public access easement in gross to ensure accessibility to the public and fire services during an emergency; and Must be signposted. 	The subject site is not proposed to be connected to a public road by an emergency access way.	NA
		A3.7 Fire service access routes (perimeter roads)	Fire service access routes are not required in this instance.	NA

Bushfire Protection Criteria	Intent	Method of Compliance	Proposed Bushfire Management Strategies	Response
		Acceptable Solutions		
		<p>Fire service access routes are to be established to provide access within and around the edge of the subdivision and related development to provide direct access to bushfire prone areas for fire fighters and link between public road networks for firefighting purposes. Fire service access routes are to meet the following requirements:</p> <ul style="list-style-type: none"> • Requirements Table 6, Column 5; • Provided as right of ways or public access easements in gross to ensure accessibility to the public and fire services during an emergency; • Surface: all-weather (i.e. compacted gravel, limestone or sealed); • Dead end roads are not permitted; • Turn-around areas designed to accommodate type 3.4 appliances and to enable them to turn around safely every 500 metres (i.e. kerb to kerb 17.5 metres); • No further than 600 metres from a public road; • Allow for two-way traffic and; • Must be signposted. 		

Bushfire Protection Criteria	Intent	Method of Compliance	Proposed Bushfire Management Strategies	Response
		Acceptable Solutions		
		<p>A3.8 Firebreak width</p> <p>Lots greater than 0.5 hectares must have an internal perimeter firebreak of a minimum width of three metres or to the level as prescribed in the local firebreak notice issued by the local government.</p>	<p>The Shire of Murray Firebreak Notice and Bushfire Information 2020-2021 (included at Appendix 3) requires that properties zoned Residential Development with an area of 4,001m² or greater to install and maintain a 3m wide private driveway.</p>	<p>The proposal meets the intent of Element 3 and achieves acceptable solution A3.8 though compliance with the Shire of Murray Fire Break and Bushfire Information 2020-2021.</p>
Element 4: Water	To ensure that water is available to the subdivision, development or land use to enable people, property and infrastructure to be defended from bushfire.	<p>A4.1 Reticulated areas</p> <p>The subdivision, development or land use is provided with a reticulated water supply in accordance with the specifications of the relevant water supply authority and Department of Fire and Emergency Services.</p>	<p>The subject site is serviced by a reticulated water supply with hydrants proposed to be positioned throughout the site in accordance with the Water Corporation Design Standard DS 63 (refer to Figure 8).</p>	<p>The proposal meets the intent of Element 4 and achieves acceptable solution A4.1.</p>
		<p>A4.2 Non-reticulated areas</p> <p>Water tanks for fire fighting purposes with a hydrant or standpipe are provided and meet the following requirements:</p> <ul style="list-style-type: none"> • Volume: minimum 50,000 litres per tank; • Ratio of tanks to lots: minimum one tank per 25 lots (or part thereof); 	<p>The subject site is located in an area serviced by a reticulated water supply.</p>	<p>NA</p>

Bushfire Protection Criteria	Intent	Method of Compliance	Proposed Bushfire Management Strategies	Response
		Acceptable Solutions		
		<ul style="list-style-type: none"> • Tank location: no more than two kilometres to the further most house site within the residential development to allow a 2.4 fire appliance to achieve a 20 minute turnaround time at legal road speeds; • Hardstand and turn-around areas suitable for a type 3.4 fire appliance (i.e. kerb to kerb 17.5 metres) are provided within three metres of each water tank; and • Water tanks and associated facilities are vested in the relevant local government. 		
		<p>A4.3 Individual lots within non-reticulated areas (Only for use if creating 1 additional lot and cannot be applied cumulatively)</p> <ul style="list-style-type: none"> • Single lots above 500 square metres need a dedicated static water supply on the lot that has the effective capacity of 10,000 litres. 	The subject site is located in an area serviced by a reticulated water supply.	NA

6.2 Additional Management Strategies

The following additional bushfire management strategies have been recommended for guiding future planning and development stages associated with the proposal. These strategies are based on best practice in bushfire protection and reflect the guidance provided by SPP3.7 and the Guidelines.

6.2.1 Compliance with Shire of Murray Firebreak Notice and Bushfire Information

The Shire of Murray Firebreak Notice and Bushfire Information 2020-2021 (included at **Appendix 3**) contains the land management practices for properties during the period from 30th November 2020 to 30th April 2021. The relevant provisions of the Fire Prevention Requirements for the subject site and surrounding land include:

2. **Special Rural, Special Residential, All Special Use, Farmlet, Hills Landscape Protection Land, Rural Townsite and Rural Zoned Land less than 10 Hectares**
 - c. *Where the area of land is 25,001m² or more in size, a three (3) metre wide firebreak is to be installed and maintained immediately:*
 - i. *Inside all external boundaries of the land.*
 - ii. *Around all outbuildings, sheds, haystacks, groups of buildings and fuel depots/storage areas situated on the land.*
 - iii. *All flammable material within 20 metres of a habitable building is to be reduced and maintained to a height of less than five (5) centimetres.*
 - d. *If the land within this category adjoins any of the land described in Clause 3, all flammable material shall be reduced and maintained to a height of less than five (5) centimetres, for a distance of 20 metres, immediately inside the installed and maintained firebreak.*
 - e. *All land within this zoning category, irrespective of size, requires a three (3) metre wide private driveway to be installed and maintained.*
3. **Residential, Residential Development, Special Development, Industry and all Other Zoned Land Not Specified**
 - b. *Where the area of land in this zoning category is more than 4,001m² in size, a three (3) metre wide firebreak shall be installed and maintained immediately inside all external boundaries of the land and also immediately surrounding all buildings situated on the land.*
 - c. *A three (3) metre wide private driveway to be installed and maintained.*
 - d. *An Asset Protection Zone to be installed and maintained.*

7. **Bushfire Management Plans**

Where a Bushfire Management Plan (BMP) exists for a specified area or property as required by the Local Planning Scheme or subdivision approval or for an individual or group of properties, compliance with all requirements of the BMP are required in addition to any further requirements within this notice.

The bushfire risk management measures to be implemented and maintained on the subject site, including the relevant bushfire protection criteria and the Bushfire Prevention Order requirements, are spatially demonstrated in **Figure 8**.

6.2.2 **Notification(s) on Title**

Pursuant to SPP3.7, in instances where land is assessed with a BAL rating above BAL-LOW, it is recommended that notifications be placed on title to advise on bushfire risk management implementation measures, including:

- To advise that the site is located in a bushfire prone area; and
- To advise that the site is subject to a Bushfire Management Plan.

6.2.3 **Building Construction Standards**

The Building Code of Australia contains bushfire construction requirements that are applied to residential classes of development, being Class 1, 2, 3 buildings in designated bushfire prone areas, or Class 10a buildings or decks associated with Class 1, 2 or 3 buildings in designated bushfire prone areas. The Building Code of Australia references AS3959 as a deemed to satisfy solution that provides one way of demonstrating compliance with the bushfire performance requirements of the Building Code.

The bushfire construction provisions of the Building Code of Australia do not apply to Class 4 to Class 9 buildings. In these instances the applicant has the discretion to utilise any or all of the elements of AS 3959 in the construction of the building that they deem appropriate.

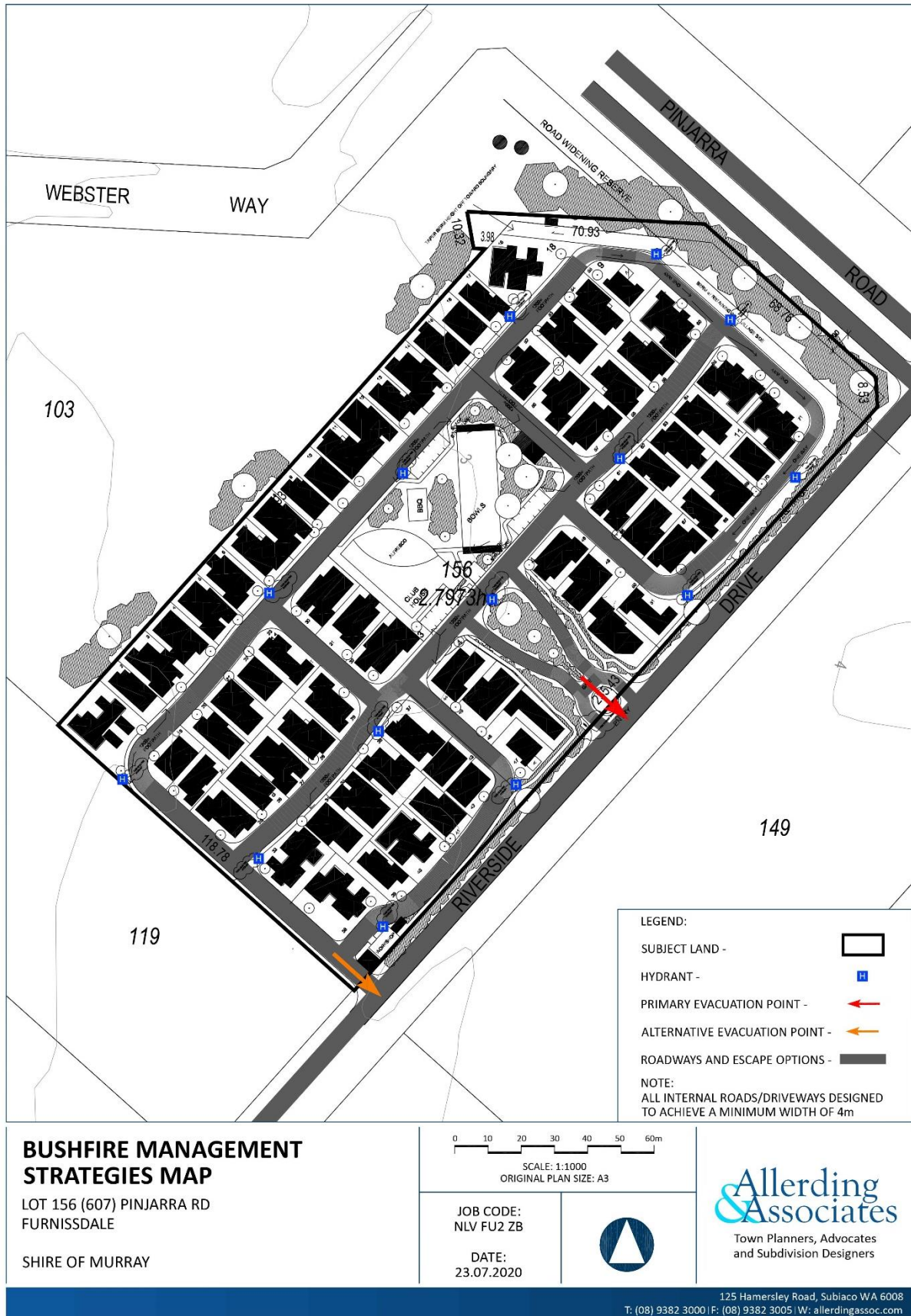


Figure 8 – Bushfire Management Strategies

7.0 RESPONSIBILITIES FOR IMPLEMENTATION AND MANAGEMENT

The following tables set out the responsibilities of the developer, landowner, and local government with regard to the initial implementation and ongoing maintenance of the required actions as contained within this BMP.

No.	Action	Implementation		Management	
		Responsible	Timing	Responsible	Timing
1	Construction of buildings to AS3959.	Landowner / Developer	Prior to the occupation of proposed buildings	NA	NA
2	Establish and maintain the Asset Protection Zone (APZ) within the lot boundary to the dimensions and standard stated in the BMP (where applicable).	Landowner / Developer	Prior to the occupation of proposed buildings	Landowner / Developer	Ongoing
3	Install and maintain vehicular access routes within the lot to the required surface condition and clearances as stated in the BMP.	Landowner / Developer	Prior to the occupation of proposed buildings	Landowner / Developer	Ongoing
4	Comply with the relevant local government annual firebreak notice issued under s33 of the Bush Fires Act 1954.	Landowner / Developer	Ongoing	Landowner / Developer	Ongoing
5	Prohibit construction of dwellings 1A, 1B, 19, 24, 25, 33A, 33B, 38A and 38B until BAL29 or lower is achieved.	Landowner / Developer	While classified vegetation exists in Plot 6 (Forest) and Plot 7 (Scrub)	Landowner / Developer	Ongoing
6	Undertake BAL Assessment for dwellings 1A, 1B, 19, 24, 25, 33A, 33B, 38A and 38B to confirm BAL29 or lower can be achieved.	Landowner / Developer	Once classified vegetation in Plot 6 (Forest) and Plot 7 (Scrub) has been removed or once it is demonstrated that BAL29 or lower is achieved	NA	NA

No.	Action	Implementation		Management	
		Responsible	Timing	Responsible	Timing
7	Future revisions / amendments to BMP.	NA	NA	Landowner / Developer	Prior to any future development outside the scope of this BMP.
8	Notification on Title	Landowner / Developer	Following development approval	NA	NA
9	Inspection and compliance action.	NA	NA	Local Government	Ongoing

8.0 REFERENCES

Allerding & Associates 2020, *Proposed Grouped Dwelling Development – Lot 156 (#528) Pinjarra Road, Furnissdale*, September 2020.

Bowman & Partners Environmental 2020, *Clearing Permit Application: Vegetation Survey Report – Lot 156 Pinjarra Road, Furnissdale*, April 2020.

Department of Fire and Emergency Services 2020, *Mapping standard for bush fire prone areas*, Government of Western Australia,
<<https://www.dfes.wa.gov.au/waemergencyandriskmanagement/obrm/Documents/OBRM-Mapping-Standard-for-Bush-Fire-Prone-Areas.pdf>>.

FirePlan WA 2015, *Fire Management Plan for Local Structure Plan Riverside Drive & Ronlyn Road Furnissdale*, Version 1.4, March 2015.

Landgate 2020, *Locate V5*, Government of Western Australia,
<<https://maps.slip.wa.gov.au/landgate/locate/>>

Rowe Group 2016, *Furnissdale West Structure Plan*, Version 5, July 2016.

Shire of Murray 2020, *Shire of Murray Firebreak Notice and Bushfire Information 2020-2021*,
<https://www.murray.wa.gov.au/single-download/firebreak-notice-bushfire-information-booklet-2019-2020/?wpdmdl=20669&ind=wLpSGiZa_P4_Uo7SKzW-zVlAGWvWRs5DOZ84qZUyC0KrUIJZ-h0NgRYXNq9Q5wjWs7si47W4bZv7ayO_1ax0p_g5ISNYhkwWkm0PNazpK1vlzjIlvBJpkX74Uym_FTg2>

Standards Australia Online 2018, *Construction of buildings in bushfire-prone areas*, AS 3959:2018.

Western Australian Planning Commission 2017a, *Guidelines for planning in bushfire prone areas version 1.3 – Appendices*,
<https://www.planning.wa.gov.au/dop_pub_pdf/Bushfire_Guidelines_Version_1.3_Dec2017-Appendices.pdf>.

Western Australian Planning Commission 2017b, *Guidelines for planning in bushfire prone areas version 1.3*,
<https://www.planning.wa.gov.au/dop_pub_pdf/Bushfire_Guidelines_Version_1.3_Dec2017.pdf>.

Western Australian Planning Commission 2015, *State planning policy 3.7 planning in bushfire prone areas*,
<https://www.planning.wa.gov.au/dop_pub_pdf/SPP_3.7_Planning_in_Bushfire_Prone_Areas.pdf>.

APPENDIX 1 – DEVELOPMENT PLANS



NOTES

- 79 DWELLINGS
 13 - LARGE - BLUE
 37 - MEDIUM - RED
 13 - SMALL - YELLOW
 08 - DUPLEX UNITS - TEAL (x2 DWELLINGS)

TOTAL SITE AREA = 29512m²
 TOTAL LOT NO' = 71
 SITE TO LOT AREA RATIO = 416m²
 AVERAGE LOT AREA = 243m²
 COMMUNAL SPACE AREA = 4607m²
 COMMUNAL SPACE LOT AREA RATIO = 16%

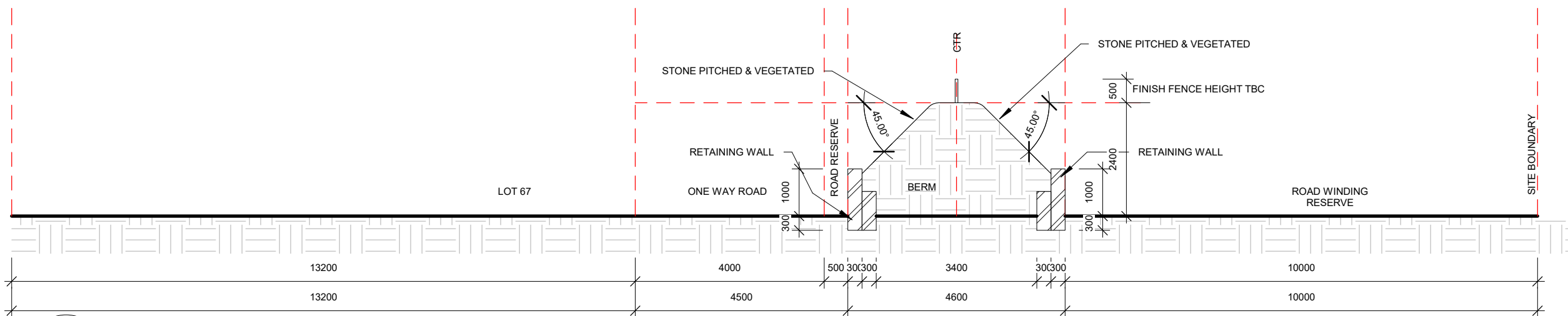
KEY

- TREE
- DRIVEWAY
- LANDSCAPING
- FOOTPATH

DWELLINGS

- 16x A - THE ARALIA
- 02x B - THE BAYBERRY - 8x6
- 11x C - THE CARAWAY - 1x1 - 19x10
- 09x D - THE FOXGLOVE - 2x1 - 19x10
- 0x E - THE GINGER
- 15x F - THE LAVENDER - 2x1 - 20x11.5
- 06x G - THE NETTLE - 2x2 - 20x12.5
- 07x H - THE PEPPERMINT - 2x1 - 20x11.5
- 10x I - THE ROSEMARY - 3x2 - 20x12.5
- 03x J - THE SANTOLINA - 3x1 - 20x12.5

*LOT BOUNDARIES DELINEATED BY 1800mm HIGH FENCING



2
A001

Berm 45 Pitch

1 : 100

*CONFIRM ALL DIMENSIONS ON SITE



RICHARD HAMMOND ARCHITECT
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No.	Description	Date
8	Masterplan Revision 8	20.03.16
9	Masterplan 8 with New House Letters	20.04.06
10	Revision 9 - Acoustic Barriers	20.05.27
11	R10 - Minor Site Revisions to satisfy R60 provisions	20.08.14

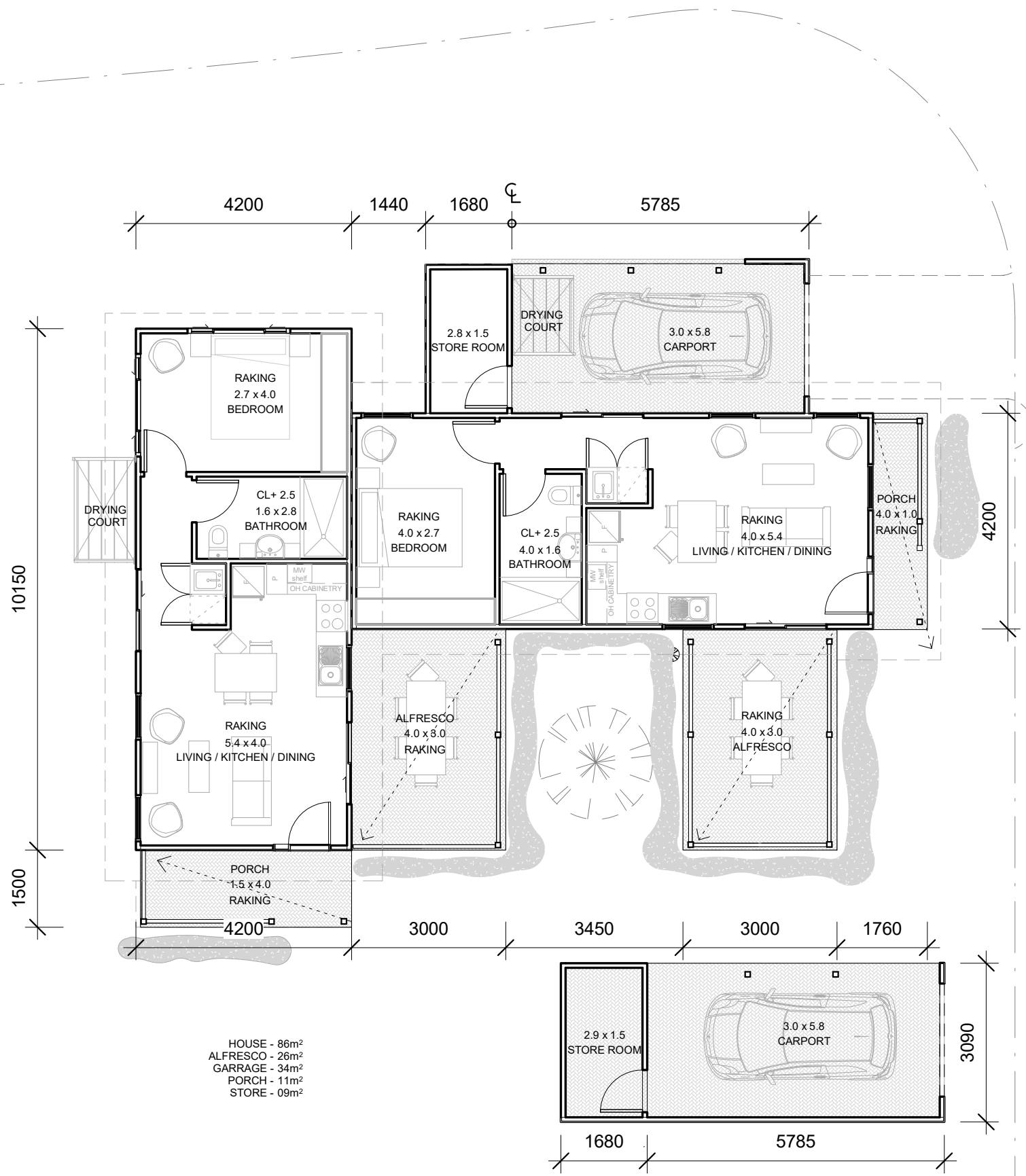
PROVIDENCE MANDURAH
 607 PINJARRA RD
 FURNISSDALE

MASTERPLAN R10		A-015	
Project number	-		
Date	20.08.14		
Drawn by	RHA		
Checked by	RHA		
Scale@A3	As indicated		

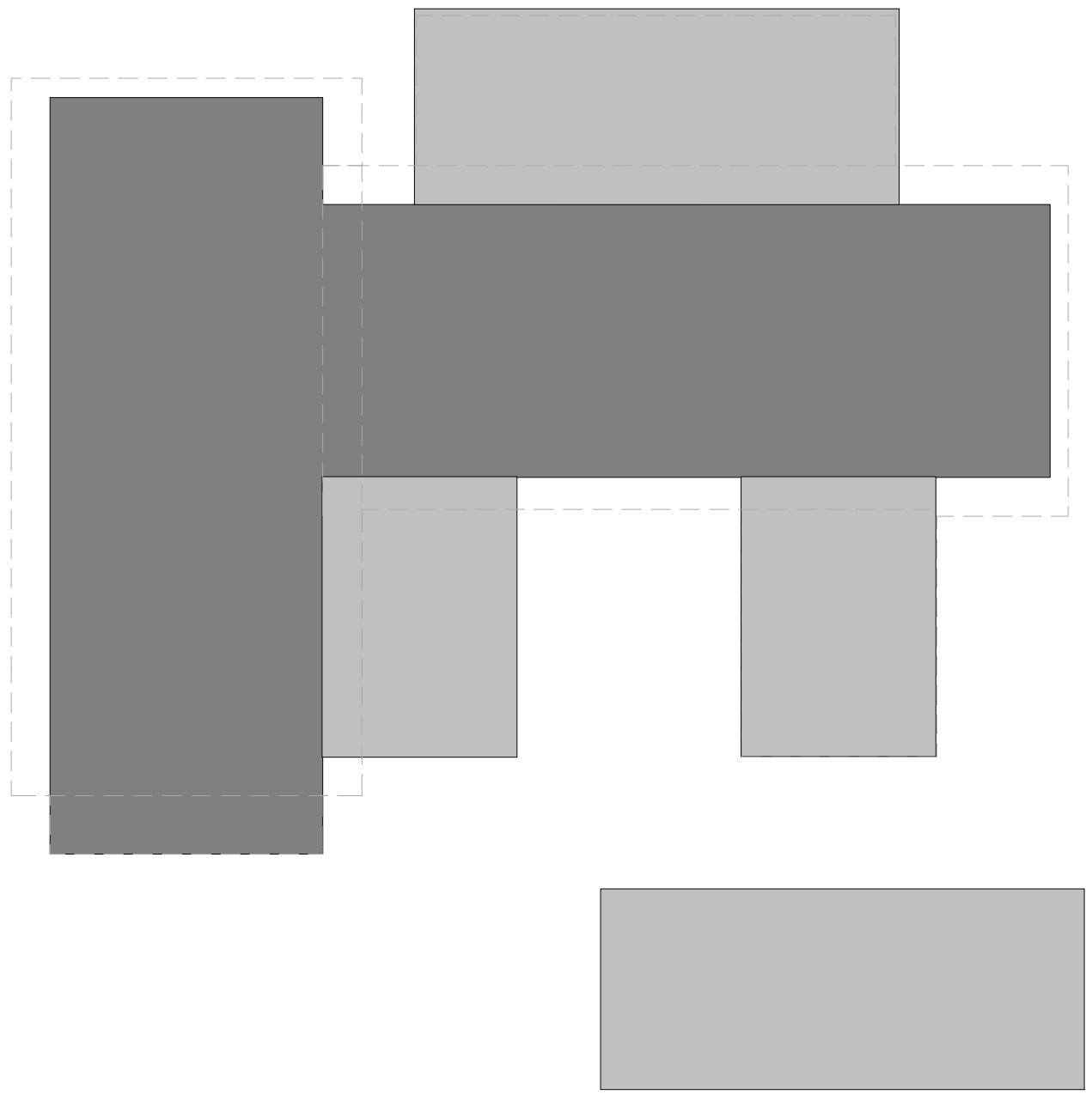
HOUSE : 42m²
 ALFRESCO: 12m²
 CARPORT: 17m²
 STORE: 4m²

NOTE:
 SUSPENDED CEILING HEIGHTS
 AT 2.5m

■ SITE BUILT
 ■ PREFABRICATED



HOUSE - 86m²
 ALFRESCO - 26m²
 GARRAGE - 34m²
 PORCH - 11m²
 STORE - 09m²



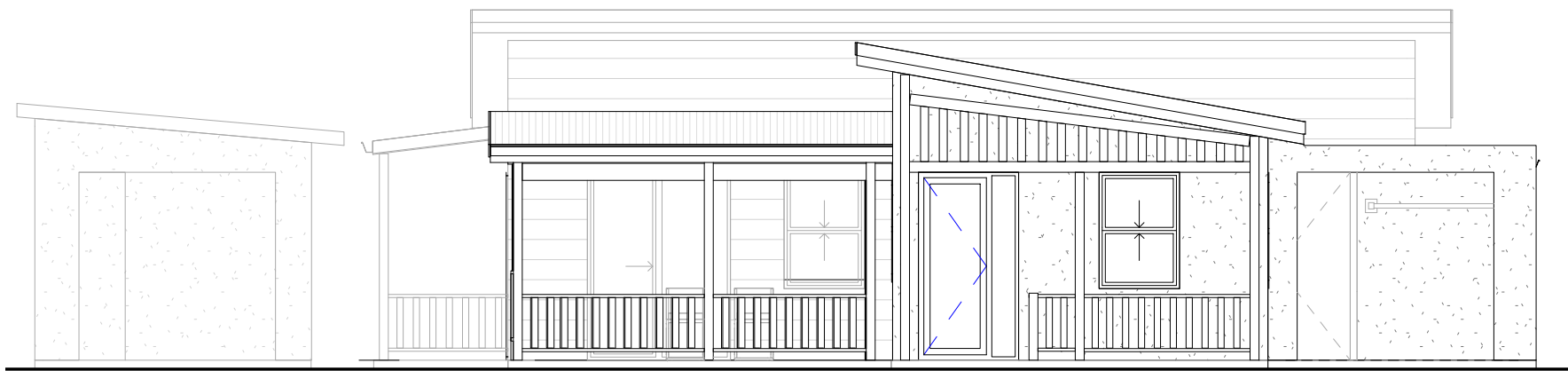
RICHARD HAMMOND ARCHITECT
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 0438 918 753
 rharchitect@bigpond.com

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No.	Description	Date

'The Aralia'
 Providence Lifestyle
 'A'

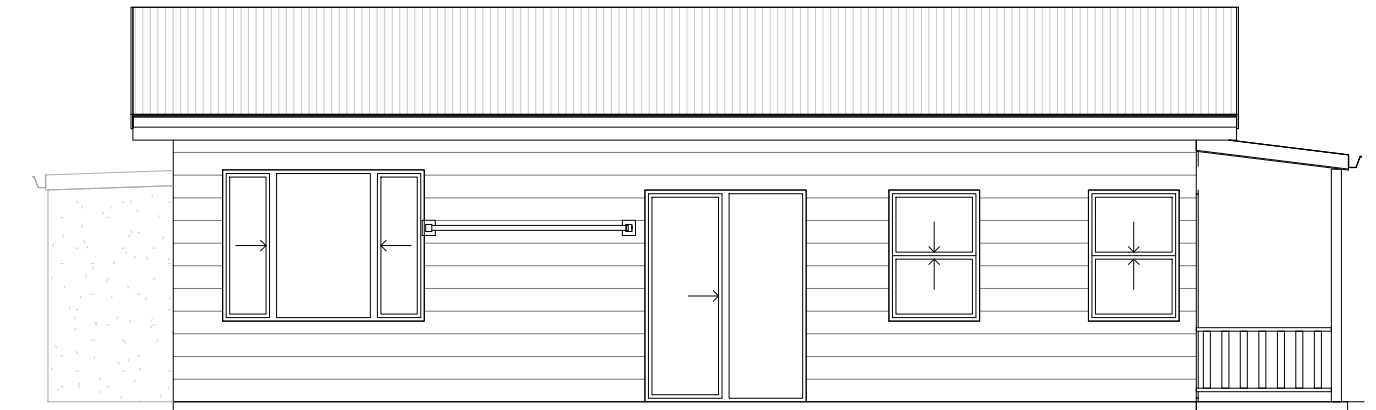
FLOOR PLAN		
Project number	xx	A-100
Date	20.07.14	
Drawn by	RHA	Scale
Checked by	RHA	
		1 : 100



1

FRONT ELEVATION

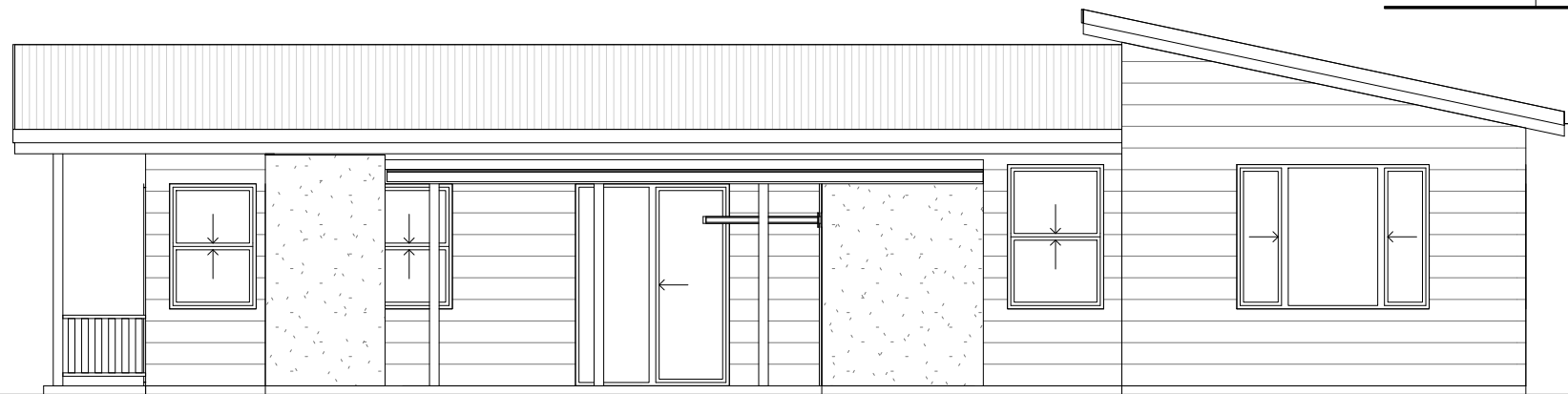
1 : 75



2

REAR ELEVATION 1

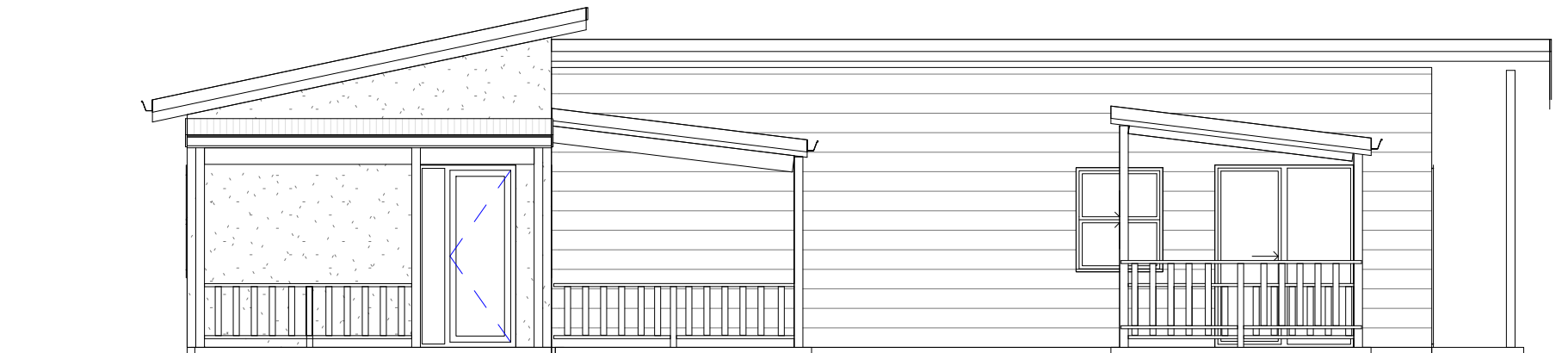
1 : 75



3

SIDE ELEVATION 1

1 : 75



4

SIDE ELEVATION 2

1 : 75

MATERIALS AND FINISHES

STREET ELEVATIONS TO BE PRIMELINE F.C WEATHERBOARD AND FLAT FIBRE CEMENT SHEET w/ ROLL-ON SAND FINISH TEXTURE

SIDE AND REAR ELEVATIONS TO BE PRIMELINE F.C WEATHERBOARD PAINT FINISH

ALL ROOFS TO BE CUSTOM ORB w/ COLORBOND FASCIA AND GUTTER IN SIMILAR FINISH

PATIO TUBE STRUCTURES TO CARPORT AND ALFRESCO

FINAL COLOUR FINISHES TO BE CONFIRMED



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No.	Description	Date
0	PRELIMINARY	20.03.11
1	HOME NAME UPDATED	20.07.14

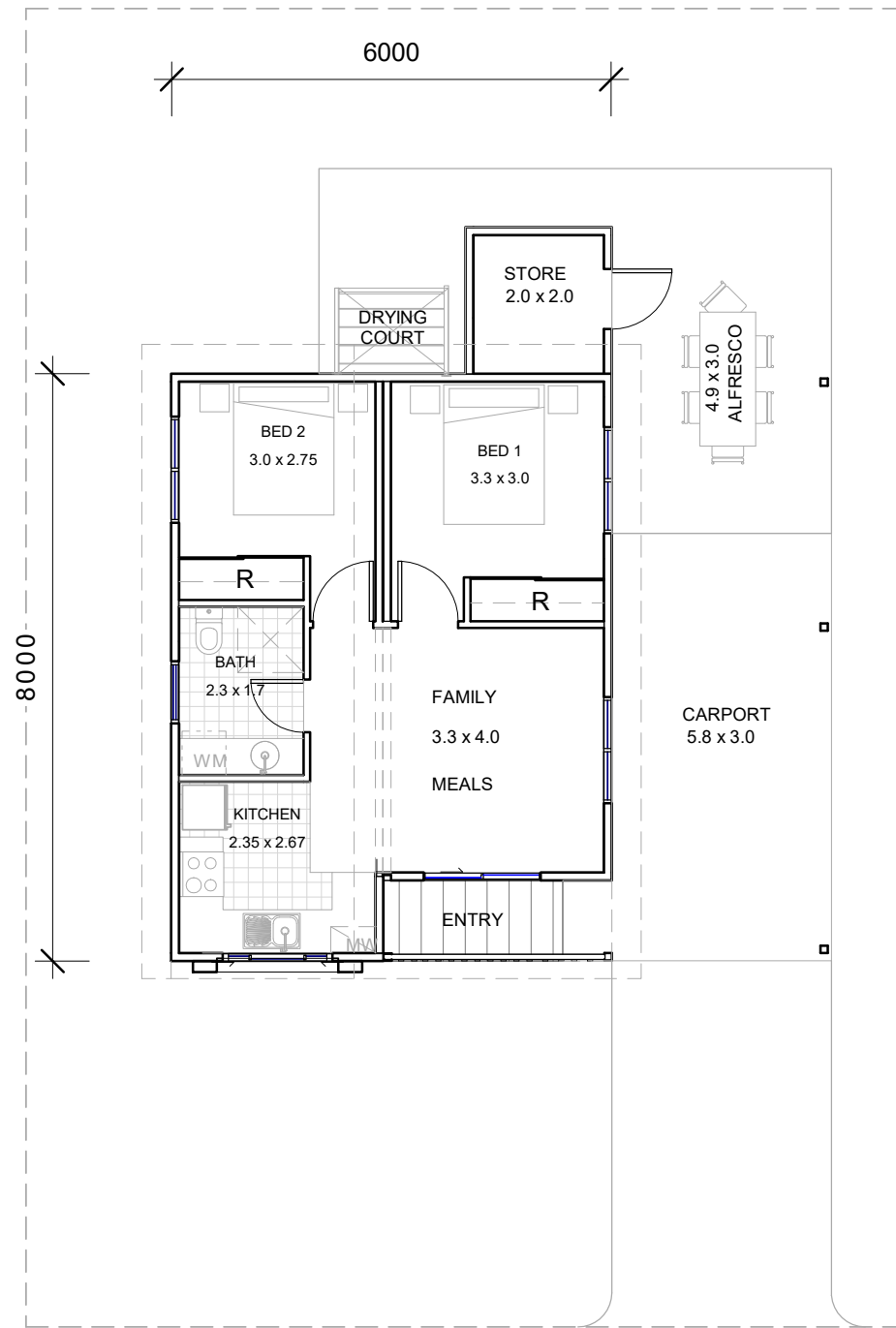
'The Aralia'

Providence Lifestyle

'A'

ELEVATIONS

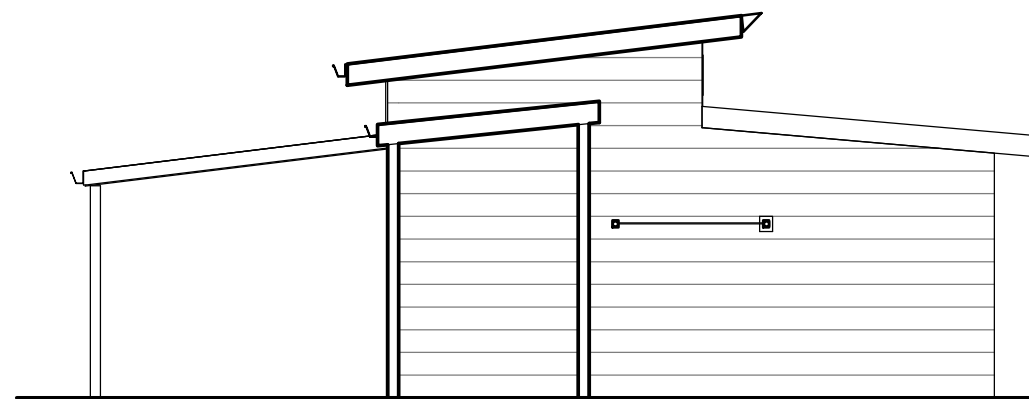
Project number	xx	A-101
Date	20.07.14	
Drawn by	RHA	Scale
Checked by	RHA	
		1 : 75



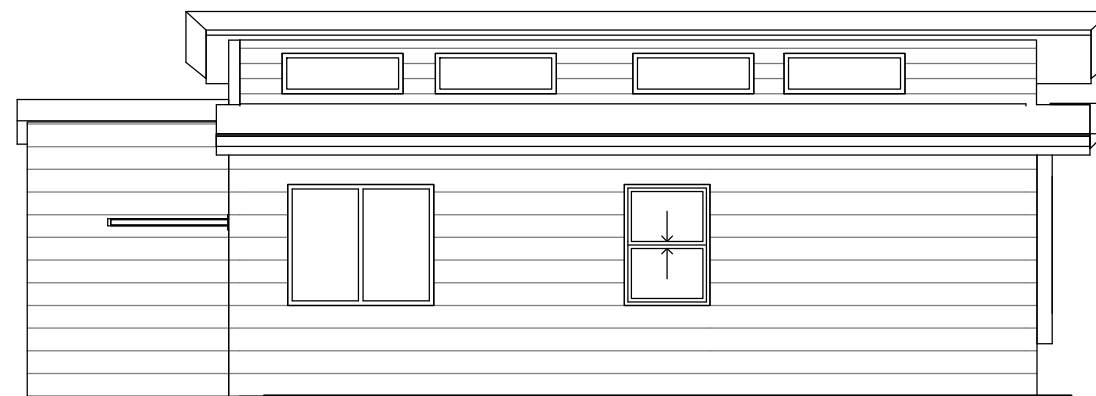
1 FLOOR PLAN 1: 100



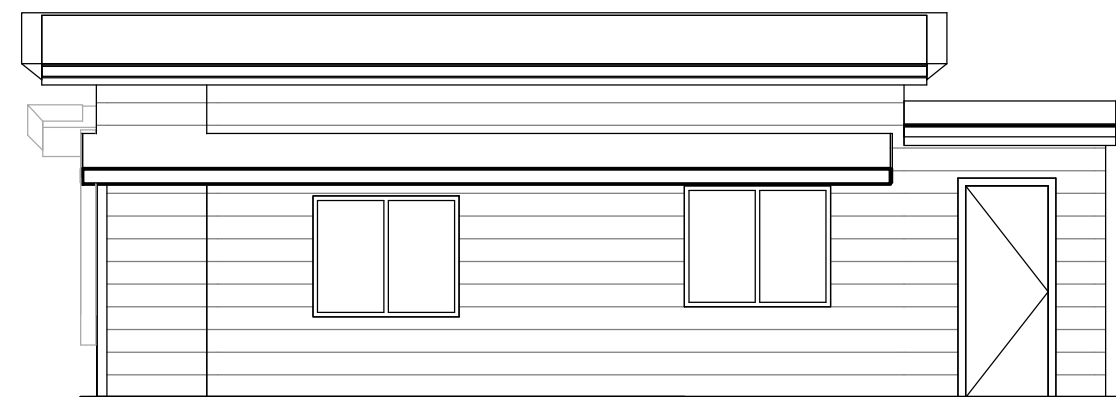
2 STREET ELEVATION 1: 75



3 REAR ELEVATION 1: 75



4 SIDE ELEVATION 1 1: 75



5 SIDE ELEVATION 2 1: 75

MATERIALS AND FINISHES
 STREET ELEVATIONS TO BE PRIMELINE F.C WEATHERBOARD AND FLAT FIBRE CEMENT SHEET w/ ROLL-ON SAND FINISH TEXTURE

SIDE AND REAR ELEVATIONS TO BE PRIMELINE F.C WEATHERBOARD PAINT FINISH

ALL ROOFS TO BE CUSTOM ORB w/ COLORBOND FASCIA AND GUTTER IN SIMILAR FINISH

PATIO TUBE STRUCTURES TO CARPORT AND ALFRESCO

FINAL COLOUR FINISHES TO BE CONFIRMED



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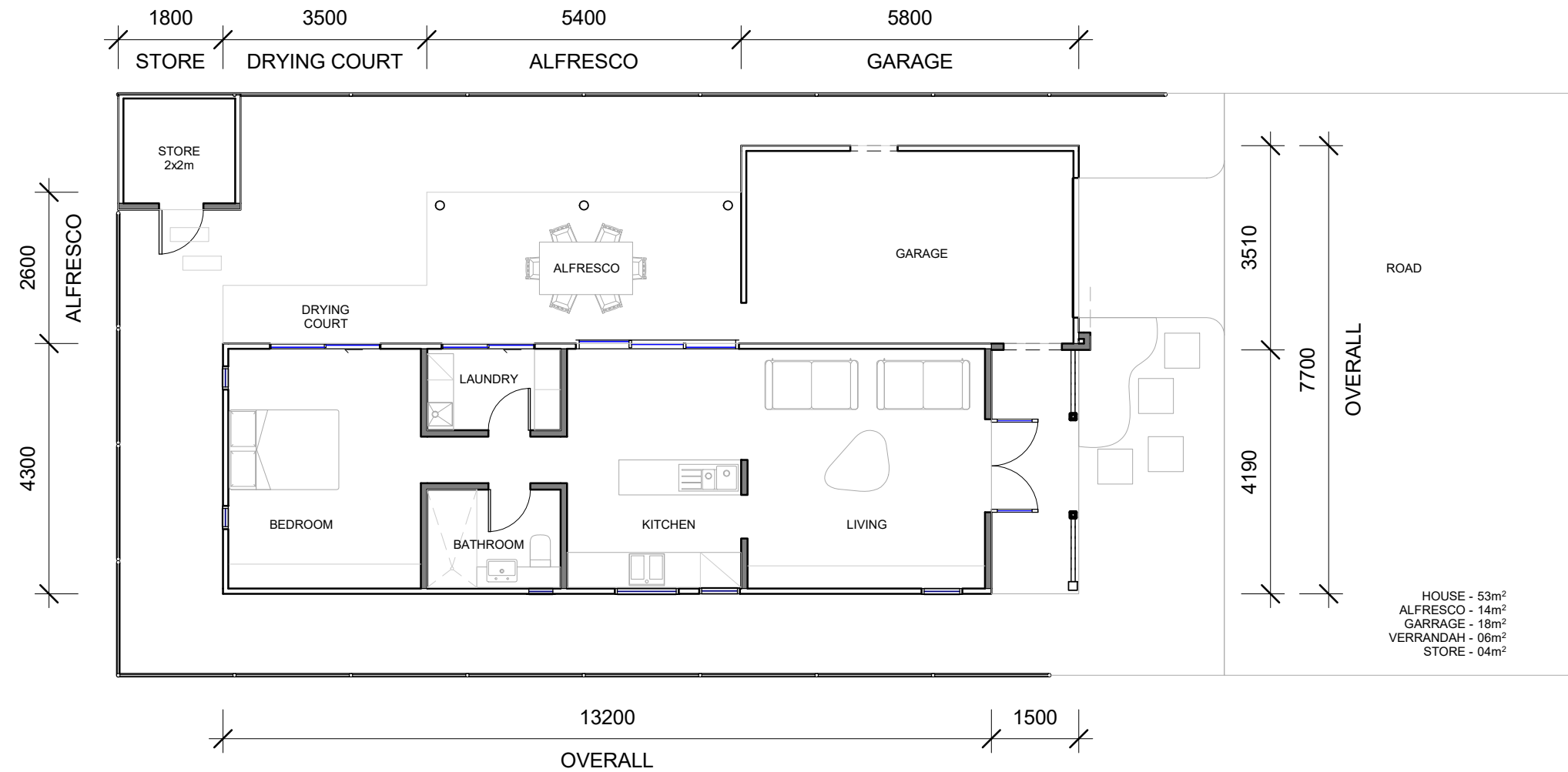
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No.	Description	Date
0	PRELIMINARY	20.03.11
1	HOME NAME UPDATED	20.07.14

'THE BAYBERRY'
 PROVIDENCE LIFESTYLE
 'B'

FLOOR PLAN & ELEVATIONS

Project number	A-100	
Date	20.07.14	
Drawn by	RHA	
Checked by	RHA	Scale@A3 As indicated



1 FLOOR PLAN
 A-101 1:100



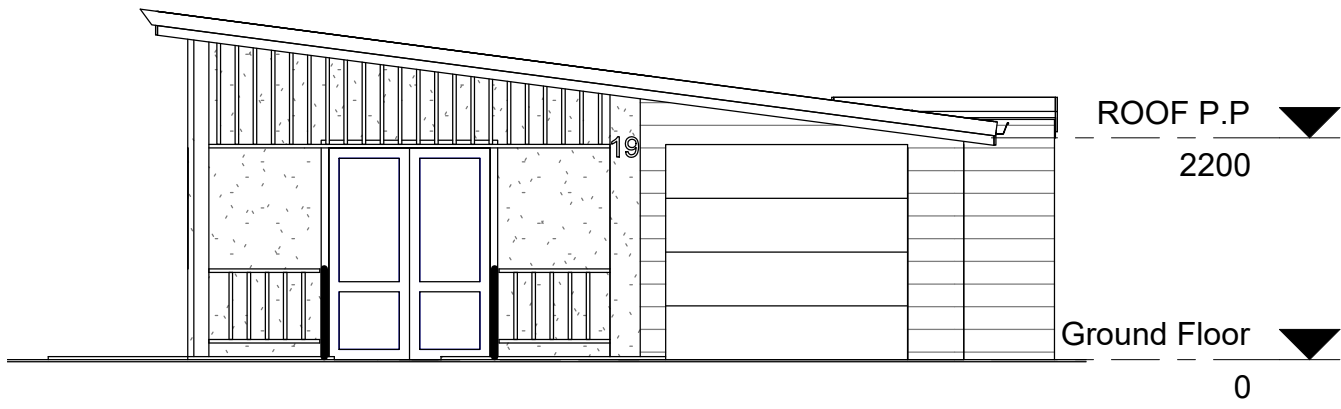
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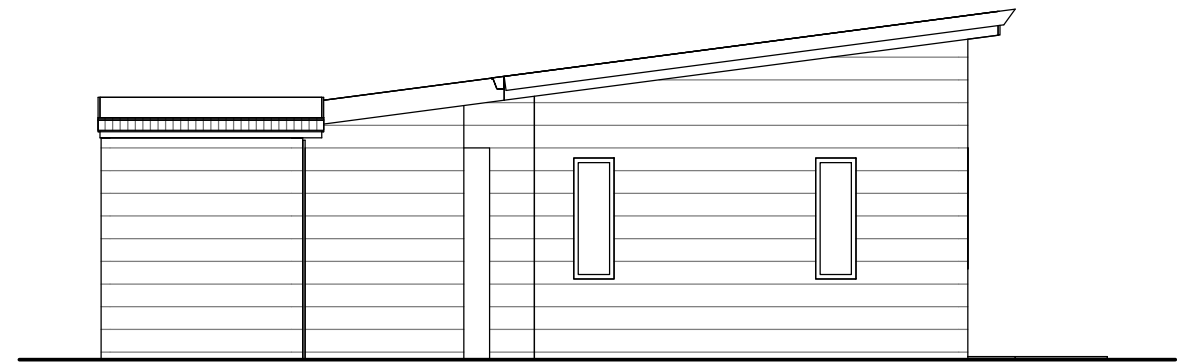
No.	Description	Date
0	PRELIMINARY	20.11.03
1	HOME NAME UPDATED	20.07.14

'THE CARAWAY'
 PROVIDENCE LIFESTYLE
 'C'

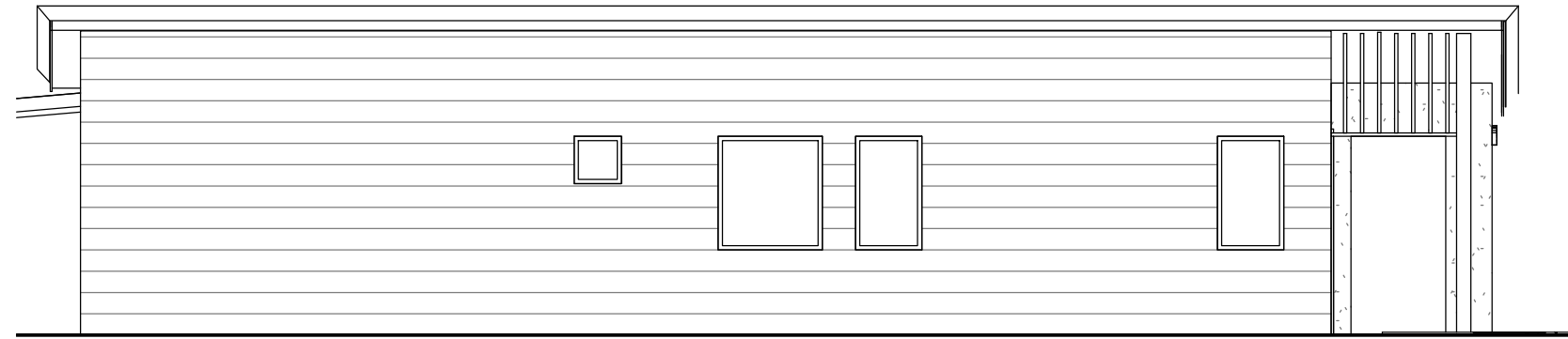
FLOOR PLAN		A-100
Project number	Project Number	
Date	20.07.14	
Drawn by	RHA	
Checked by	RHA	
Scale@A3	1:100	



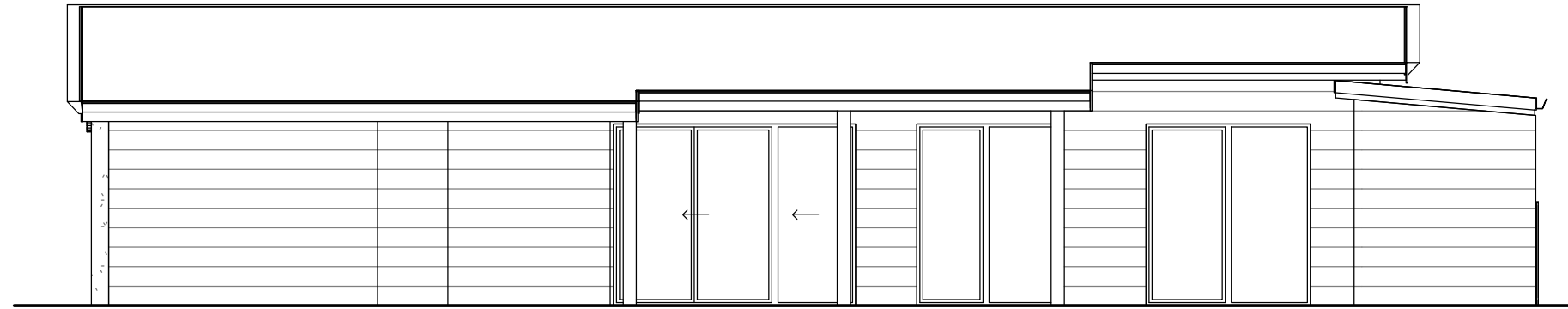
1 STREET ELEVATION
1:75



2 REAR ELEVATION
1:75



3 SIDE ELEVATION 1
1:75



4 SIDE ELEVATION 2
1:75

MATERIALS AND FINISHES
 STREET ELEVATIONS TO BE PRIMELINE F.C WEATHERBOARD AND FLAT FIBRE CEMENT SHEET w/ ROLL-ON SAND FINISH TEXTURE
 SIDE AND REAR ELEVATIONS TO BE PRIMELINE F.C WEATHERBOARD PAINT FINISH
 ALL ROOFS TO BE CUSTOM ORB w/ COLORBOND FASCIA AND GUTTER IN SIMILAR FINISH
 PATIO TUBE STRUCTURES TO CARPORT AND ALFRESCO
 FINAL COLOUR FINISHES TO BE CONFIRMED



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No.	Description	Date
0	PRELIMINARY	20.11.03
1	HOME NAME UPDATED	20.07.14

'THE CARAWAY'
 PROVIDENCE LIFESTYLE
 'C'

ELEVATIONS		A-101
Project number	Project Number	
Date	20.07.14	
Drawn by	RHA	
Checked by	RHA	
Scale@A3	1:75	

MATERIALS AND FINISHES

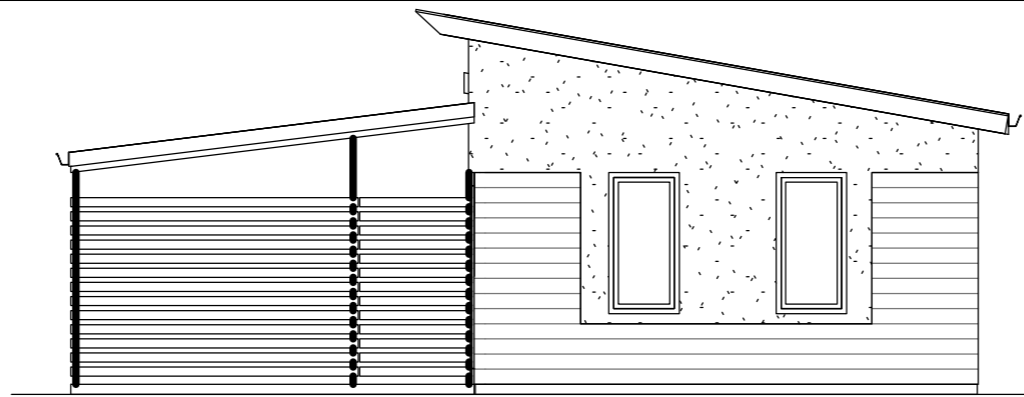
STREET ELEVATIONS TO BE PRIMELINE F.C WEATHERBOARD AND FLAT FIBRE CEMENT SHEET w/ ROLL-ON SAND FINISH TEXTURE

SIDE AND REAR ELEVATIONS TO BE PRIMELINE F.C WEATHERBOARD PAINT FINISH

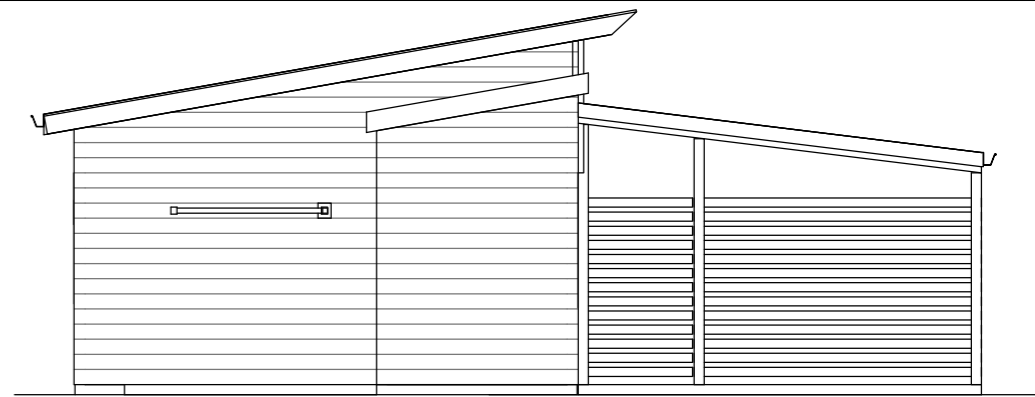
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PATIO TUBE STRUCTURES TO CARPORT AND ALFRESCO

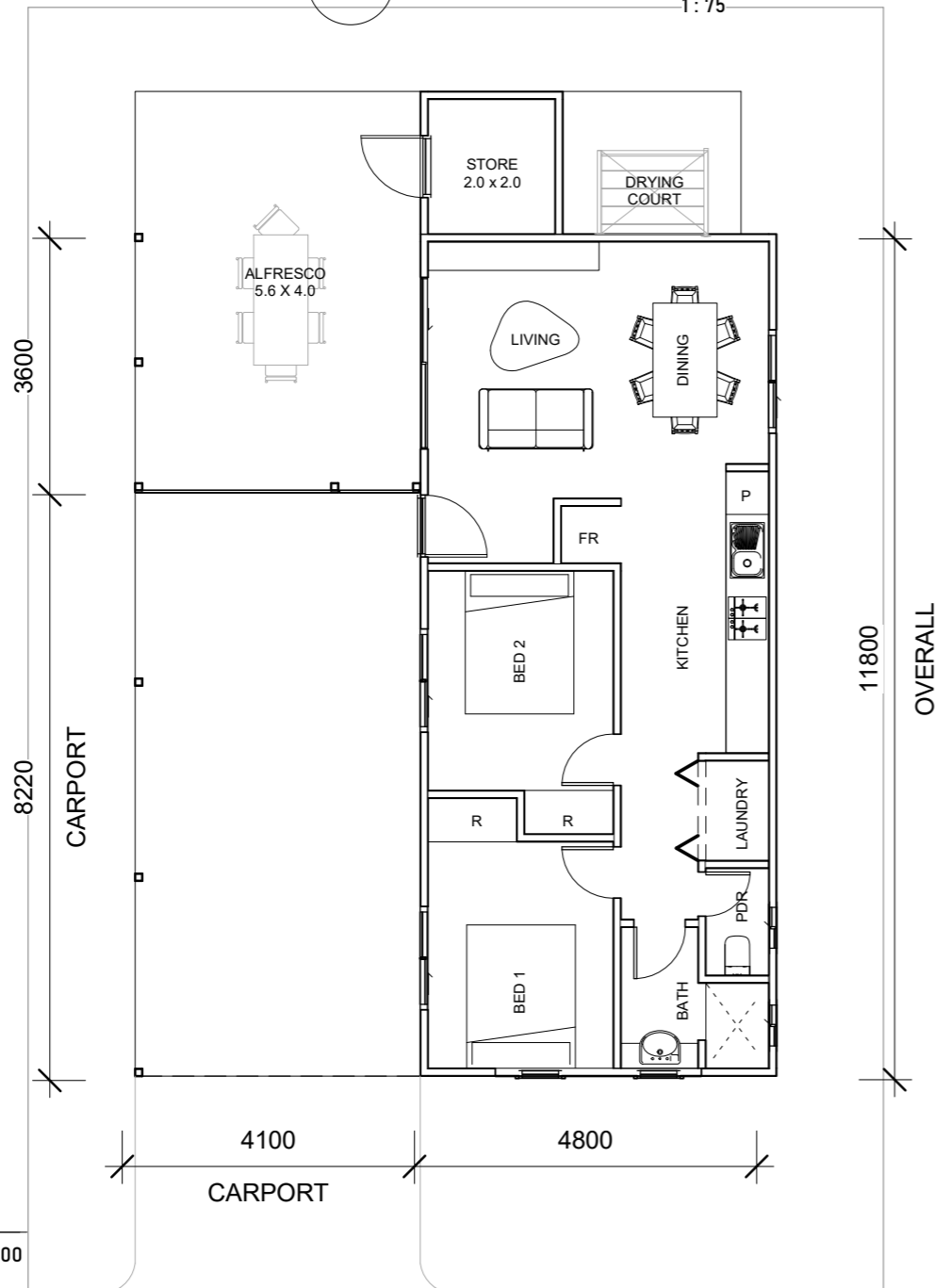
FINAL COLOUR FINISHES TO BE CONFIRMED



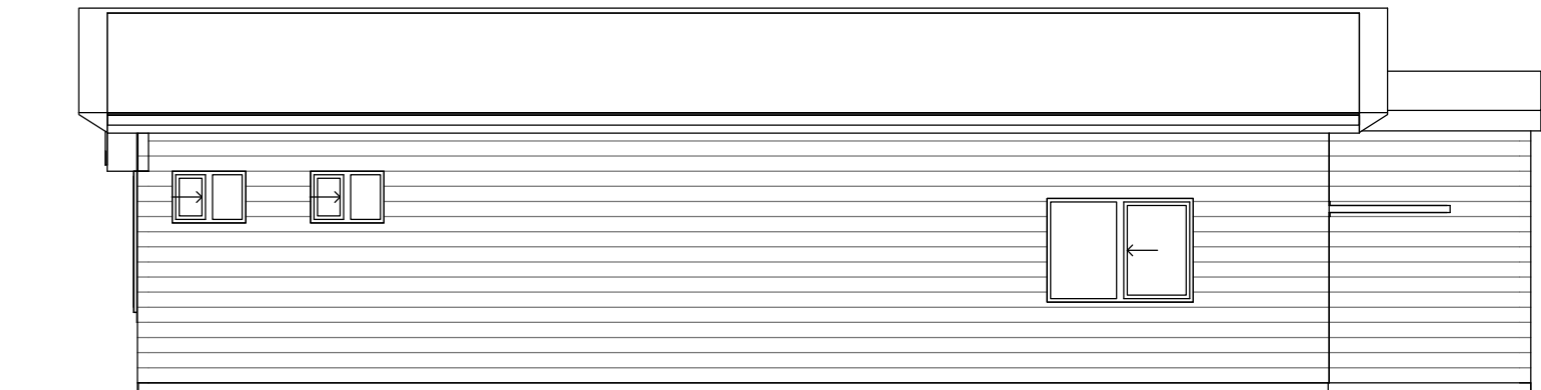
2 STREET ELEVATION
1:75



3 REAR ELEVATION
1:75



1 FLOOR PLAN
1:100



4 SIDE ELEVATION 1
1:75



5 SIDE ELEVATION 2
1:75



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No.	Description	Date
0	PRELIMINARY	20.03.11
1	HOME NAME UPDATED	20.07.14

'THE FOXGLOVE
PROVIDENCE LIFESTYLE
'D'

FLOOR PLAN & ELEVATIONS		
Project number	A100	
Date	20.07.14	
Drawn by	RHA	
Checked by	RHA	Scale@A3 As indicated

MATERIALS AND FINISHES

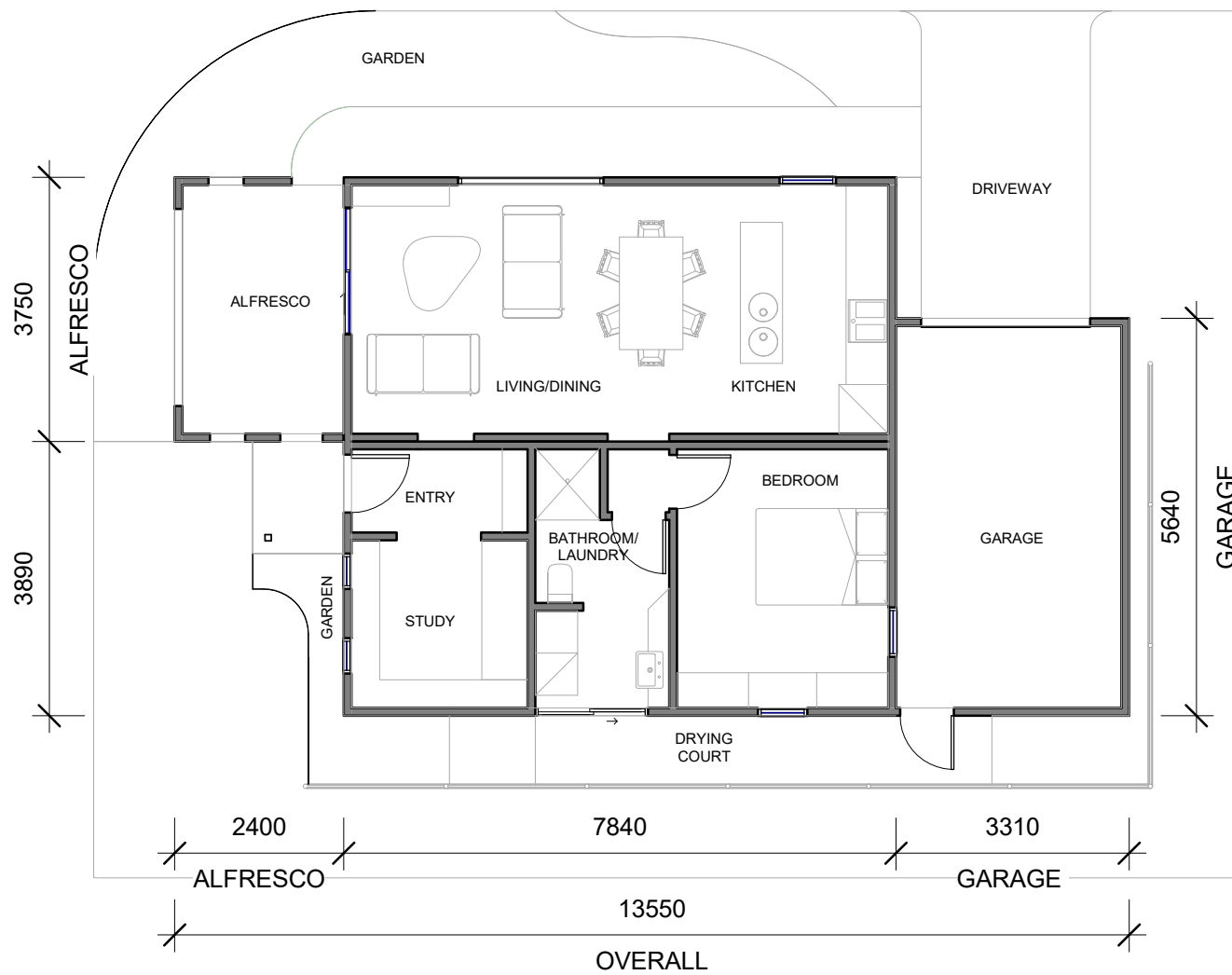
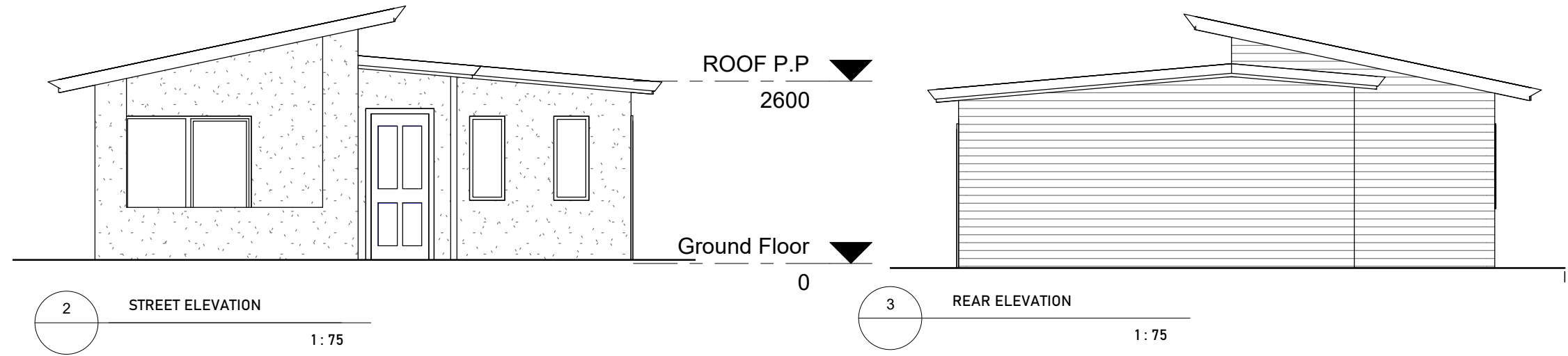
STREET ELEVATIONS TO BE PRIMELINE F.C WEATHERBOARD AND FLAT FIBRE CEMENT SHEET w/ ROLL-ON SAND FINISH TEXTURE

SIDE AND REAR ELEVATIONS TO BE PRIMELINE F.C WEATHERBOARD PAINT FINISH

ALL ROOFS TO BE CUSTOM ORB w/ COLORBOND FASCIA AND GUTTER IN SIMILAR FINISH

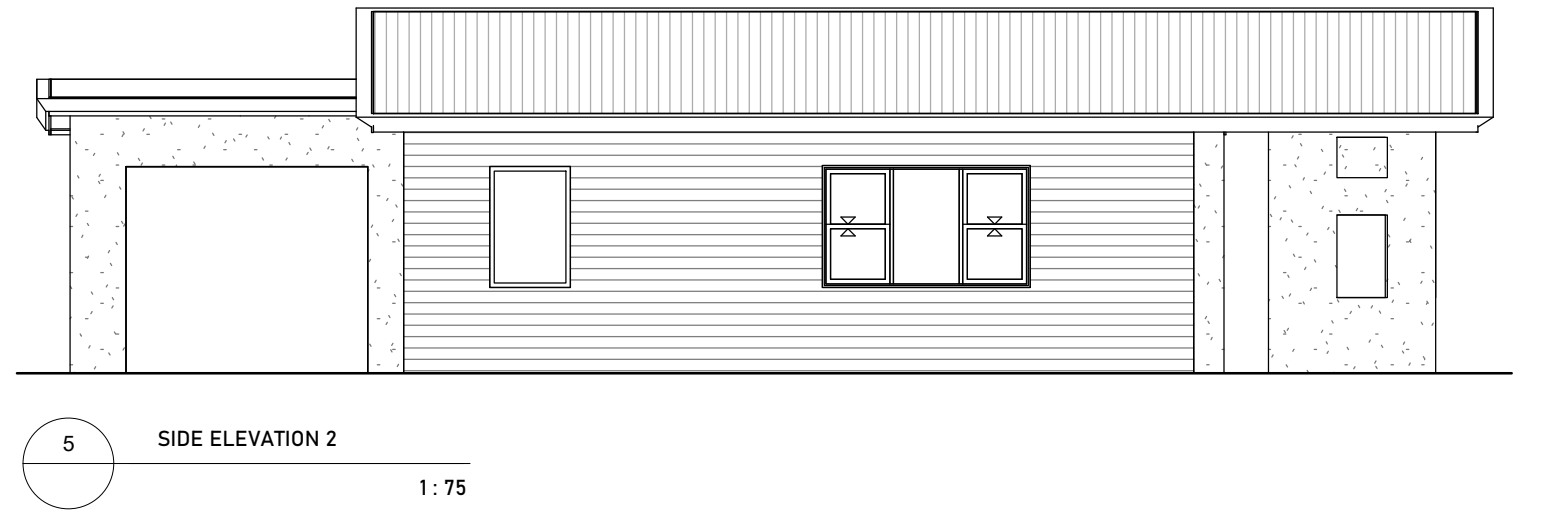
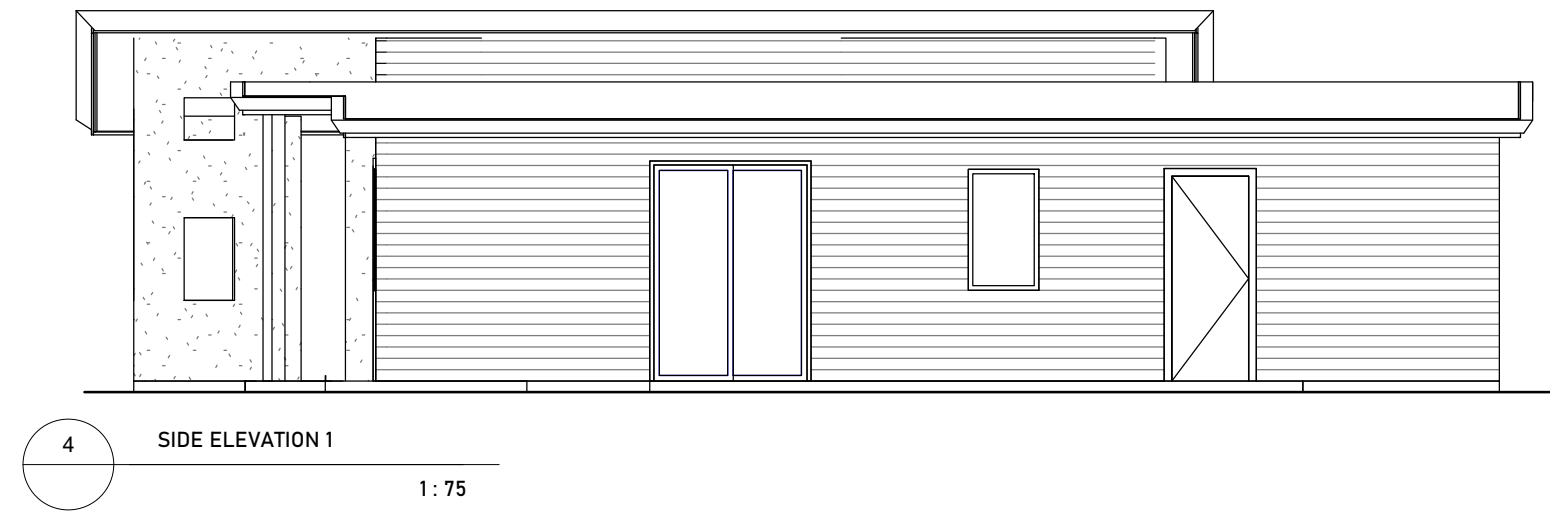

PATIO TUBE STRUCTURES TO CARPORT AND ALFRESCO

FINAL COLOUR FINISHES TO BE CONFIRMED



1 FLOOR PLAN
A-100 1:100

HOUSE - 57m²
ALFRESCO - 08m²
GARRAGE - 17m²
VERRANDAH - 02m²

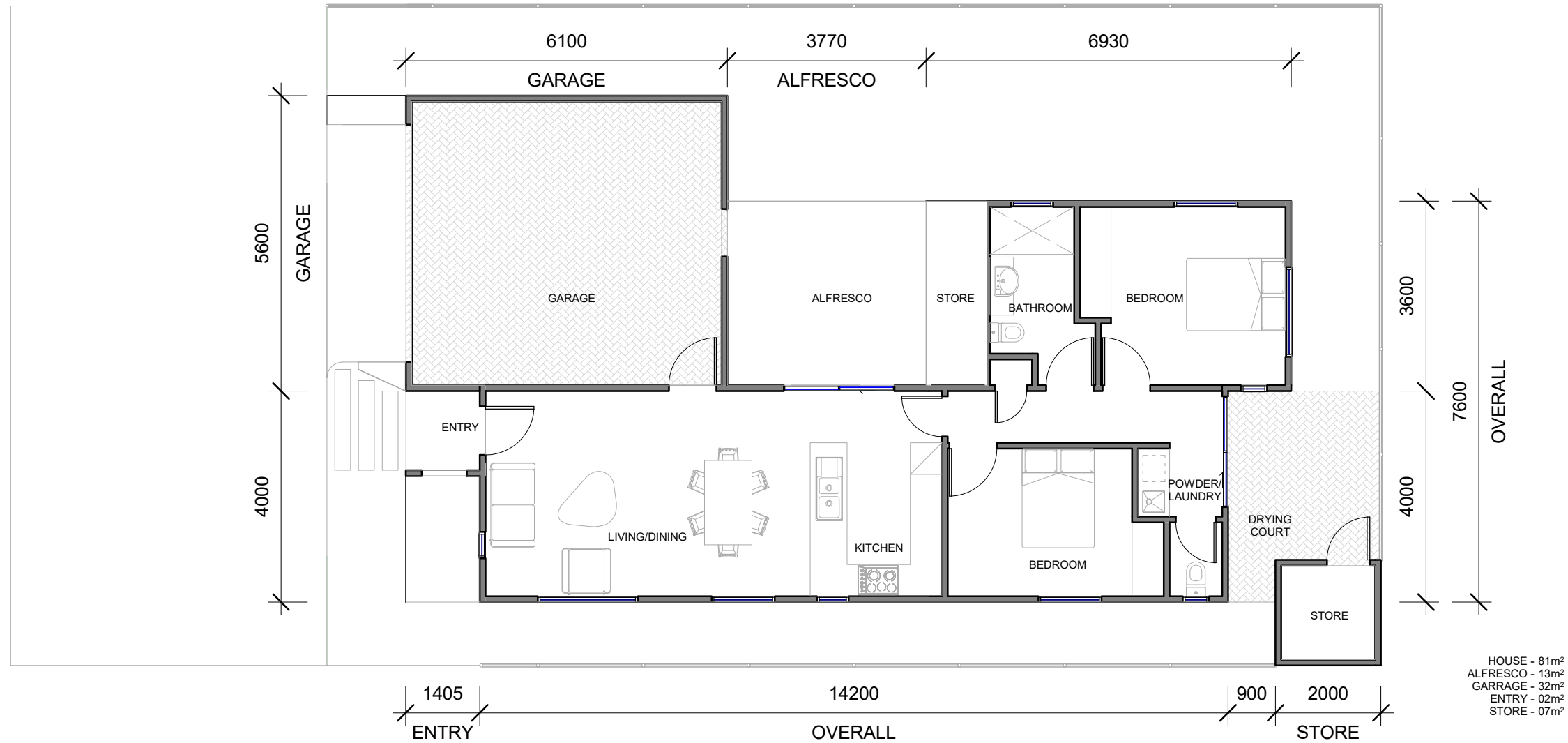
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No.	Description	Date
0	PRELIMINARY	20.03.11
1	HOME NAME UPDATED	20.07.14

THE GINGER
PROVIDENCE LIFESTYLE
'E'

FLOOR PLAN & ELEVATIONS	
Project number	A-100
Date	20.07.14
Drawn by	RHA
Checked by	RHA
Scale@A3	As indicated



1 FLOOR PLAN
A-101 1:100



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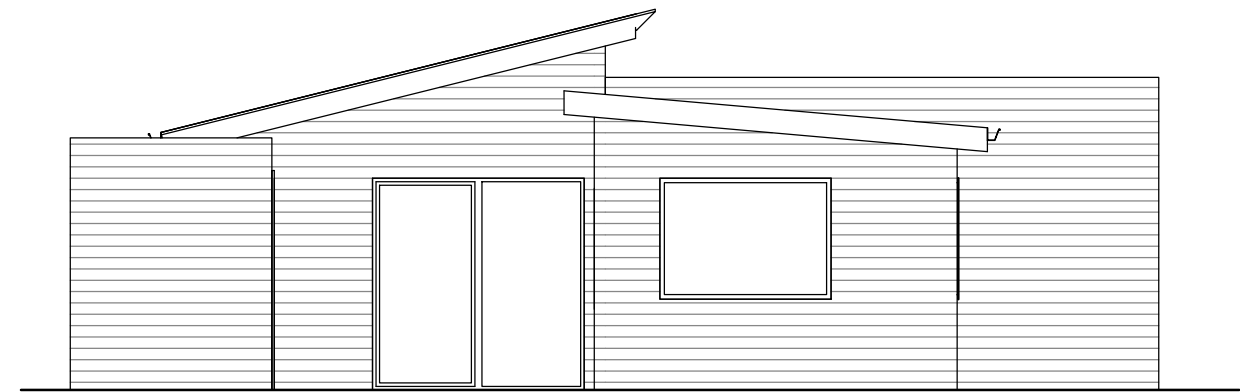
No.	Description	Date
0	PRELIMINARY	20.03.11
1	HOME NAME UPDATED	20.07.14

'THE LAVENDER'
PROVIDENCE LIFESTYLE
'F'

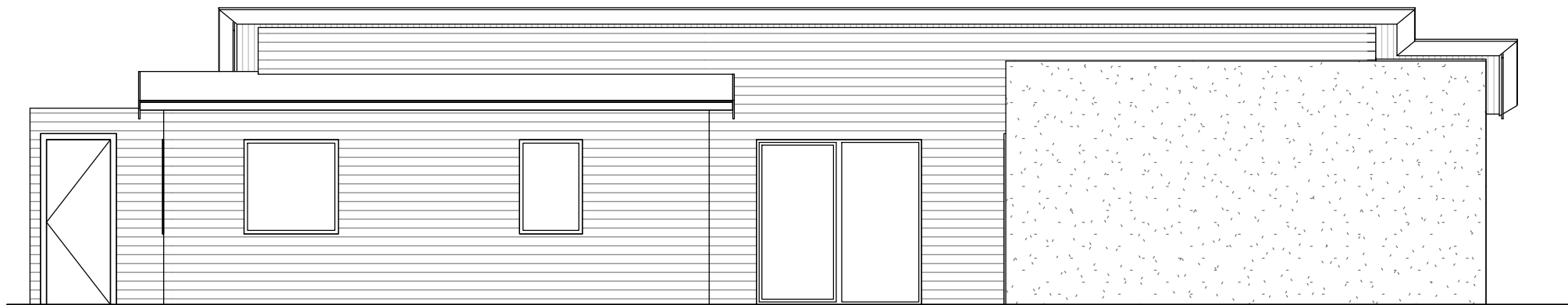
FLOOR PLAN		A-100
Project number		
Date	20.07.14	
Drawn by	RHA	
Checked by	RHA	
Scale@A3	1:100	



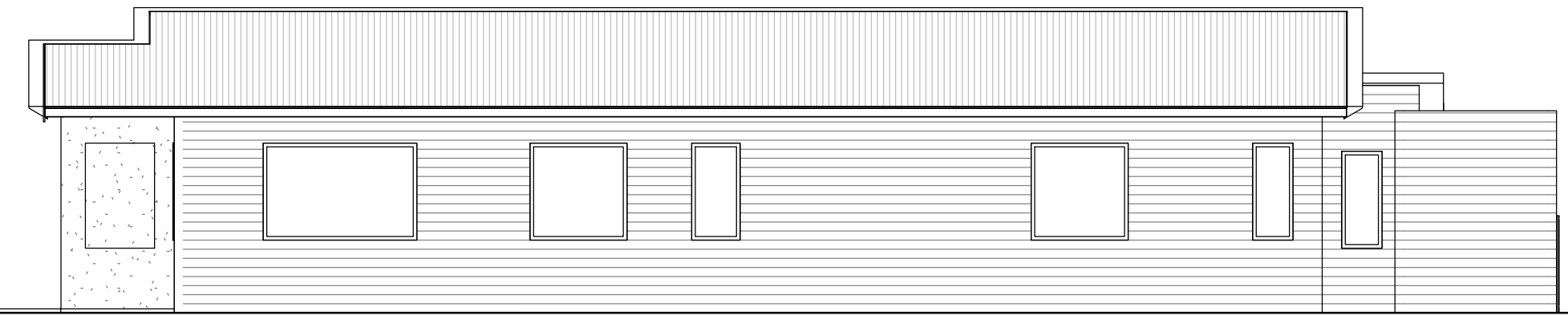
1 STREET ELEVATION
1 : 75



2 REAR ELEVATION
1 : 75



3 SIDE ELEVATION 1
1 : 75



4 SIDE ELEVATION 2
1 : 75

MATERIALS AND FINISHES
 STREET ELEVATIONS TO BE PRIMELINE F.C WEATHERBOARD AND FLAT FIBRE CEMENT SHEET w/ ROLL-ON SAND FINISH TEXTURE
 SIDE AND REAR ELEVATIONS TO BE PRIMELINE F.C WEATHERBOARD PAINT FINISH
 ALL ROOFS TO BE CUSTOM ORB w/ COLORBOND FASCIA AND GUTTER IN SIMILAR FINISH
 PATIO TUBE STRUCTURES TO CARPORT AND ALFRESCO
FINAL COLOUR FINISHES TO BE CONFIRMED



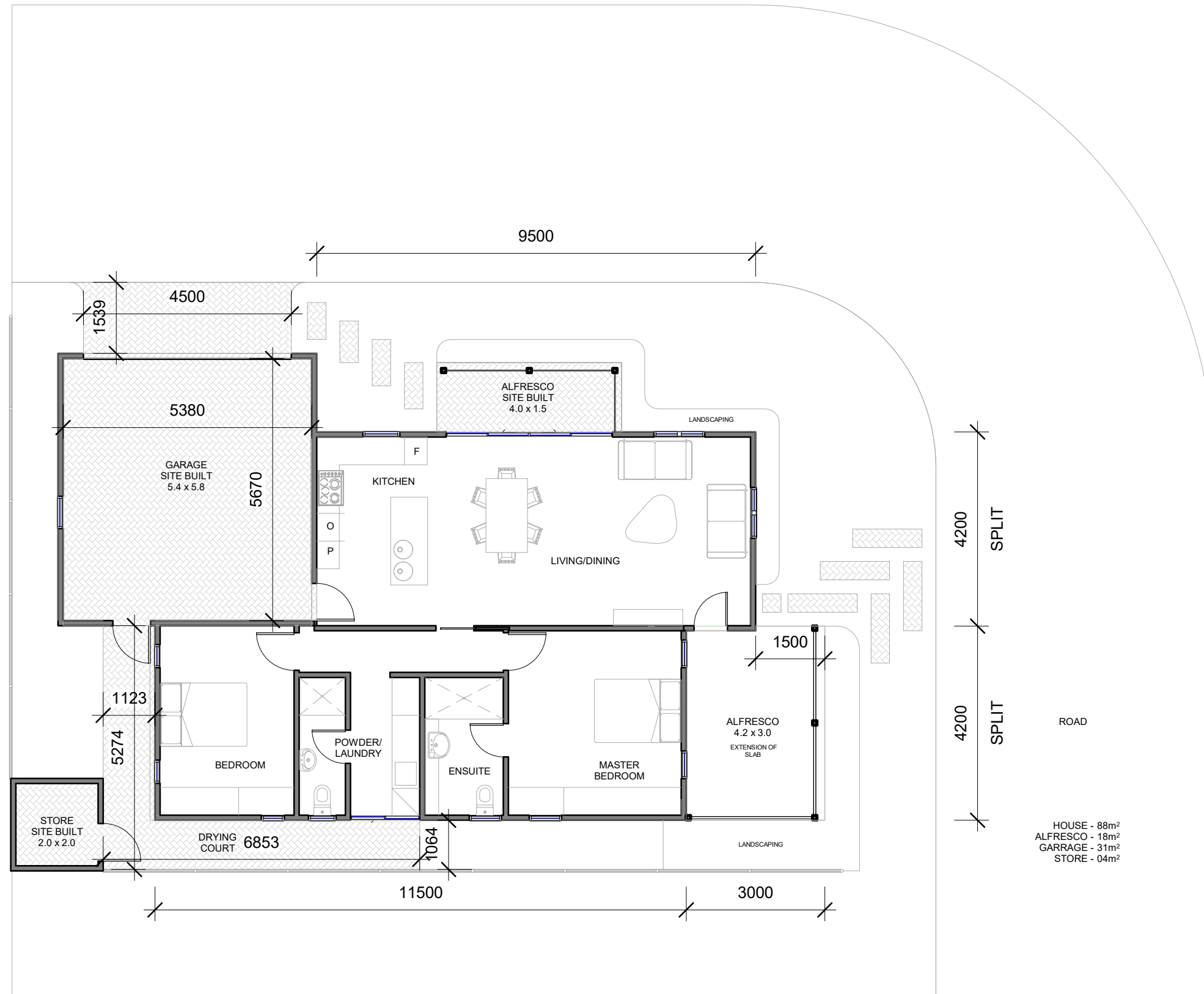
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1	HOME NAME UPDATED	20.07.14

'THE LAVENDER'
 PROVIDENCE LIFESTYLE
 'F'

ELEVATIONS		
Project number		A- 101
Date	20.07.14	
Drawn by	RHA	
Checked by	RHA	
Scale@A3		1 : 75



HOUSE - 88m²
 ALFRESCO - 18m²
 GARRAGE - 31m²
 STORE - 04m²

1 FLOOR PLAN
 A-102 1:100



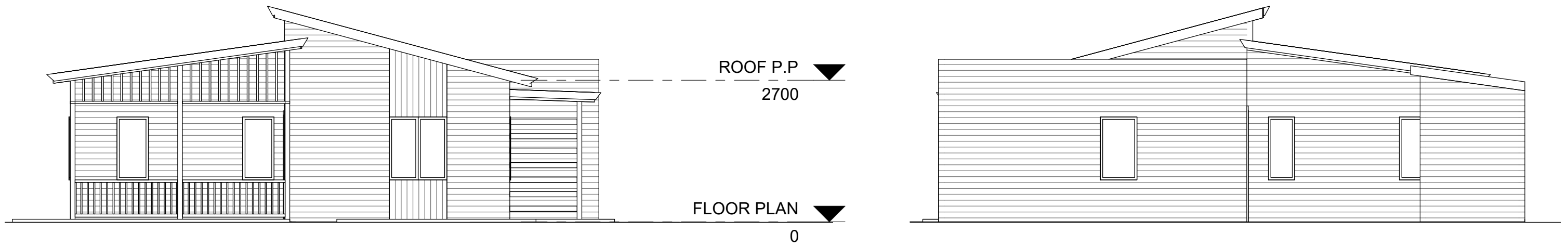
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1	HOME NAME UPDATED	20.07.14

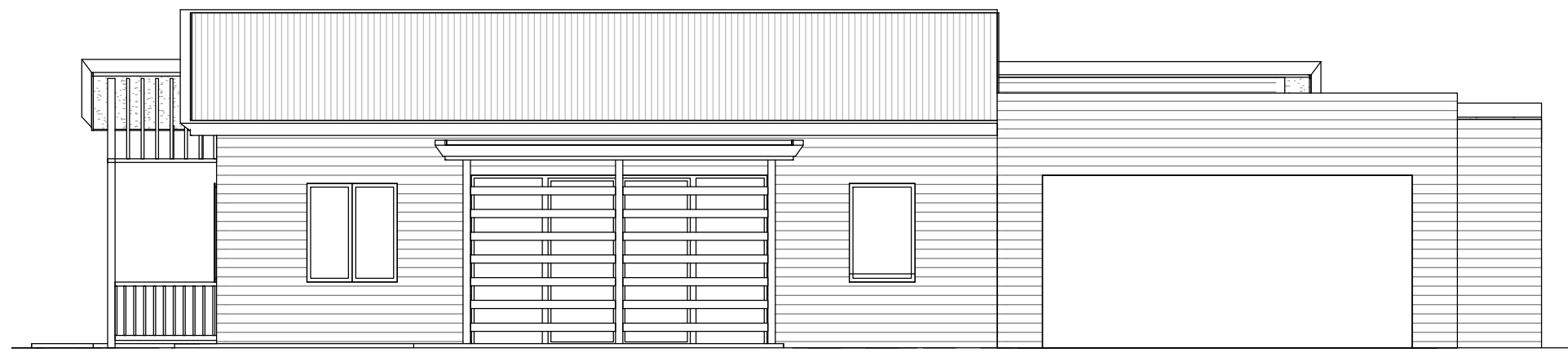
'THE NETTLE'
 PROVIDENCE LIFESTYLE
 'G'

FLOOR PLAN		A-101	
Project number		A-101	1:100
Date	20.07.14		
Drawn by	RHA		
Checked by	RHA		
Scale@A3			

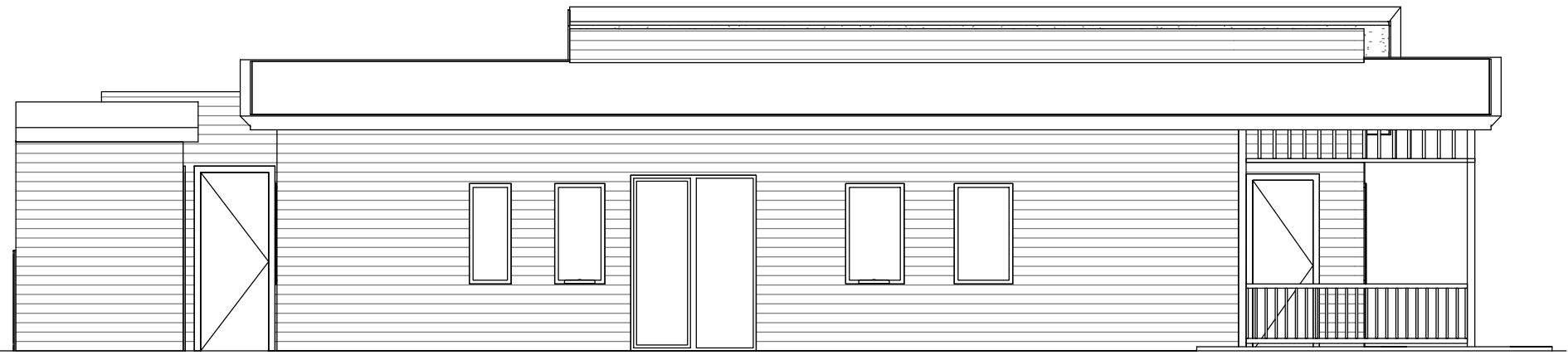


1 STREET ELEVATION
1: 75

2 REAR ELEVATION
1: 75



3 SIDE ELEVATION 1
1: 75



4 SIDE ELEVATION 2
1: 75

MATERIALS AND FINISHES
 STREET ELEVATIONS TO BE PRIMELINE F.C WEATHERBOARD AND FLAT FIBRE CEMENT SHEET w/ ROLL-ON SAND FINISH TEXTURE
 SIDE AND REAR ELEVATIONS TO BE PRIMELINE F.C WEATHERBOARD PAINT FINISH
 ALL ROOFS TO BE CUSTOM ORB w/ COLORBOND FASCIA AND GUTTER IN SIMILAR FINISH
 PATIO TUBE STRUCTURES TO CARPORT AND ALFRESCO
FINAL COLOUR FINISHES TO BE CONFIRMED



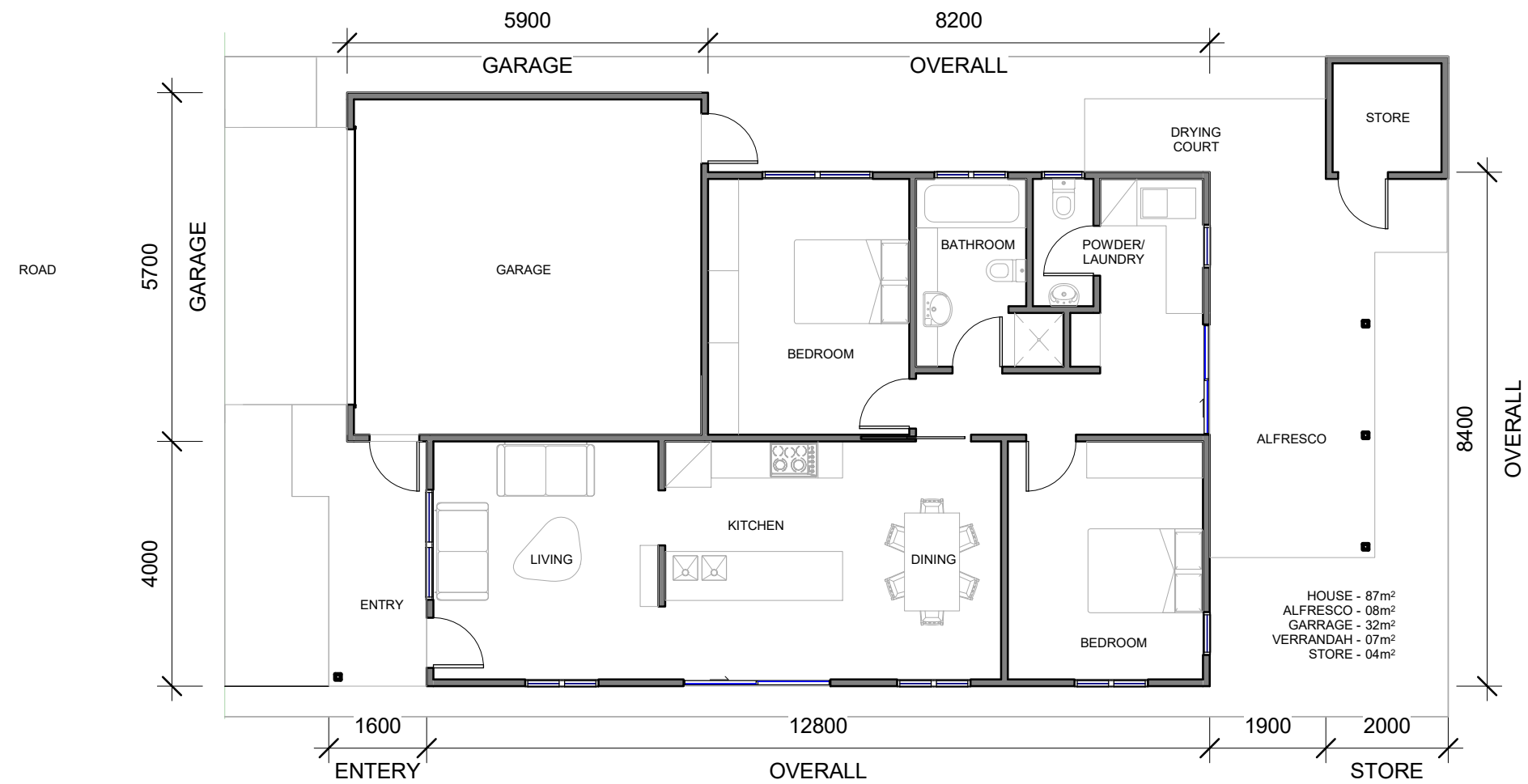
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No.	Description	Date
0	PRELIMINARY	20.03.11
1	HOME NAME UPDATED	20.07.14

'THE NETTLE'
 PROVIDENCE LIFESTYLE
 'G'

ELEVATIONS		
Project number		A-102
Date	20.07.14	
Drawn by	RHA	
Checked by	RHA	
Scale@A3		1: 75



1 FLOOR PLAN
A-101 1:100



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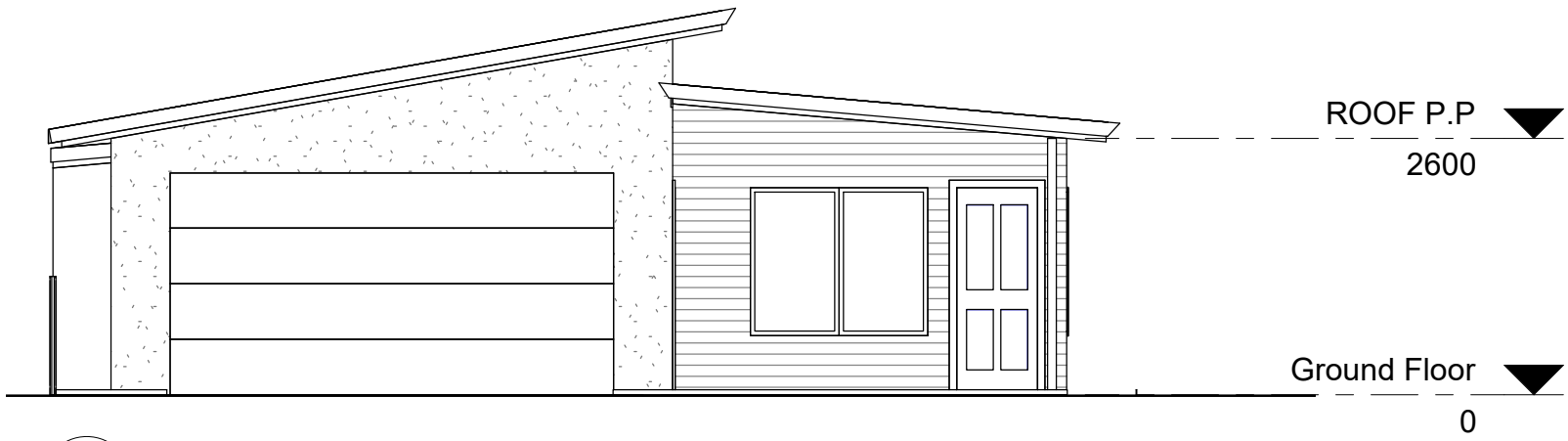
No.	Description	Date
0	PRELIMINARY	20.03.11
1	HOME NAME UPDATED	20.07.14

'THE PEPPERMINT'

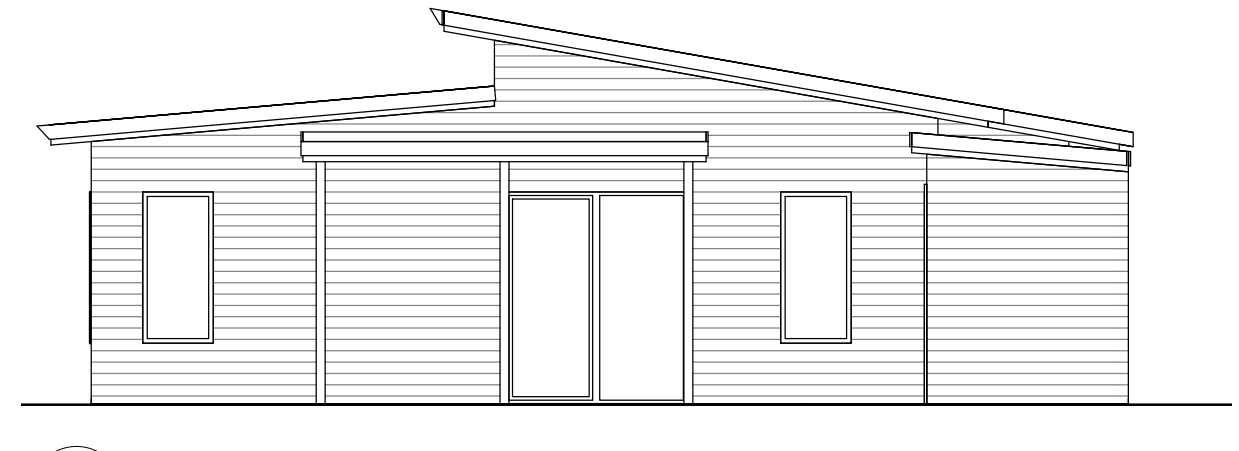
PROVIDENCE LIFESTYLE

'H'

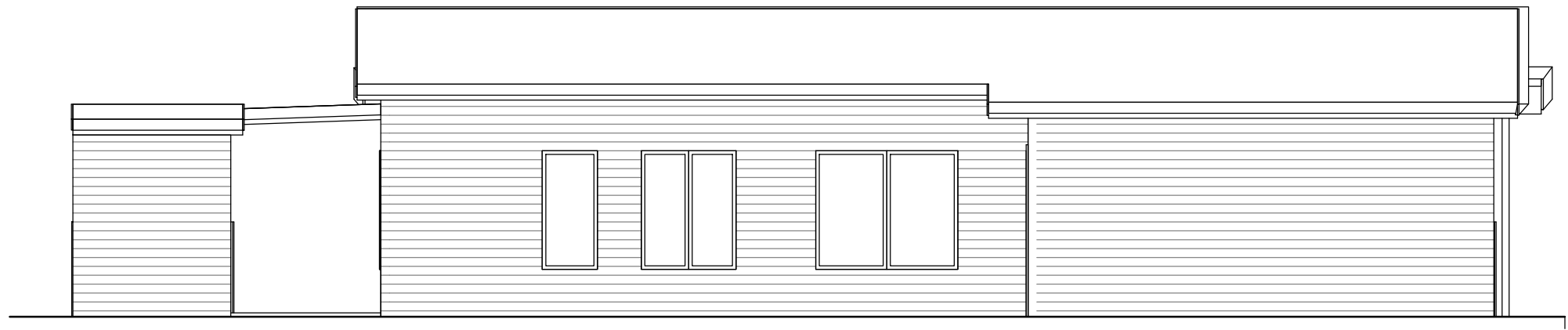
FLOOR PLAN		A-100	
Project number		A-100	
Date	20.07.14		
Drawn by	RHA		
Checked by	RHA		
Scale@A3		1:100	



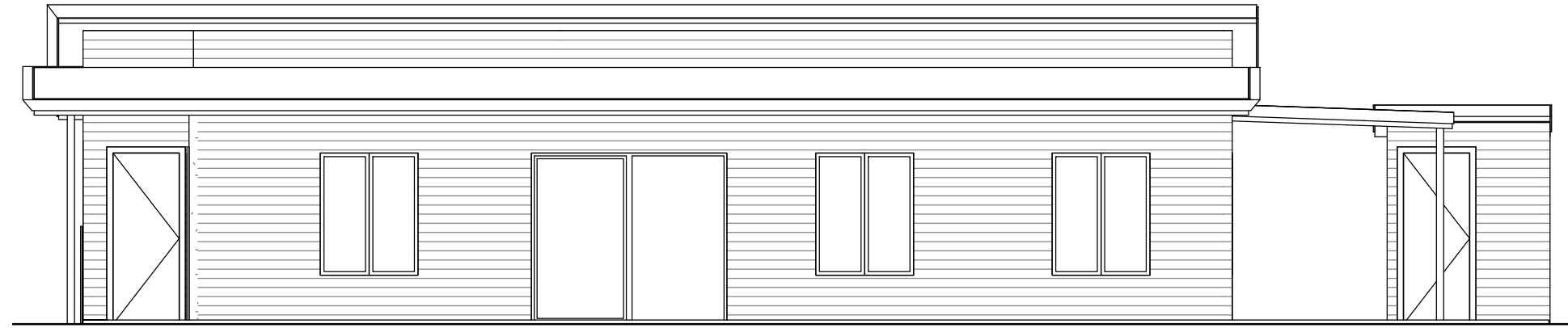
1 STREET ELEVATION
1:75



2 REAR ELEVATION
1:75



3 SIDE ELEVATION 1
1:75



4 SIDE ELEVATION 2
1:75

MATERIALS AND FINISHES
 STREET ELEVATIONS TO BE PRIMELINE F.C WEATHERBOARD AND FLAT FIBRE CEMENT SHEET w/ ROLL-ON SAND FINISH TEXTURE
 SIDE AND REAR ELEVATIONS TO BE PRIMELINE F.C WEATHERBOARD PAINT FINISH
 ALL ROOFS TO BE CUSTOM ORB w/ COLORBOND FASCIA AND GUTTER IN SIMILAR FINISH
 PATIO TUBE STRUCTURES TO CARPORT AND ALFRESCO
FINAL COLOUR FINISHES TO BE CONFIRMED



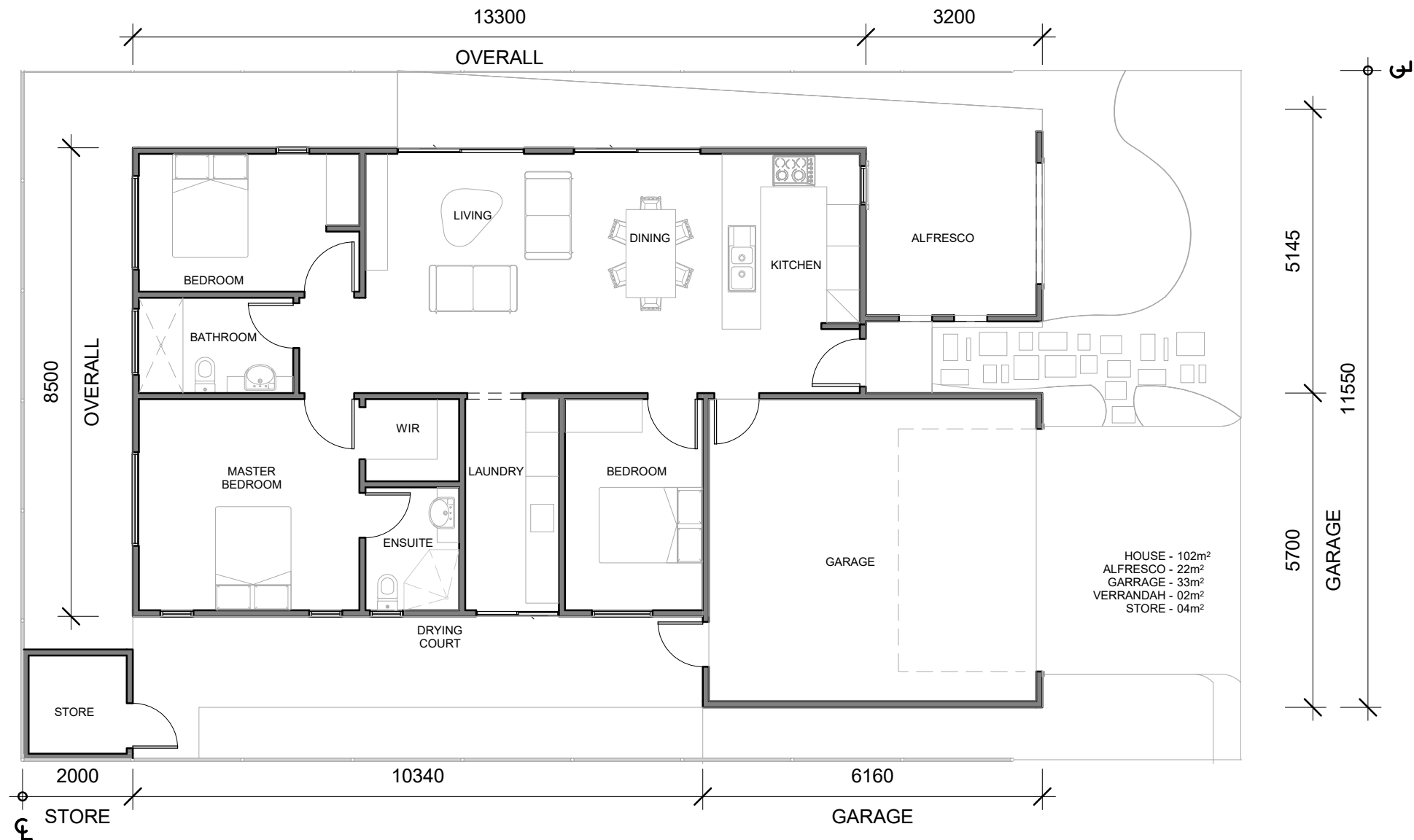
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No.	Description	Date

'THE PEPPERMINT'
 PROVIDENCE LIFESTYLE
 'H'

ELEVATIONS		
Project number	A-101	
Date	20.07.14	
Drawn by	RHA	
Checked by	RHA	Scale@A3
		1:75



1 FLOOR PLAN
 A - 101 1 : 100



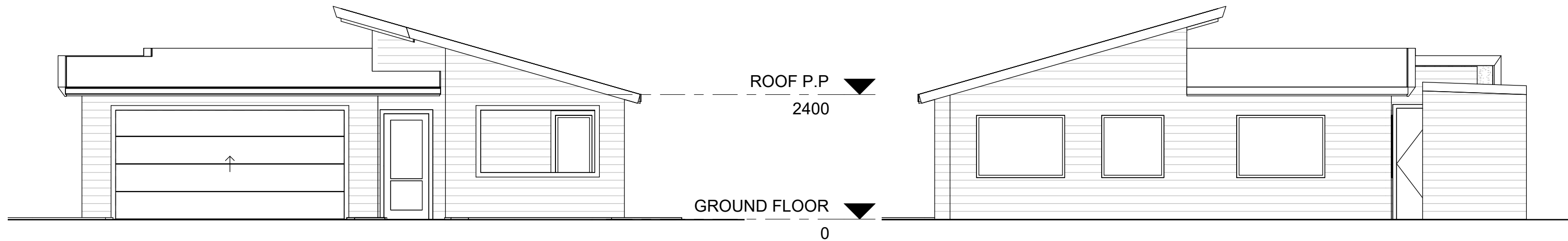
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No.	Description	Date
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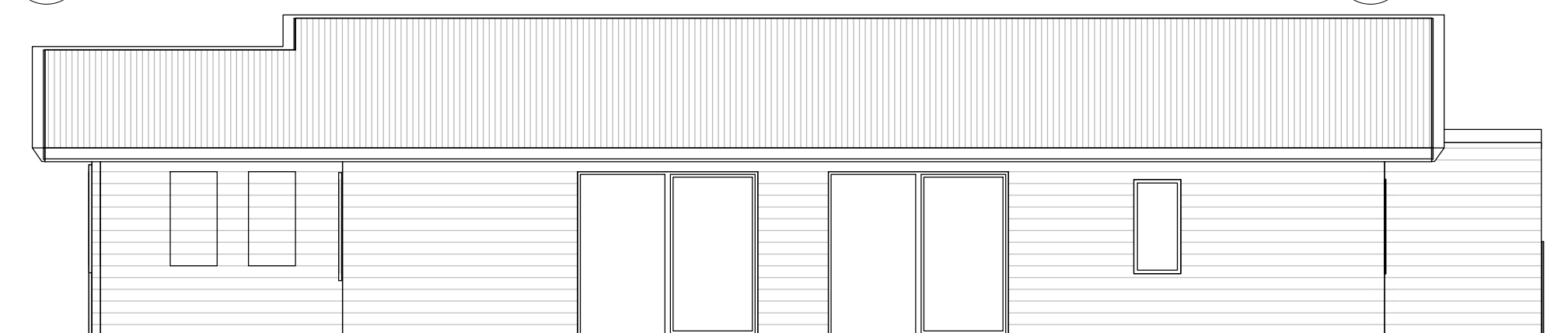
'THE ROSEMARY
 PROVIDENCE LIFESTYLE
 'I'

FLOOR PLAN		A - 100
Project number	20.07.14	
Date	RHA	
Drawn by	RHA	
Checked by	Scale@A3	
	1 : 100	

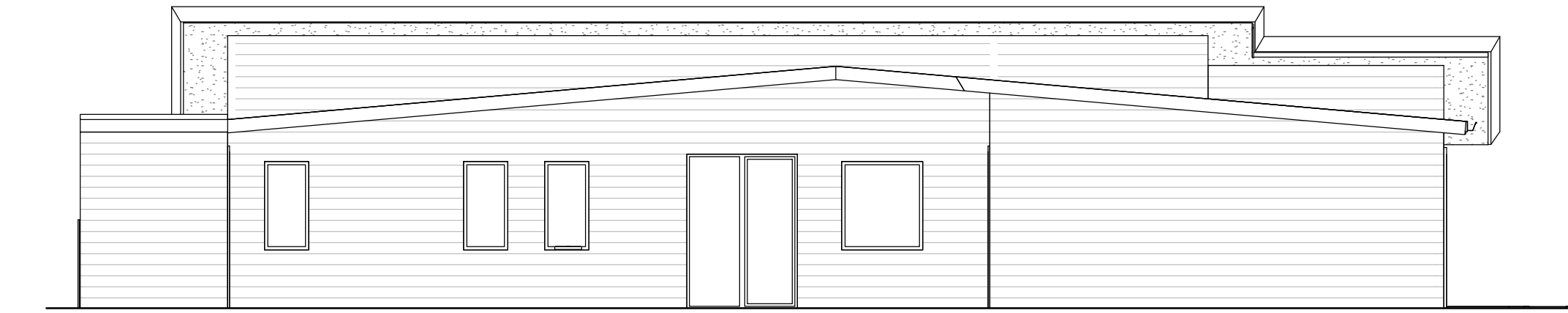


1 STREET ELEVATION
1:75

2 REAR ELEVATION
1:75




3 SIDE ELEVATION 1
1:75



4 SIDE ELEVATION 2
1:75

MATERIALS AND FINISHES
 STREET ELEVATIONS TO BE PRIMELINE F.C WEATHERBOARD AND
 FLAT FIBRE CEMENT SHEET w/ ROLL-ON SAND FINISH TEXTURE
 SIDE AND REAR ELEVATIONS TO BE PRIMELINE F.C WEATHERBOARD
 PAINT FINISH
 ALL ROOFS TO BE CUSTOM ORB w/ COLORBOND FASCIA AND GUTTER
 IN SIMILAR FINISH
 PATIO TUBE STRUCTURES TO CARPORT AND ALFRESCO
FINAL COLOUR FINISHES TO BE CONFIRMED

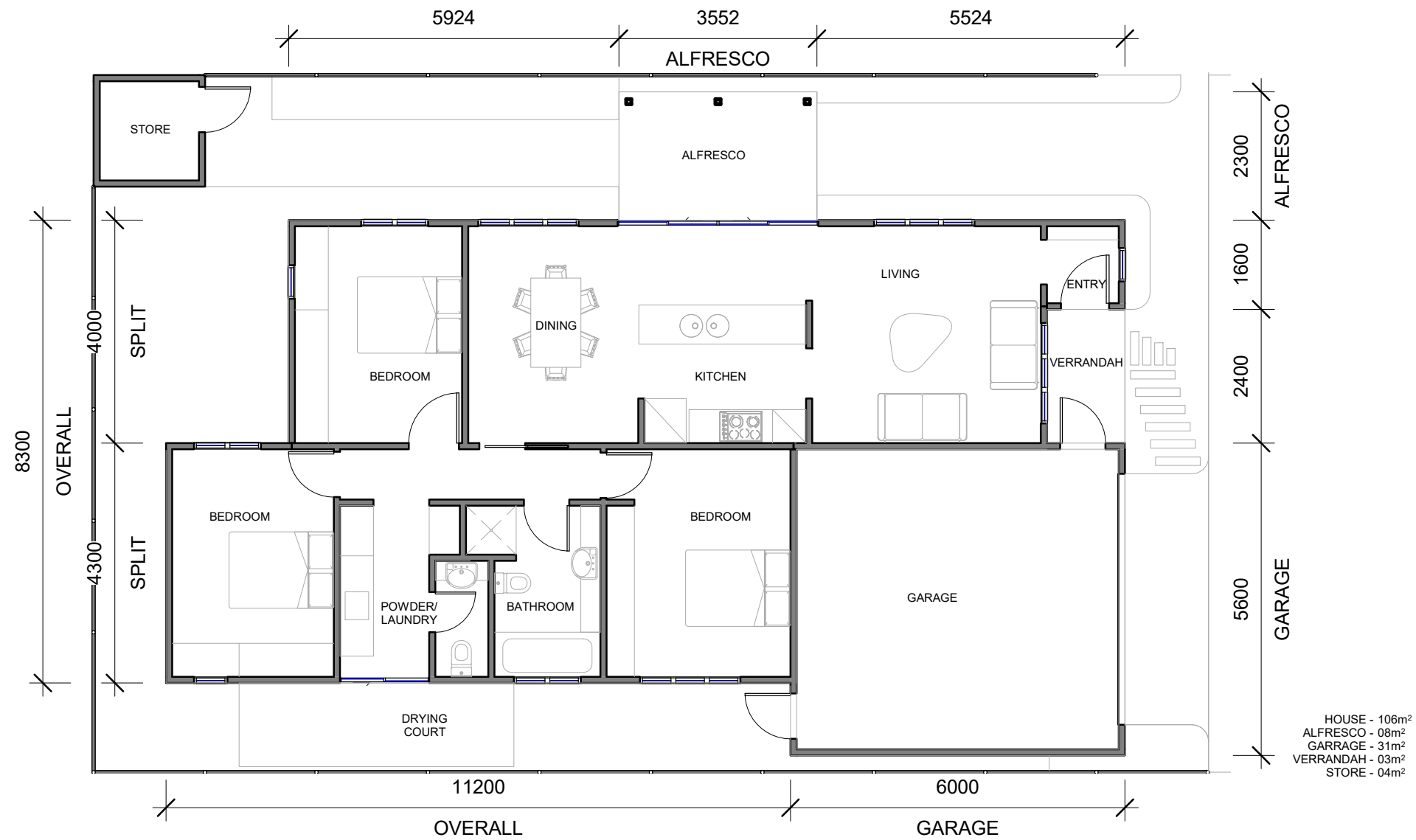


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No.	Description	Date

'THE ROSEMARY
 PROVIDENCE LIFESTYLE
 'I'

ELEVATIONS		
Project number		A - 101
Date	20.07.14	
Drawn by	RHA	
Checked by	RHA	
	Scale@A3	1:75



1 FLOOR PLAN
 A-101 1:100



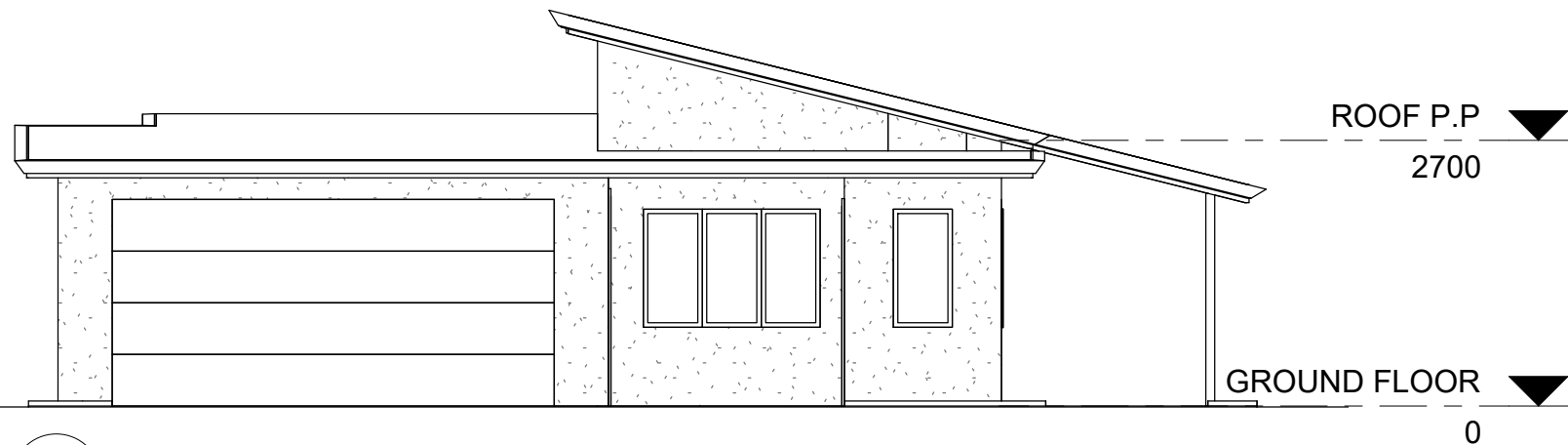
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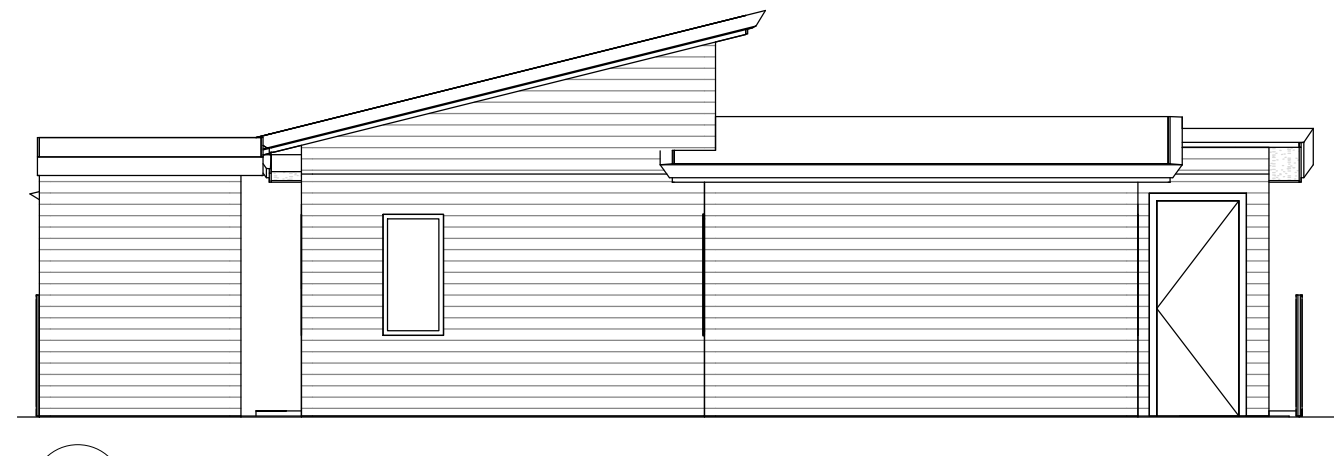
No.	Description	Date
0	PRELIMINARY	20.03.11
1	HOME NAME UPDATED	20.07.14

'THE SANTOLINA'
 PROVIDENCE LIFESTYLE
 'J'

FLOOR PLAN		A-100
Project number		
Date	20.07.14	
Drawn by	RHA	
Checked by	RHA	
Scale@A3	1:100	



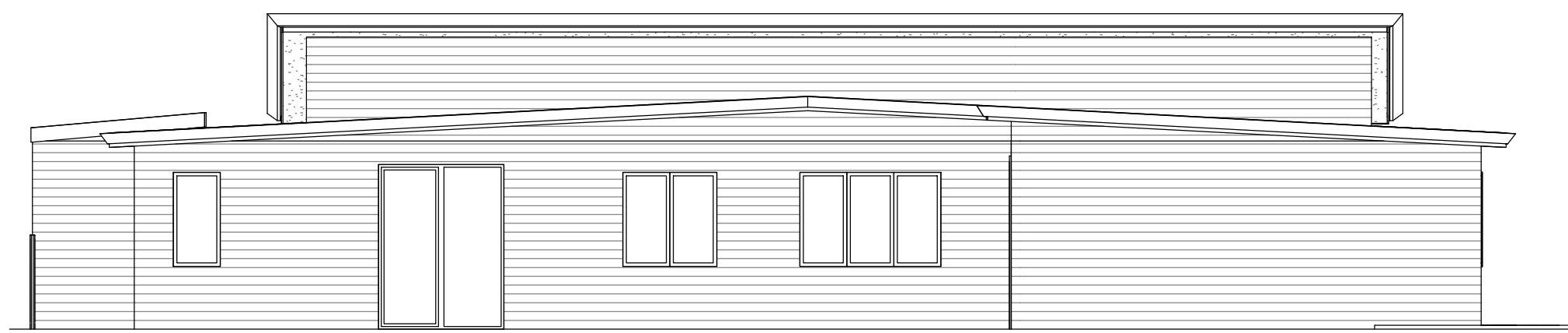
1 STREET ELEVATION
1:75



2 REAR ELEVATION
1:75



3 SIDE ELEVATION 1
1:75



4 SIDE ELEVATION 2
1:75

MATERIALS AND FINISHES
 STREET ELEVATIONS TO BE PRIMELINE F.C WEATHERBOARD AND FLAT FIBRE CEMENT SHEET w/ ROLL-ON SAND FINISH
 SIDE AND REAR ELEVATIONS TO BE PRIMELINE F.C WEATHERBOARD PAINT FINISH
 ALL ROOFS TO BE CUSTOM ORB w/ COLORBOND FASCIA AND GUTTER IN SIMILAR FINISH
 PATIO TUBE STRUCTURES TO CARPORT AND ALFRESCO
FINAL COLOUR FINISHES TO BE CONFIRMED



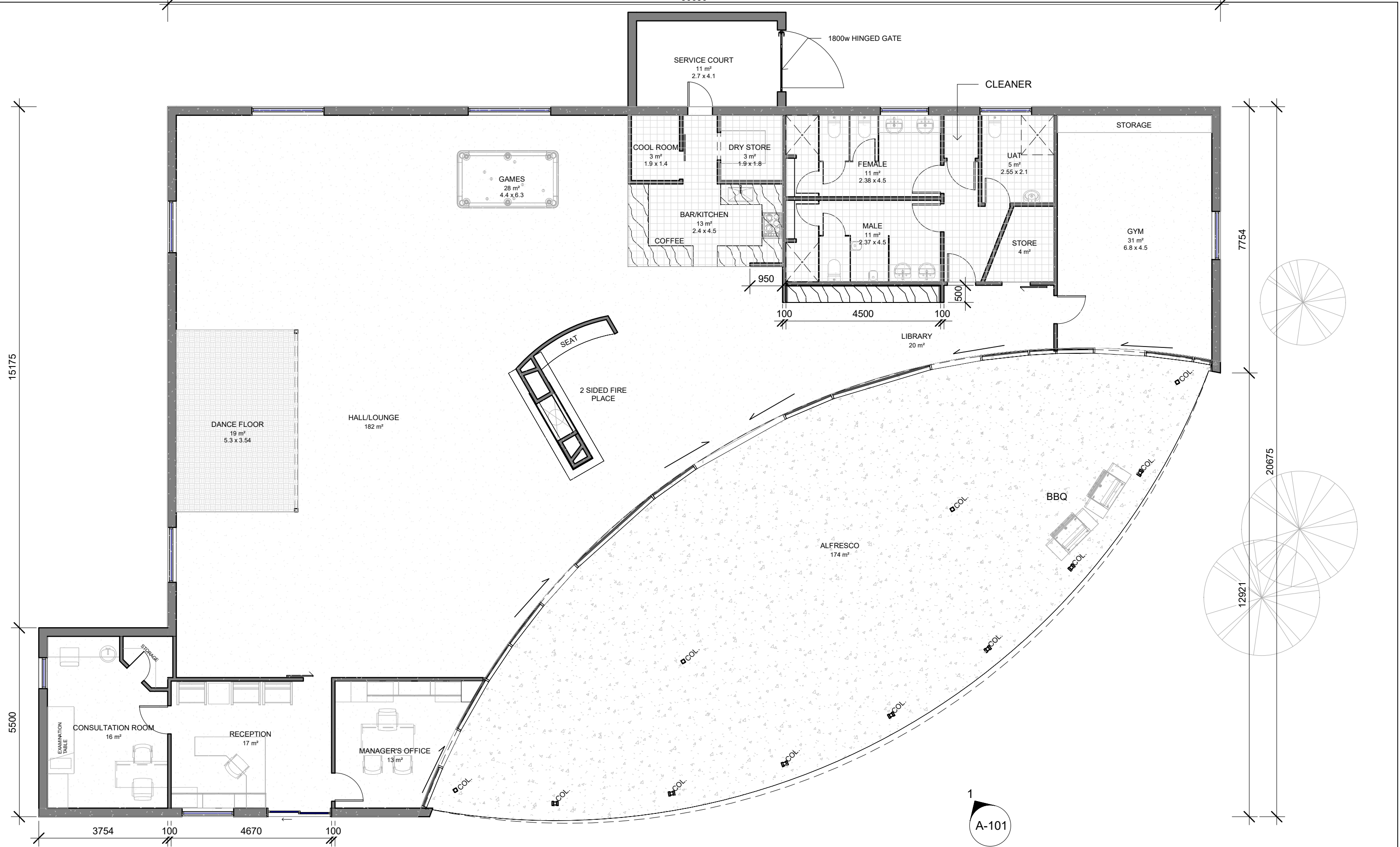
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No.	Description	Date

'THE SANTOLINA'
 PROVIDENCE LIFESTYLE
 'J'

ELEVATIONS		
Project number		A- 101
Date	20.07.14	
Drawn by	RHA	
Checked by	RHA	
	Scale@A3	1:75



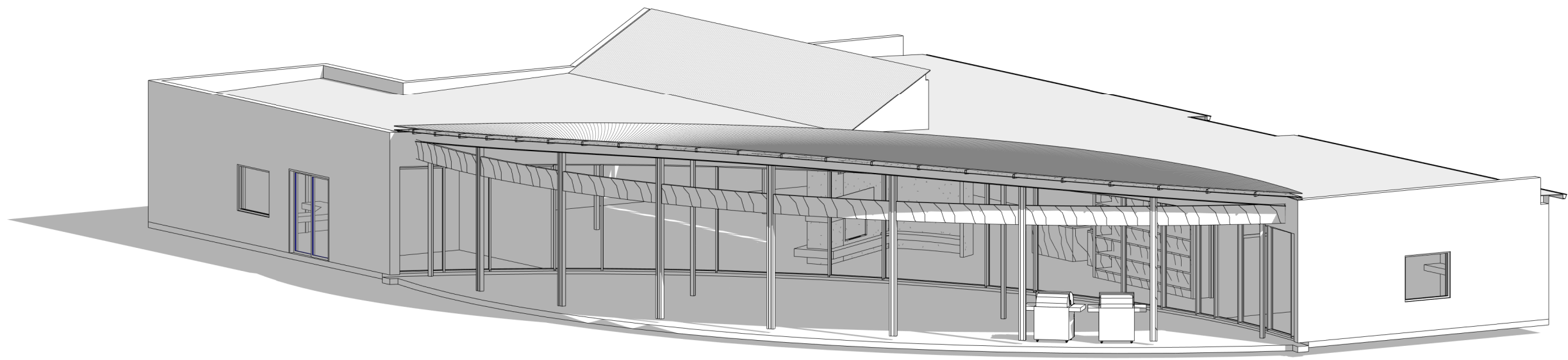
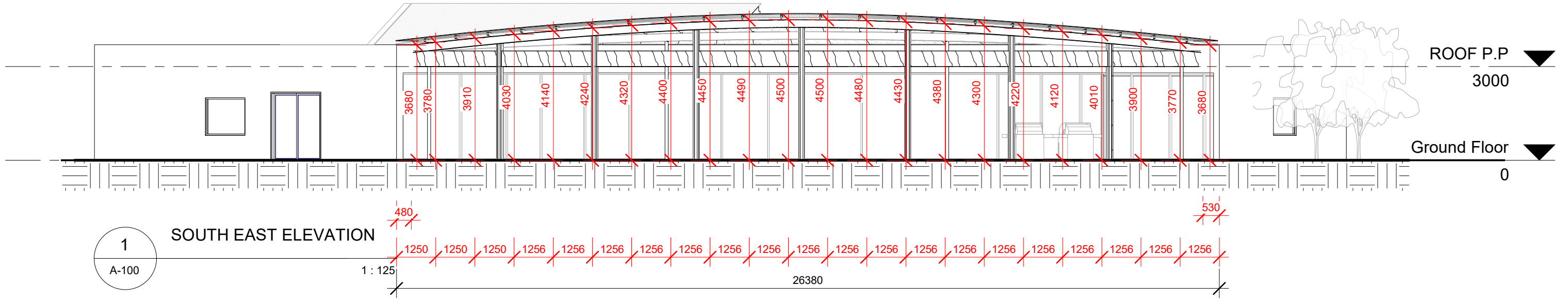
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No.	Description	Date

FURNISSDALE LIFESTYLE VILLAGE
 CLUBHOUSE

GROUND PLAN EXTENSION		
Project number	xx	A-102
Date	17.02.20	
Drawn by	Author	
Checked by	Checker	
Scale@A3		1 : 100



2 EXTERNAL 3D



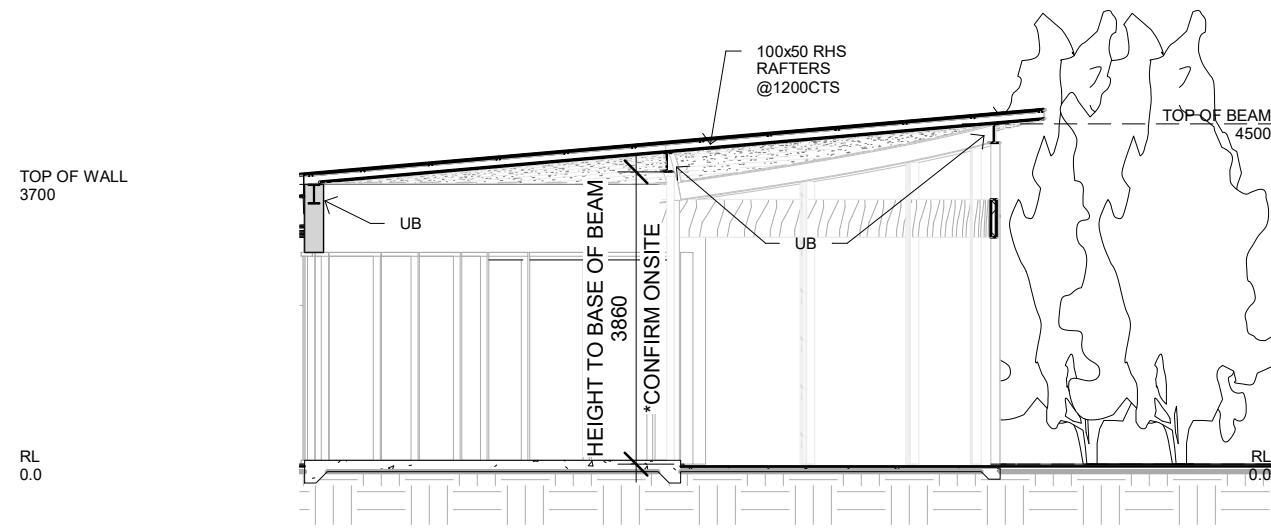
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No.	Description	Date

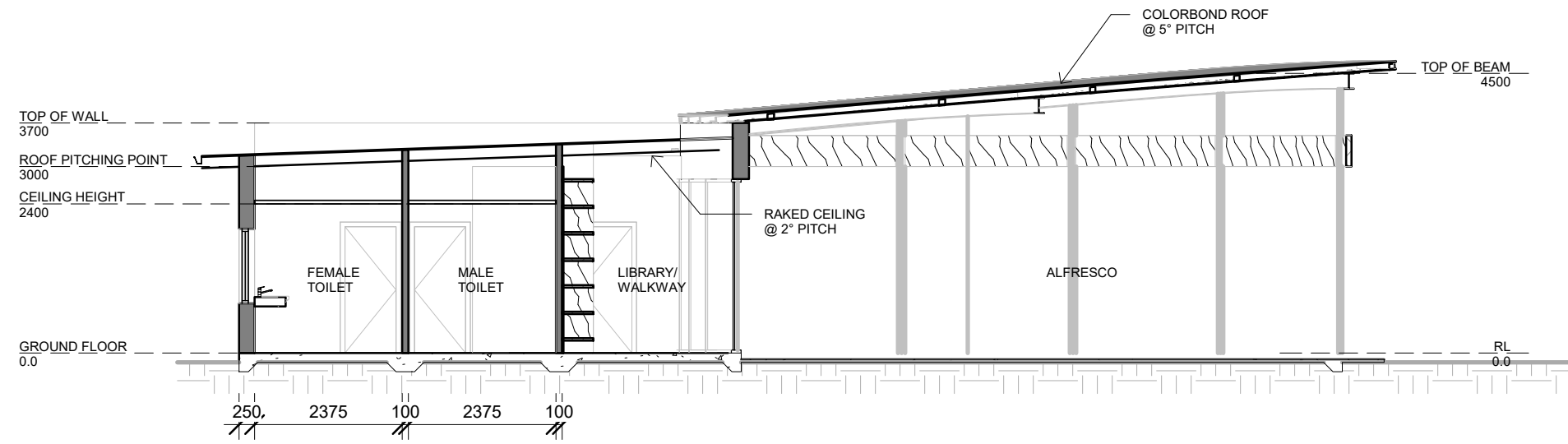
FURNISSDALE LIFESTYLE VILLAGE
CLUBHOUSE

ELEVATION			
Project number	xx	A-101	1 : 125
Date	17.02.20		
Drawn by	RHA		
Checked by	RHA		
Scale@A3			



1 Alfresco Roof Section

1 : 100



2 Bathroom Alfresco Section

1 : 100



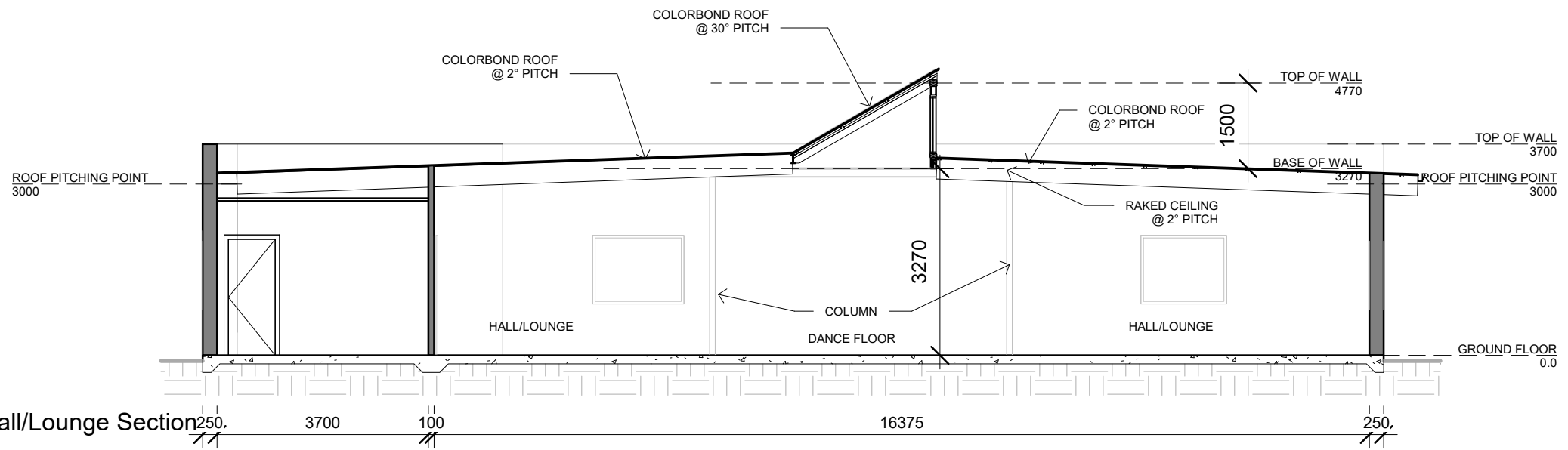
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No.	Description	Date

FURNISSDALE LIFESTYLE VILLAGE
CLUBHOUSE

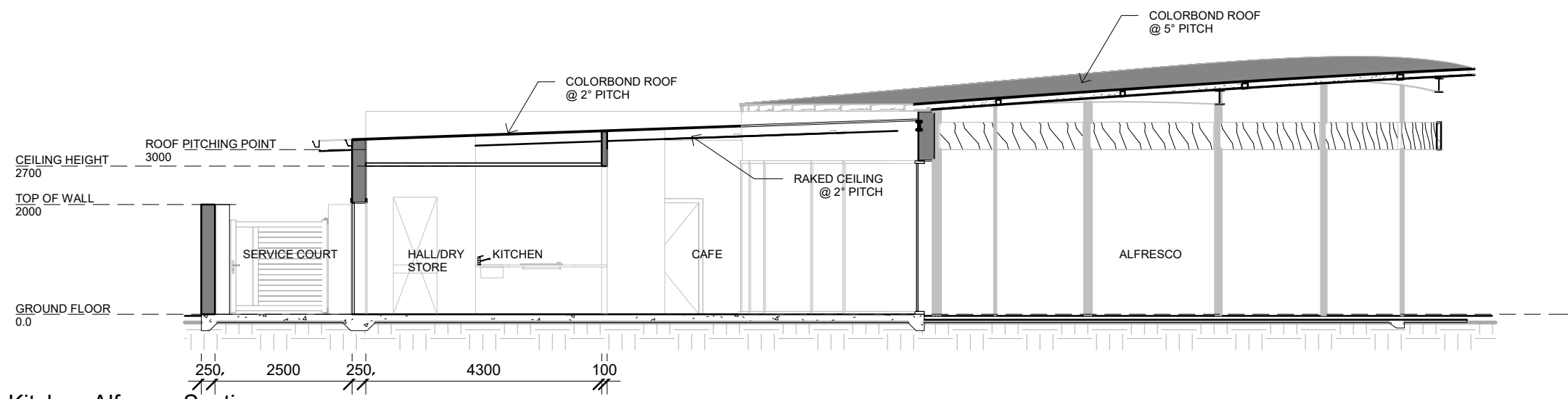
SECTIONS 1		
Project number	xx	A401
Date	17.02.20	
Drawn by	Author	
Checked by	Checker	
Scale@A3		1 : 100



1
A201

Hall/Lounge Section

1 : 100



2

Kitchen Alfresco Section

1 : 100



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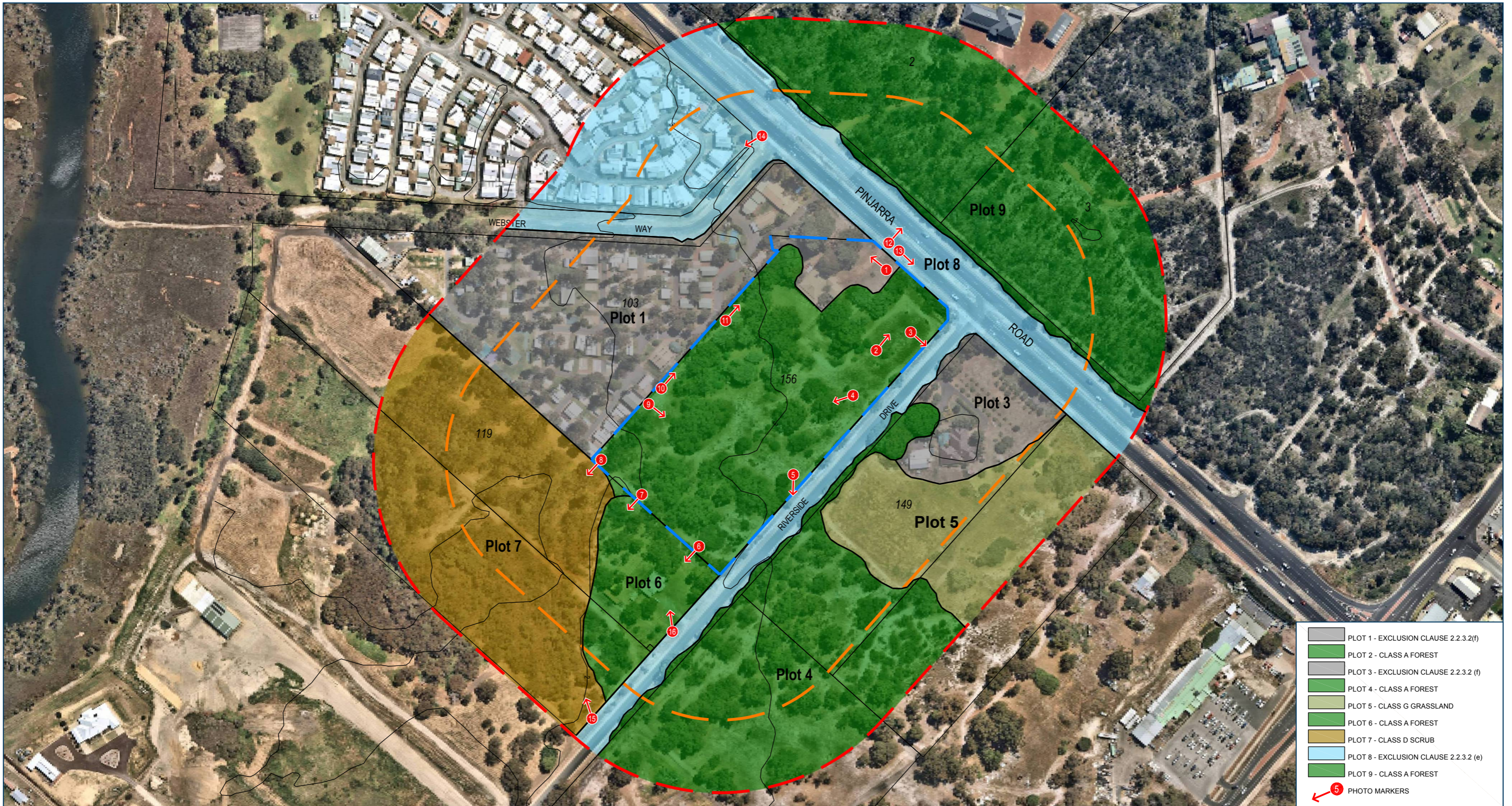
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No.	Description	Date

FURNISSDALE LIFESTYLE VILLAGE
CLUBHOUSE

SECTIONS 2		
Project number	xx	A402
Date	17.02.20	
Drawn by	Author	
Checked by	Checker	
Scale@A3		1 : 100

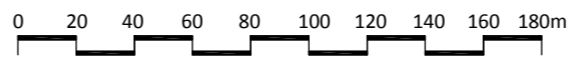
APPENDIX 2 – BUSHFIRE MANAGEMENT PLAN MAPPING



AS3959 VEGETATION CLASSIFICATION

LOT 156 (528) PINJARRA ROAD
FURNISSDALE

SHIRE OF MURRAY



SCALE: 1:2600
ORIGINAL PLAN SIZE: A3

JOB CODE:
NLV FU2 ZB

DATE:
22.05.2020



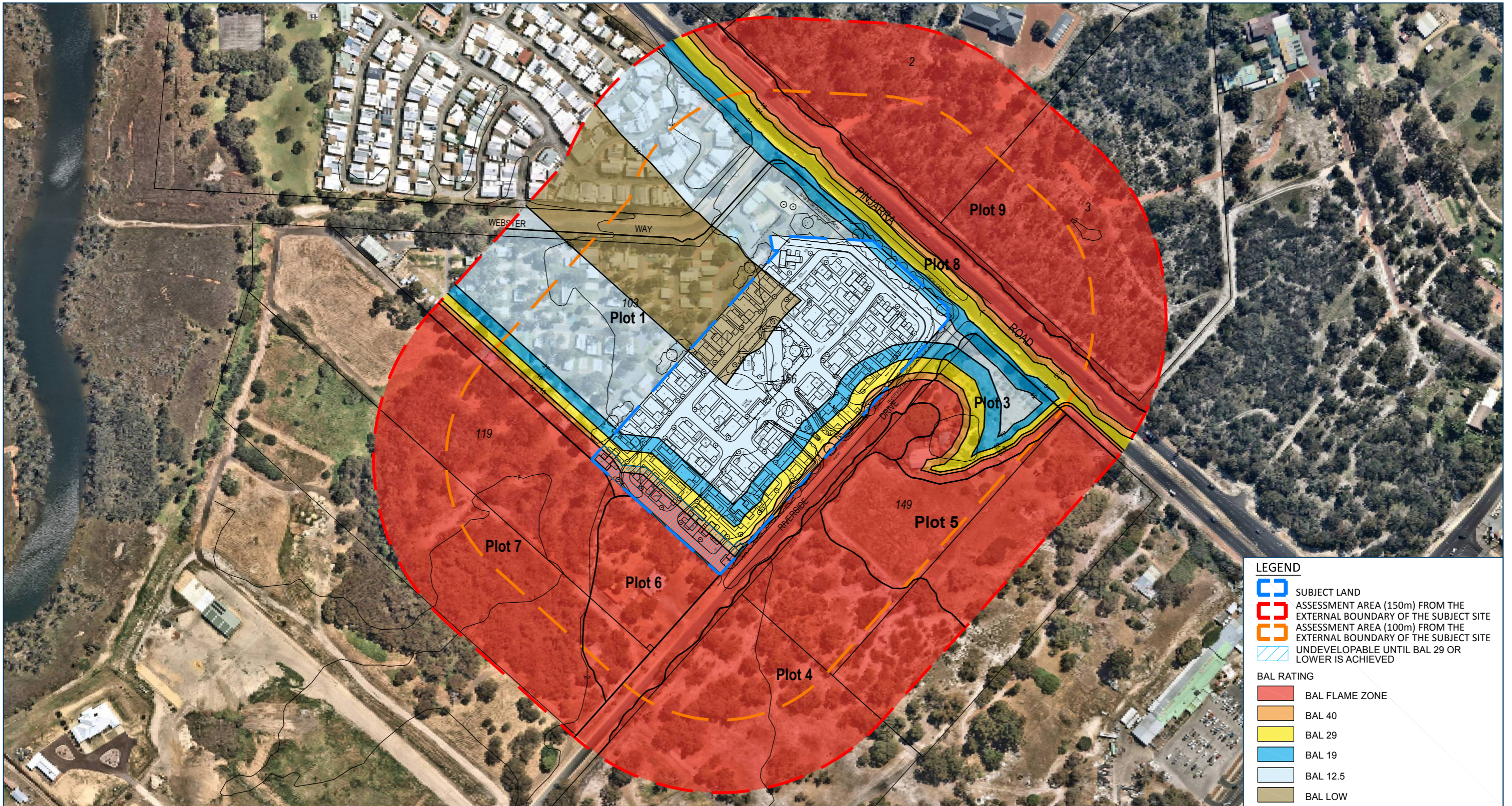
LEGEND

- SUBJECT LAND
- ASSESSMENT AREA (150m) FROM THE EXTERNAL BOUNDARY OF THE SUBJECT SITE
- ASSESSMENT AREA (100m) FROM THE EXTERNAL BOUNDARY OF THE SUBJECT SITE

- PLOT 1 - EXCLUSION CLAUSE 2.2.3.2(f)
- PLOT 2 - CLASS A FOREST
- PLOT 3 - EXCLUSION CLAUSE 2.2.3.2 (f)
- PLOT 4 - CLASS A FOREST
- PLOT 5 - CLASS G GRASSLAND
- PLOT 6 - CLASS A FOREST
- PLOT 7 - CLASS D SCRUB
- PLOT 8 - EXCLUSION CLAUSE 2.2.3.2 (e)
- PLOT 9 - CLASS A FOREST
- PHOTO MARKERS

**Allerding
& Associates**

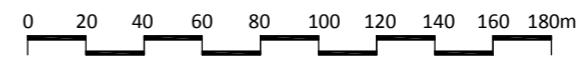
Town Planners, Advocates
and Subdivision Designers



BAL CONTOUR PLAN

LOT 156 (528) PINJARRA ROAD
FURNISSDALE

SHIRE OF MURRAY



SCALE: 1:2600
ORIGINAL PLAN SIZE: A3

JOB CODE:
NLV FU2 ZB

DATE:
21.05.2020



Allering & Associates

Town Planners, Advocates
and Subdivision Designers



BUSHFIRE MANAGEMENT STRATEGIES MAP

LOT 156 (607) PINJARRA RD
FURNISSDALE

SHIRE OF MURRAY

0 10 20 30 40 50 60m

SCALE: 1:1000
ORIGINAL PLAN SIZE: A3

JOB CODE:
NLV FU2 ZB

DATE:
23.07.2020



Allering & Associates

Town Planners, Advocates
and Subdivision Designers

**APPENDIX 3 –
SHIRE OF MURRAY FIREBREAK NOTICE AND BUSHFIRE
INFORMATION 2020-2021**



Important Dates
Camping/Cooking/Garden Refuse

Permit to Burn
Stay Informed

Fire Danger Ratings
Total Fire/Harvest and Vehicle Movement Bans

Preparing for the Fire Season

Firebreak Notice

Firebreak Notice and Bushfire Information 2020 - 2021

Report All Fires: Phone 000

Important Dates

Restricted Burning Time One

Permits Required

1 October – 30 November (inclusive)

Permits: Permit Issuing Officer – details page five

Fire Prevention Work Due

Installed on or before 30 November

Maintained up to and including 30 April

Prohibited Burning Time

Burning Prohibited

1 December – 31 March (inclusive)

Restricted Burning Time Two

Permits Required

1 April – 15 May (inclusive)

Permits: Permit Issuing Officer – details page five

Note

- Unseasonal weather conditions may necessitate a variation to the dates above.
- Burning is prohibited on days where the Fire Danger Rating is Very High or above and if either a Total Fire Ban/Harvest and Vehicle Movement Ban is declared.
- Prior to any burning, please advise the Department of Fire and Emergency Services' Communication Centre on 08 9395 9209 as well as a Permit Issuing Officer (page five).
- Please monitor the Shire's website murray.wa.gov.au or contact the Shire's Ranger and Emergency Services on 08 9531 7777.

Camping/Cooking/ Garden Refuse

Outdoor Cooking

Gas and Electric Barbeques

Permitted at any time.

Solid Fuel Barbecues, Spit Roasts, Webers, Pizza Ovens and Other Cooking Fires

Prohibited Burning Time:

- ✘ Prohibited at all times.

Restricted Burning Times:

- ✘ Prohibited when the Fire Danger Rating is Very High or above, or when a Total Fire Ban has been declared.
- ✓ Permitted at all other times, if constructed in a way which prevents the escape of sparks or burning material and is within a three (3) metre fuel free zone.
- ✓ Somebody must be in attendance at all times and a means of extinguishing the fire must be on hand.

Burning of Garden Refuse or Rubbish

Includes incinerators and on the ground.

Prohibited Burning Time:

- ✘ Prohibited at all times.

Restricted Burning Times:

- ✘ Prohibited on land < 4,000m².
- ✘ Prohibited when the Fire Danger Rating is Very High or above or if a Total Fire Ban has been declared.
- ✓ Permitted at all other times on land ≥ 4,000m²: One small heap (up to one (1) cubic metre) may be burnt on the ground, without a 'Permit to Set Fire to the Bush', between 6:00pm and 11:00pm but only if it is completely extinguished before midnight on the same day, a five (5) metre firebreak has been cleared and at least one able bodied person remains in attendance.

The Shire of Murray Health Local Law prohibits the burning of the following materials which cause the generation of smoke or odour in such quantities as to cause a nuisance to other persons:

- ✘ Plastic
- ✘ Rubber
- ✘ Food scraps
- ✘ Green garden materials



Smoke Management

Considerations prior to burning:

- Weather conditions – Always check with the Bureau of Meteorology for haze alerts and weather conditions in your area.
- Tell your neighbours – Give sufficient notice of your intention to burn to ensure adequate preparation time especially for relocating any persons with respiratory issues.
- Condition of refuse – Only burn dry dead material to minimise the amount of smoke produced.
- Control the load – Do not burn more than you can manage, commence with a smaller fire and gradually add more material.

Residents are encouraged to remove and dispose of potential flammable material – bush, garden rubbish or refuse, from their properties before the onset of summer.



Example of Dry Burn

Permit to Burn

During Restricted Burning Times, a Permit to Burn is required and is obtainable free of charge from:

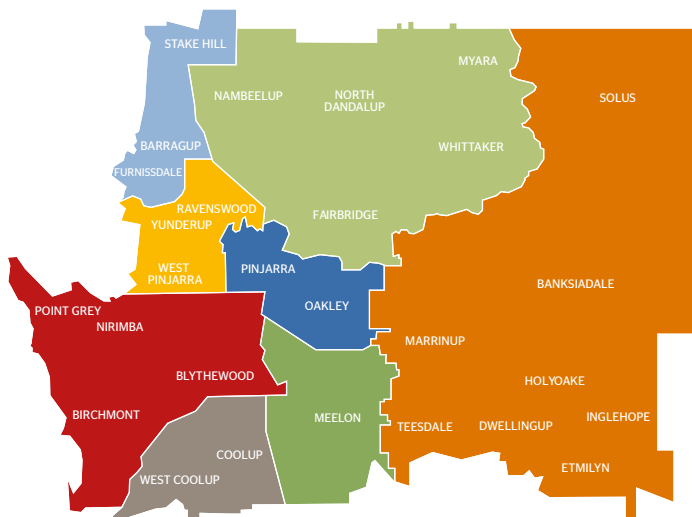
- Local Bush Fire Brigade Fire Control Officers
- Locality Permit Issuing Officer

Note:

- No permits are issued during the Prohibited Burning Time.
- Permits to Burn **will not** be issued in relation to properties < 4,000m².
- Permit holders are required to adhere to all conditions on the permit.
- Special conditions may apply.

Even when a Permit to Burn has been issued, **no fire is to be lit when the fire danger rating is Very High or above.**

Permit Issuing Officer Contact Details



- Zone 1** Jim Camplin | 0409 909 063
- Zone 2** Robert Wilson | 0417 916 468
 Christine Thompson | 0429 447 341
 Brian Bird | 0417 081 781
- Zone 3** Peter Thurkle | 0427 882 201
 Michael Webster | 0439 920 882
 Brendan Webster | 0418 930 986
 Lorraine Webster | 0448 135 671
- Zone 4** Kevin Jones | 0417 996 806
- Zone 5** Ben Armstrong | 0429 777 500
 David Turner | 0427 775 914
- Zone 6** Lance Pitter | 0438 246 500
- Zone 7** Douglas McLarty | 0407 728 446
- Zone 8** Chris Sattler | 0428 625 066

Stay Informed



EmergencyWA

emergency.wa.gov.au

Total Fire Bans

- Total Fire Ban Information Line 1800 709 355
- dfes.wa.gov.au
- emergency.wa.gov.au
- ABC720AM Local Radio



Harvest and Vehicle Movement Bans

- Shire of Murray
08 9531 7777
- ABC720AM Local Radio
- Local Fire Control Officer

SMS Alerts

Broadcast of local Harvest and Vehicle Movement Bans, Total Fire Bans and other information:

Email: mailbag@murray.wa.gov.au

Please note:

SMS alerts do not include alerts about fires or other emergencies.



Fire Danger Ratings

The Fire Danger Rating (FDR) is based on forecast weather conditions and offers advice about the level of bushfire threat on a particular day. When the rating is High, the threat of a bushfire increases.

If the FDR is Extreme or Catastrophic, residents should leave the day or hours before a fire might threaten, as this is the best option for survival.

Shire of Murray Fire Weather District

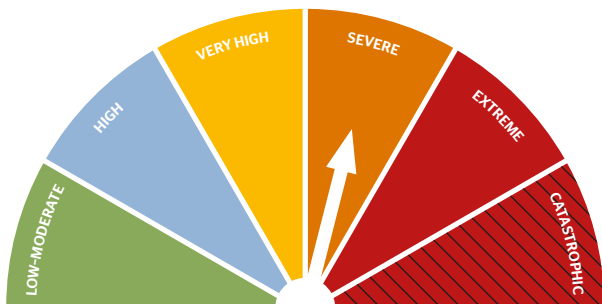
- Lower West Coast
- Lower West Inland



Daily Fire Danger Rating (FDR)

- dfes.wa.gov.au
- bom.gov.au/wa
- emergency.wa.gov.au

Understanding Fire Danger Ratings



CATASTROPHIC

100+

Total Fire Bans will be declared. Some fires will be unpredictable, difficult to control and fast moving. A well prepared, well constructed and actively defended home may not survive a fire.

EXTREME

75-99

Total Fire Bans will be declared. Some fires will be unpredictable, difficult to control and fast moving. A well prepared, well constructed and actively defended home may not survive a fire.

SEVERE

50-74

Total Fire Bans are likely. Some fires will be unpredictable, difficult to control and fast moving.

VERY HIGH

32-49

Total Fire Bans are likely. Some fires will be unpredictable, difficult to control and may be fast moving.

HIGH

12-31

Fires can be controlled but there is still a potential threat.

LOW-MODERATE

0-11

Fires can be easily controlled and are slow moving.

Bans



Total Fire Ban

A Total Fire Ban (TFB) is declared by the Department of Fire and Emergency Services (DFES) following consultation with local governments because of extreme weather conditions or when widespread fires are seriously stretching firefighting resources.

During a TFB the lighting of any fires in the open air and any other activities that may start a fire, are prohibited, this includes:

- × All open air fires for the purpose of cooking or camping (i.e. wood fuel barbeques, candles and pizza ovens).
- × Incinerators, welding, grinding, soldering or gas cutting, angle grinders and lawnmowers.

Penalty: Up to \$25,000 fine and/or a 12 month jail term.

Exemptions may be granted by DFES and must be requested in writing.



Harvest and Vehicle Movement Ban

Harvest and Vehicle Movement Bans (HVMB) are imposed by local government under the *Bush Fires Regulations 1954* Section 38A, and/or Section 24C, when prevailing and/or anticipated weather conditions and/or when availability and/or response capacity of the local firefighting resources are reduced.

A HVMB may be imposed for any length of time but is generally imposed for 'heat of the day' periods and may be extended or revoked as weather conditions change.

During a HVMB the use of the following items is prohibited, in order to mitigate the associated risk of causing or contributing to the spread of a bushfire:

- × Engines, vehicles, plant and machinery.

Preparing Your Property

Preparing for fires is essential to living in our fire prone landscape. Having a **plan** is the primary step to ensuring the survivability of your property and the welfare of you and your family, including pets and livestock.

In a bushfire, every minute counts especially the next five. Visit **firechat.wa.gov.au** to prepare a plan, by having a five minute fire chat with your family.

It will be too late to prepare your property when a serious fire is threatening. **Fuel loads** influence bushfire intensity.

If you are planning to build or to undertake any building work, you are advised to comply with Australian Standard AS 3959 Building in Bush Fire Prone Areas.

Public utilities such as telephone, power and water supplies are often damaged during major bushfires and may not be available to you when you need them.

If you are well prepared, your property has a greater chance of surviving a bushfire. Having an Asset Protection Zone is one way to ensure this.



Asset Protection Zone

Asset Protection Zone (APZ) is the area within 20 metres, measured from any external wall, of any habitable building. The zone is within the boundaries of the lot on which the habitable building is situated.

Where an APZ is required as part of an approved Bushfire Attack Level (BAL) assessment, it must be maintained in accordance with the BAL report. A BAL report is required as part of all new planning and/or building license approvals for habitable buildings constructed in bushfire prone areas.

Shire of Murray planning approval is not required for the purpose of implementing an APZ.

Note: Building Protection Zone and Asset Protection Zone are synonymous.

Within the APZ, ensure:

- Tree crowns are a minimum of 10 metres apart.
- Low trees are pruned to a height of two (2) metres.
- The fuel load (flammable material) is reduced and maintained to a height of less than five (5) centimetres or less than two (2) tonnes per hectare.
- No tall shrubs or trees are located within two (2) metres of a building (including windows).
- Fences and sheds are constructed using non-combustible materials (e.g. colorbond iron, brick, limestone).
- Sheds or other outbuildings do not contain flammable materials.
- Tall shrubs are not planted in clumps within three (3) metres of a habitable building.
- Tree crowns do not overhang a dwelling and shrubs and trees do not have dead material within the plant.
- Lawns are kept short and green where possible.

Alternatives to Burning

There are a range of alternatives to burning waste which will not harm the environment or cause health problems for you or your neighbours.

- Grass can be slashed, grazed or reduced with herbicide to decrease fuel loads. This may be a practical alternative particularly if erosion is a concern or in areas which are difficult to access.
- Ratepayers and residents are encouraged to dispose of green waste and garden refuse via the two annual Green Waste Verge Collections.
- Shire of Murray ratepayers and residents are also able to dispose of their green waste and garden refuse at the Corio Road and Dwellingup Waste Transfer Stations.
- Garden refuse (particularly grass clippings, leaves and twigs) can also be used as a mulch or compost in the garden to improve soils and the growth of plants.

If you have large quantities of green waste (branches, tree trunks) you can arrange for mobile mulching services for the material on-site.

Mulching and composting at home avoids the need to burn off and is an environmentally friendly way to deal with green waste. For information regarding composting, please contact the Shire of Murray Environmental Services on 08 9531 7777.

Mulch piles should be no larger than five (5) cubic metres to reduce the risk of spontaneous combustion and piles should have a three (3) metre firebreak surrounding the pile.

Advice is Available

Further advice on when and how to burn off is available from your local Fire Control Officer, the Shire of Murray Community Emergency Services Coordinator or Ranger Services on 08 9531 7777.

Can We Access Your Property?

Did You Know?

In order for fire appliances to access your property safely, firebreaks are required to be no less than three (3) metres wide and have no less than four and a half (4.5) metres vertical clearance. Fire appliances must be able to fit through gates on your property.

The average fire appliance is nine (9) metres long.



← Width 3 metres →

Firebreak Notice

Bush Fires Act 1954

Notice is hereby given to all owners and/or occupiers of land within the Shire of Murray that Council pursuant to the powers conferred in Section 33(1), 25(1a) and 24G(2) of the *Bush Fires Act 1954*, approved the following requirements at its Ordinary Council Meeting on 25 June, 2020 to prevent the outbreak, spread or extension of a bush fire within the district and deal with other fire related preparedness and prevention matters.

Pursuant to Section 33 of the *Bush Fires Act 1954*, all owners and/or occupiers of land are required to carry out fire prevention work in accordance with the requisitions of this notice on or before 30 November each calendar year or within 14 days of the date of becoming the owner or occupier of the land, should this be after 30 November. All work specified in this notice is to be maintained up to and including 30 April the following calendar year.

Definitions

For the purpose of this notice the following definitions apply:

Authorised Officer – an employee of the Shire of Murray appointed as a Bush Fire Control Officer.

Bushfire Management Plan – a plan that has been developed and approved by the Shire of Murray to reduce and mitigate fire hazards within a particular subdivision, lot or other area of land anywhere in the district.

Driveway – the point of access (driveway) to a habitable building that is accessible for both conventional two wheel drive vehicles and firefighting appliances that is totally clear of all vegetation, trees, bushes, shrubs and other objects or things encroaching into the vertical axis of the driveway. If a driveway to a habitable building is longer than 50 metres in length from a public road, a clear turn around area with a 10 metre radius is to be provided.

Firebreak – an area of ground, of a prescribed width, constructed to a trafficable surface that is kept and maintained totally clear of all flammable material and includes the pruning and removal of any living or dead

trees, scrub or any other material encroaching into the vertical axis of the firebreak area.

Fire Management Plan – the same as Bushfire Management Plan.

Fuel Depot/Storage Area – an area of land, a building or structure where fuel (i.e. petrol, diesel, kerosene, liquid gas or any other fossil fuel) is kept in any container or other manner.

Flammable Material – any plant, tree, grass, vegetable, substance, object, thing or material (except living flora including live standing trees) that may or is likely to catch fire and burn or any other thing deemed by an Authorised Officer to be capable of combustion.

Habitable Building – a dwelling, work place, place of gathering or assembly and includes a building used for storage or display of goods or produce for sale by wholesale in accordance with classes 1 – 9 of the Building Code of Australia.

The term habitable building includes attached and adjacent structures like garages, carports, verandahs or similar roofed structure(s) that are attached to, or within six (6) metres of the dwelling or primary building.

Haystack – any collection of hay including fodder rolls placed or stacked that exceeds 100m³ in size (e.g. five (5) metres x five (5) metres x four (4) metres), whether in a shed, other structure or in the open air.

Hills Landscape Protection Land – land zoned or defined in the Local Planning Scheme or Shire of Murray property rate database as Hills Landscape Protection Land.

Plantations – any area of planted pines, eucalypt, hardwood or softwood trees exceeding three (3) hectares in area.

Size – the size of an individual parcel or lot of land as recorded in the Shire of Murray property rate database.

- 1 hectare = 10,000m² = 2.47 acres
- 1 acre = 4,046.86m² = 0.4046 hectare

Trafficable – to be able to travel from one point to another in a four wheel drive fire appliance on a clear surface, unhindered without any obstruction that may endanger resources. A firebreak is not to terminate in a dead end without provision for egress to a safe place or a cleared turn around area of 17.5 metre radius.

Vertical Axis – a continuous vertical uninterrupted line at a right angle to the horizontal line of the firebreak to a minimum height of four and a half (4.5) metres from the ground.

Zoning – the land zoning description as recorded in the Shire of Murray property rate database.

Fire Prevention Requirements

1. Rural Zoned Land – 10 Hectares or Greater

- a. A three (3) metre wide firebreak is to be constructed and maintained as close as practicable, but within 50 metres of the boundaries of the land, where the land abuts all made roads or railway reserves, Crown land which is the responsibility of a state agency, held in leasehold by a third party or otherwise unmanaged or a plantation.
- b. If the rural zoned land abuts or adjoins any other type of zoned land a three (3) metre wide firebreak is to be constructed and maintained along that portion of the rural land that abuts the other zoned land and the firebreak(s) is to be located immediately, where practical inside the boundary of the rural land where it abuts the above mentioned land.
- c. A three (3) metre wide firebreak is to be constructed and maintained immediately surrounding all outbuildings, sheds, haystacks, groups of buildings and fuel depots/storage areas situated on the land.
- d. All flammable material within 20 metres of a habitable building is to be reduced and maintained to a height of less than five (5) centimetres.
- e. A three (3) metre wide driveway to be installed and maintained.

2. Special Rural, Special Residential, All Special Use, Farmlet, Hills Landscape Protection Land, Rural Townsite and Rural Zoned Land Less than 10 Hectares

- a. Where the area of land in this zoning category is 10,000m² or less in size, all flammable material on the entire property is to be reduced and maintained to a height of less than five (5) centimetres.
- b. Where the area of land in this zoning category is between 10,001m² and 25,000m² in size all flammable material on the entire property is to be reduced and maintained to a height of less than five (5) centimetres. Alternatively, a firebreak is to be installed and maintained in accordance with clause 2(c).
- c. Where the area of land in this zoning category is 25,001m² or more in size, a three (3) metre wide firebreak is to be installed and maintained immediately:
 - i. Inside all external boundaries of the land.
 - ii. Around all outbuildings, sheds, haystacks, groups of buildings and fuel depots/storage areas situated on the land.
 - iii. All flammable material within 20 metres of a habitable building is to be reduced and maintained to a height of less than five (5) centimetres.
- d. If land within this zoning category adjoins any of the land described in Clause 3, all flammable material shall be reduced and maintained to a height of less than five (5) centimetres, for a distance of 20 metres, immediately inside the installed and maintained firebreak.
- e. All land within this zoning category, irrespective of size, requires a three (3) metre wide driveway to be installed and maintained.

Exception: Where there is green maintained and reticulated lawn, inclusive of any living trees, shrubs or plants immediately adjacent to an external boundary of any land within this zoning category, a firebreak is not required to be installed or maintained, immediately inside that particular land boundary.

3. Residential, Residential Development, Special Development, Industry and all Other Zoned Land Not Specified

- a. Where the area of land in this zoning category is 4,000m² or less, all flammable material on the entire property shall be reduced and maintained to a height of less than five (5) centimetres.
- b. Where the area of land in this zoning category is more than 4,001m² in size, a three (3) metre wide firebreak shall be installed and maintained immediately inside all external boundaries of the land and also immediately surrounding all buildings situated on the land.
- c. A three (3) metre wide driveway to be installed and maintained.

4. Plantations

- a. **Boundary Firebreaks** – all property boundaries must have a 15 metre firebreak installed. The outer 10 metres will be cleared of all flammable material while the inner five (5) metres (i.e. that portion closest to the trees) may be kept in a reduced fuel state by slashing or grazing grass to a height of less than five (5) centimetres. This includes the trimming back of all overhanging limbs, bushes, shrubs and any other object encroaching into the vertical axis above the outer 10 metres of the firebreak area.
- b. **Internal Firebreaks** – plantation area must be subdivided into areas not greater than 30 hectares, separated by six (6) metre wide firebreaks. This includes the trimming back of all overhanging limbs, bushes, shrubs and any other object encroaching into the vertical axis of the firebreak area.
- c. **Special Risks** –
 - i. Public road and railway reserve firebreaks 15 metres wide shall be maintained where the planted area adjoins public roads and railway reserves. The specification will be as for boundary firebreaks on planted areas.
 - ii. Firebreaks shall be provided along power lines where they pass through or lie adjacent to planted areas. The specification of the width and

height of clearing shall be in accordance with Western Power specifications.

- d. Furthermore, all plantations shall comply with requirements contained in the Department of Fire and Emergency Services (DFES) guidelines or standards for Plantation Fire Protection.

5. Storage of Cut or Stockpiled Timber Products

On all land in the district except land specified as industrial, non-rateable or reserve land, the owner or occupier of the land shall not keep or permit to be kept any cut, stockpiled or windrowed timber products (manufactured or natural), unless the material is in piles of less than 15 metres long, five (5) metres wide and three (3) metres high. Every pile of cut, stockpiled or windrowed timber product larger than 12m³ is to be completely surrounded by a 10 metre wide firebreak.

6. Variations

If it is considered to be impractical for any reason to clear firebreaks or establish other arrangements as required by this notice, the owner and/or occupier of land in the district may apply for a variation by contacting the appropriate area Fire Control Officer prior to 14 November each calendar year to arrange an onsite inspection to discuss alternate methods of fire prevention. Variations may be approved by the Shire of Murray for a one, three or five year period, subject to the owner and/or occupier of the land remaining the same. If a request to vary this notice is not approved, the requirements of this notice apply.

7. Bushfire Management Plans

Where a Bushfire Management Plan (BMP) exists for a specified area or property as required by the Local Planning Scheme or subdivision approval or for an individual or group of properties, compliance with all requirements of the BMP are required in addition to any further requirements within this notice.

8. Special Works Order

The requirements of this notice are considered to be the minimum requirement for fire prevention work, not only to protect individual properties but the district generally.

A separate Special Works Order may be issued to individual landowners pursuant to Section 33 of the *Bush Fires Act 1954* to carry out further hazard removal and/or reduction work with respect to anything upon the land, where in the opinion of an Authorised Officer, it is likely to be conducive to the outbreak and/or the extension of a bushfire.

9. Dates to Remember

Restricted Burning Time:

1 October to 30 November each year (inclusive) and 1 April to 15 May each year (inclusive and as varied pursuant to Section 18 of the *Bush Fires Act 1954*).

Prohibited Burning Time:

1 December to 31 March each year (inclusive and as varied pursuant to Section 17 of the *Bush Fires Act 1954*).

The above dates are subject to variation and any alterations will be published in a local newspaper circulating within the district.

10. Camp or Cooking Fires (s.25(1a) *Bush Fires Act 1954*)

The lighting of camp or cooking fires is prohibited on all land within the Shire of Murray during the Prohibited Burning Time. This prohibition does not apply to a gas appliance that does not consume solid fuel comprising of a fire, the flame of which is encapsulated by the appliance.

11. Burning of Garden Refuse and Rubbish (s.24G *Bush Fires Act 1954*)

The burning of garden refuse or rubbish is prohibited on all land under 4,000m² in size during the Limited Burning Time that would otherwise be permitted under Section 24F.

For the purposes of this clause, Limited Burning Time means 1 October each calendar year through until 15 May the following calendar year (inclusive and as varied pursuant to Sections 17 and 18 of the *Bush Fires Act 1954*).

On land larger than 4,001m² the burning of garden waste and rubbish that would otherwise be permitted under Section 24F is prohibited absolutely during the Prohibited Burning Time.

The effect of this clause is that the burning of garden refuse or rubbish in an incinerator or on the ground on land that is 4,000m² or less in size is prohibited during the Limited Burning Time and the burning of garden refuse or rubbish in an incinerator or on the ground is prohibited on all land within the district during the Prohibited Burning Time.

Any time when there is in force a fire danger forecast issued for the district by the Bureau of Meteorology in Perth of Catastrophic, Extreme, Severe or Very High, a Total Fire Ban (TFB) or any other prohibition is in effect under the *Bush Fires Act 1954*, burning of garden refuse or rubbish in an incinerator or on the ground is prohibited on all land within the district.

In addition to the above restrictions, garden refuse burnt on the ground is burnt in accordance with this clause if:

- a. There is no flammable material, other than that being burnt, within five (5) metres of the fire at any time while the fire is burning.
- b. The fire is lit between 6:00pm and 11:00pm and is completely extinguished before midnight on the same day.
- c. At least one person is present at the site of the fire at all times until it is completely extinguished.
- d. One pile (up to one (1) cubic metre in size) can only be burnt at a time.
- e. When the fire is no longer required, the person ensures that the fire is completely extinguished by the application of water or earth.
- f. The person intending to light the fire must telephone the Department of Fire and Emergency Services' Communications Centre (COMCEN) immediately prior to igniting on 08 9395 9209.

The Shire of Murray Health Local Law 2018 further restricts and or prohibits burning of rubbish or refuse on land in the district.

12. Penalties

The penalty for failing to comply with this notice is a fine not exceeding \$5,000. A person in default is also liable whether prosecuted or not, to pay the costs of performing the work directed by this notice if it is not carried out by the owner and/or occupier by the date required by this notice.



EXTINGUISHERS ON

PHO 1 30



DAVE TURNER
CAPTAIN





Shire of Murray

 /ShireofMurray

 @ShireofMurray

 ShireofMurray

1915 Pinjarra Road,
Pinjarra WA 6208
PO Box 21 Pinjarra WA 6208

T: 08 9531 7777

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mailbag@murray.wa.gov.au

www.murray.wa.gov.au

Report All Fires: Phone 000

Department of Fire and Emergency Services

General Enquiries 08 9395 9300

Emergency Information 133 337 (13DFES)

Register your Controlled Burn 08 9395 9209

Department of Biodiversity, Conservation and Attractions

General Enquiries 08 9290 6100

Shire of Murray Ranger and Emergency Services

08 9531 7709

Chief Bush Fire Control Officer

Robert Wilson 0417 916 468

Deputy Chief Bush Fire Control Officer

Ben Armstrong 0429 777 500

Pinjarra Volunteer Fire and Rescue

Ken Jones—Brigade Captain 0409 205 071

www.emergency.wa.gov.au

Annexure 7
Acoustic Report



**PROVIDENCE MANDURAH
607 PINJARRA ROAD
FURNISSDALE**

**STATE PLANNING POLICY 5.4
NOISE MANAGEMENT PLAN**

MAY 2020

OUR REFERENCE: 25748-1-20031



DOCUMENT CONTROL PAGE

SPP 5.4 NOISE MANAGEMEN PLAN
607 PINJARRA ROAD, FURNISSDALE

Job No: 20031

Document Reference: 25748-1-20031

FOR

ALLERDING & ASSOCIATES

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3.	CRITERIA	2
4.	NOISE MONITORING	5
5.	MODELLING	5
6.	DISCUSSION / RECOMMENDATION	6

APPENDICIES

A	Subdivision Plan
B	Monitoring Noise Results
C	$L_{Aeq(16hr)}$ Noise Contours for Pinjarra Road
D	Figure D1 – Lots Requiring “Quiet House” Design and Notifications
E	“Quiet House” Design – General Information

1. INTRODUCTION

Herring Storer Acoustics was commissioned by Allerdig & Associates to undertake an acoustical assessment of noise received within the proposed Subdivision Plan of 607 Pinjarra Road, Furnissdale.

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

- Measure current noise levels within the proposed development from traffic movements on Pinjarra Road.
- Determine by noise modelling the noise levels that would be received at residences within the development from vehicles travelling on the future Pinjarra Road.
- Assess the predicted noise levels received at residence for compliance with the requirements of the WAPC State Planning Policy 5.4 “*Road and Rail Noise*” - 2019 (SPP 5.4).
- If exceedances are predicted, comment on possible noise amelioration options for compliance with the appropriate criteria.

For information, the concept subdivision plan is attached in Appendix A.

2. SUMMARY

Under the WAPC State Planning Policy 5.4, for this development, the appropriate “Noise Targets” to be achieved under SPP 5.4, external to a residence are:

External

Day	Maximum of 55 dB(A) L_{Aeq}
Night	Maximum of 50 dB(A) L_{Aeq}

The policy states that the “outdoor targets are to be met at all outdoor areas as far as reasonable and practical to do so using the various noise mitigation measures outlined in the guidelines”. The Policy also states, under Section 6 – Policy Measures that “a reasonable degree of acoustic amenity for living areas on each residential lot”. The policy recognises that “it may not be practicable to meet the outdoor noise targets”.

The Policy states the following acceptable internal noise levels:

Internal

Living and Work Areas	$L_{Aeq(Day)}$ of 40 dB(A)
Bedrooms	$L_{Aeq(Night)}$ of 35 dB(A)

For this development, compliance with the requirements of SPP 5.4, noise modelling and assessment are based on the day period for residence located adjacent to Pinjarra Road.

To mitigate the noise received within the development, it is proposed to construct a barrier, as shown on the Figure attached in Appendix A. However, even with the proposed barrier, noise received at some of the residences located near Pinjarra Road would exceed the “Noise Targets” as outlined in SPP 5.4. Hence to comply with the requirements of SPP 5.4, the following are required :

- “Quiet House” design is required for some residences, as shown on Figure D1 in Appendix D.
- The layout of residences located near Pinjarra Road, need to be amended to protect the outdoor living area (ie alfresco areas). A suggested layout is shown in Figure 5.1.

It is noted that under the policy, that for those residences where noise would exceed the “Noise Target”, notification of vehicle noise will need to be stated on the titles. These residences are also indicated on Figure D1, attached in Appendix D. Information on Packages A “Quiet House” design measures are also attached in Appendix E.

3. CRITERIA

The Western Australian Planning Commission (WAPC) released on 6th September 2019 State Planning Policy 5.4 “Road and Rail Noise”. The requirements of State Planning Policy 5.4 are outlined below.

POLICY APPLICATION (Section 4)

When and where it applies (Section 4.1)

SPP 5.4 applies to the preparation and assessment of planning instruments, including region and local planning schemes; planning strategies, structure plans; subdivision and development proposals in Western Australia, where there is proposed:

- a) *noise-sensitive land-use within the policy’s trigger distance of a transport corridor as specified in **Table 1**;*
- b) *New or major upgrades of roads as specified in **Table 1** and maps (**Schedule 1,2 and 3**);
or*
- c) *New railways or major upgrades of railways as specified in maps (**Schedule 1, 2 and 3**);
or any other works that increase capacity for rail vehicle storage or movement and will result in an increased level of noise.*

Policy trigger distances (Section 4.1.2)

Table 1 identifies the State’s transport corridors and the trigger distances to which the policy applies.

*The designation of land within the trigger distances outlined in **Table 1** should not be interpreted to imply that land is affected by noise and/or that areas outside the trigger distances are unaffected by noise.*

*Where any part of the lot is within the specified trigger distance, an assessment against the policy is required to determine the likely level of transport noise and management/ mitigation required. An initial screening assessment (**guidelines: Table 2: noise exposure forecast**) will determine if the lot is affected and to what extent.”*

TABLE 1: TRANSPORT CORRIDOR CLASSIFICATION AND TRIGGER DISTANCES

Transport corridor classification	Trigger distance	Distance measured from
Roads		
Strategic freight and major traffic routes <i>Roads as defined by Perth and Peel Planning Frameworks and/or roads with either 500 or more Class 7 to 12 Austroads vehicles per day, and/or 50,000 per day traffic volume</i>	300 metres	Road carriageway edge
Other significant freight/traffic routes <i>These are generally any State administered road and/or local government road identified as being a future State administered road (red road) and other roads that meet the criteria of either >=23,000 daily traffic count (averaged equivalent to 25,000 vehicles passenger car units under region schemes)</i>	200 metres	Road carriageway edge
Passenger railways		
	100 metres	Centreline of the closest track
Freight railways		
	200 metres	Centreline of the closest track

Proponents are advised to consult with the decision making authority as site specific conditions (significant differences in ground levels, extreme noise levels) may influence the noise mitigation measures required, that may extend beyond the trigger distance.

POLICY MEASURES (Section 6)

The policy applies a performance-based approach to the management and mitigation of transport noise. The policy measures and resultant noise mitigation will be influenced by the function of the transport corridor and the type and intensity of the land-use proposed. Where there is risk of future land-use conflict in close proximity to strategic freight routes, a precautionary approach should be applied. Planning should also consider other broader planning policies. This is to ensure a balanced approach takes into consideration reasonable and practical considerations.

Noise Targets (Section 6.1)

Table 2 sets out noise targets that are to be achieved by proposals under which the policy applies. Where exceeded, an assessment is required to determine the likely level of transport noise and management/mitigation required.

In the application of the noise targets the objective is to achieve:

- indoor noise levels as specified in **Table 2** in noise sensitive areas (for example, bedrooms and living rooms of houses, and school classrooms); and
- a reasonable degree of acoustic amenity for outdoor living areas on each residential lot. For non-residential noise-sensitive developments, for example schools and child care centres the design of outdoor areas should take into consideration the noise target.

It is recognised that in some instances, it may not be reasonable and/or practicable to meet the outdoor noise targets. Where transport noise is above the noise targets, measures are expected to be implemented that balance reasonable and practicable considerations with the need to achieve acceptable noise protection outcomes.

TABLE 2: NOISE TARGETS

Proposals	New/Upgrade	Noise Targets		
		Outdoor		Indoor
		Day ($L_{Aeq}(\text{Day})$ dB) (6 am-10 pm)	Night ($L_{Aeq}(\text{Night})$ dB) (10 pm-6 am)	(L_{Aeq} dB)
Noise-sensitive land-use and/or development	New noise sensitive land use and/or development within the trigger distance of an existing/proposed transport corridor	55	50	L_{Aeq} (Day) 40(Living and work areas) L_{Aeq} (Night) 35 (bedrooms)
Roads	New	55	50	N/A
	Upgrade	60	55	N/A
Railways	New	55	50	N/A
	Upgrade	60	55	N/A

Notes:

- The noise target is to be measured at one metre from the most exposed, habitable façade of the proposed building, which has the greatest exposure to the noise-source. A habitable room has the same meaning as defined in State Planning Policy 3.1 Residential Design Codes.
- For all noise-sensitive land-use and/or development, indoor noise targets for other room usages may be reasonably drawn from Table 1 of Australian Standard/New Zealand Standard AS/NZS 2107:2016 Acoustics – Recommended design sound levels and reverberation times for building interiors (as amended) for each relevant time period.
- The 5dB difference in the criteria between new and upgrade infrastructure proposals acknowledges the challenges in achieving noise level reduction where existing infrastructure is surrounded by existing noise-sensitive development.
- Outdoor targets are to be met at all outdoor areas as far as is reasonable and practical to do so using the various noise mitigation measures outlined in the guidelines. For example, it is likely unreasonable for a transport infrastructure provider to achieve the outdoor targets at more than 1 or 2 floors of an adjacent development with direct line of sight to the traffic.

Noise Exposure Forecast (Section 6.2)

When it is determined that SPP 5.4 applies to a planning proposal as outlined in Section 4, proponents and/or decision makers are required to undertake a preliminary assessment using **Table 2:** noise exposure forecast in the guidelines. This will provide an estimate of the potential noise impacts on noise-sensitive land-use and/ or development within the trigger distance of a specified transport corridor. The outcomes of the initial assessment will determine whether:

- no further measures is required;
- noise-sensitive land-use and/or development is acceptable subject to deemed-to- comply mitigation measures; or
- noise-sensitive land-use and/or development is not recommended. Any noise-sensitive land-use and/ or development is subject to mitigation measures outlined in a noise management plan.”

4. NOISE MONITORING

Noise logging was conducted at the proposed development site, approximately 16m from the edge of Pinjarra Road. This monitoring was conducted between Tuesday 3rd March and Saturday 7th March 2020 to determine the existing vehicle traffic noise levels received on site.

The results are summarised in Table 4.1. The results are also shown graphically on Figure B1, attached in Appendix B.

TABLE 4.1: SUMMARY OF MEASURED NOISE LEVELS FOR PINJARRA ROAD

Parameter	Measured Level dB(A)*	Difference between $L_{10(18hour)}$ and $L_{Aeq(parameter)}$ dB(A)
L_{A10} (18 hour)	74.5	N/A
$L_{Aeq, day}$ (6am to 10pm)	70.8	= L_{A10} (18 hour) -3.7
$L_{Aeq, night}$ (10pm to 6am)	60.7	= $L_{A10(18 hour)}$ - 13.8

* It is normal practice to quote decibels to the nearest whole number. Fractions are retained here to minimise any cumulative rounding error.

Note: Based on the results of the noise monitoring the difference between the L_{Aeq} (Day) and L_{Aeq} (Night) is greater than 5 dB(A) (ie; 10.1 dB(A)). Hence, achieving compliance with the day period criteria would also result in compliance with the night period criteria and the day period has been used for the assessment.

5. MODELLING

The future road traffic volumes were based on information provided by the MRWA for Pinjarra Road. Information relevant to the calculations are shown below in Table 5.1.

TABLE 5.1 - NOISE MODELLING INPUT DATA

Parameter	Current 2019 (Time of Monitoring)	Future (2041)
Traffic flows (vpd)	16015	21,146 vpd
Heavy Vehicles (%)	12.1%	12.1%
Traffic Speed km/hr	70	70
Road Surface	Dense Grade Asphalt	
Façade Correction	+2.5	

Other input data for the model included:

- Noise source heights for the three road source strings (Passenger Vehicles, Heavy Vehicles Engine and Heavy Vehicle Exhausts) are +0.5, +1.5 and +3.6m, with a noise correction of -0.8 and -8.0 applied to the heavy vehicle engines and exhaust noise sources.
- Traffic data from MRWA (<https://mrapps.mainroads.wa.gov.au/TrafficMap/>)
- Topographical data, with the ground level within the development based on natural ground levels as per Google Earth.
- A +2.5 dB adjustment to allow for façade reflection.
- Development receiver heights at 1.4m above ground level.
- Future buildings located on the Lots (assumed to be present for future road traffic volumes).

To determine the noise that would be received within the development from the surrounding road network, acoustic modelling was carried out using the computer program 'SoundPlan'.

The following scenarios were modelled:

1. Current traffic volumes – For calibration against monitored noise levels.
2. Future traffic volumes, with barrier, as detailed in Appendix A.

Even with the barrier, as detailed in Appendix A, noise received at the alfresco areas for some residences would still exceed the "Noise Target". To comply at all the outdoor living areas (ie Alfresco Areas), it is recommended that the proposed layout of the first row of residences to Pinjarra Road be amended, as shown in Figure 5.1.



FIGURE 5.1 – RECOMMENDED REVISED LAYOUT

Based on the above, the noise contours plot for day periods for the above modelling scenarios are attached in Appendix C, for the following :

- Figure C1 - Residential layout as shown in Appendix A.
- Figure C2 - Modification to residential layout, as shown on Figure 5.1.

6. DISCUSSION / RECOMMENDATION

Under the WAPC State Planning Policy 5.4, for this development, the appropriate "Noise Targets" to be achieved under SPP 5.4, external to a residence are:

External	
Day	Maximum of 55 dB(A) L_{Aeq}
Night	Maximum of 50 dB(A) L_{Aeq}

The policy states that the "outdoor targets are to be met at all outdoor areas as far as reasonable and practical to do so using the various noise mitigation measures outlined in the guidelines". The Policy also states, under Section 6 – Policy Measures that "a reasonable degree of acoustic amenity for living areas on each residential lot". The policy recognises that "it may not be practicable to meet the outdoor noise targets".

The Policy states the following acceptable internal noise levels:

Internal

Living and Work Areas	$L_{Aeq(Day)}$ of 40 dB(A)
Bedrooms	$L_{Aeq(Night)}$ of 35 dB(A)

For this development, compliance with the requirements of SPP 5.4, noise modelling and assessment are based on the day period for residence located adjacent to Pinjarra Road.

To mitigate the noise received within the development, it is proposed to construct a barrier, as shown on the Figure attached in Appendix A. However, even with the proposed barrier, noise received at some of the residences located near Pinjarra Road would exceed the "Noise Targets" as outlined in SPP 5.4. Hence to comply with the requirements of SPP 5.4, "Quiet House" design is required. The deemed to satisfy "Quiet house" design requirements are shown on Figure D1 in Appendix D. Additionally, to ensure noise received at outdoor living areas (ie; alfresco areas) comply with the requirements of State Planning Policy 5.4, amendments to the layout of residences as shown in Figure 5.1 is recommended.

It is noted that under the policy, that for those residences where noise would exceed the "Noise Target", notification of vehicle noise will need to be stated on the titles. These residences are indicated on Figure D1, attached in Appendix D. Information on Packages A "Quiet House" design measures are also attached in Appendix E.

Notes :

- 1 Barriers fencing to be a minimum surface density of 15 kg/m².
- 2 The stated Quiet House design packages attached in Appendix E are deemed to satisfy requirements. Alternative constructions are acceptable, provided they are supported by an acoustic assessment report, prepared by a suitably qualified acoustic consultant.

APPENDIX A

SUBDIVISION PLAN



- NOTES**
- 72 DWELLINGS
 13 - LARGE - BLUE
 37 - MEDIUM - RED
 13 - SMALL - YELLOW
 08 - DUPLEX UNITS - TEAL (x2 DWELLINGS)
- TOTAL SITE AREA = 29512m²
 TOTAL LOT NO^r = 71
 SITE TO LOT AREA RATIO = 416m²
 AVERAGE LOT AREA = 243m²
 COMMUNAL SPACE AREA = 4607m²
 COMMUNAL SPACE LOT AREA RATIO = 16%
- KEY**
- TREE
 - ⋯ DRIVEWAY
 - ⊞ LANDSCAPING
 - FOOTPATH
- DWELLINGS**
- 16x A - THE ARLIA
 - 02x B - THE BAYBERRY - 8x6
 - 11x C - THE CARAWAY - 1x1 - 19x10
 - 09x D - THE FOXGLOVE - 2x1 - 19x10
 - 0x E - THE GINGER
 - 15x F - THE LAVENDER - 2x1 - 20x11.5
 - 08x G - THE NETTLE - 2x2 - 20x12.5
 - 07x H - THE PEPPERMINT - 2x1 - 20x11.5
 - 10x I - THE ROSEMARY - 3x2 - 20x12.5
 - 03x J - THE SANTOLINA - 3x1 - 20x12.5
- *LOT BOUNDARIES DELINEATED BY 1800mm HIGH FENCING



2 Berm 45 Pitch
 1 : 100

*CONFIRM ALL DIMENSIONS ON SITE

RICHARD HAMMOND ARCHITECT
 18/342 SOUTH TERRACE, SOUTH FREMANTLE
 0438 918 753 | RICHARD@HRARCHITECTS.COM.AU

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No.	Description	Date

PROVIDENCE MANDURAH
 607 PINJARRA RD
 FURNISSDALE

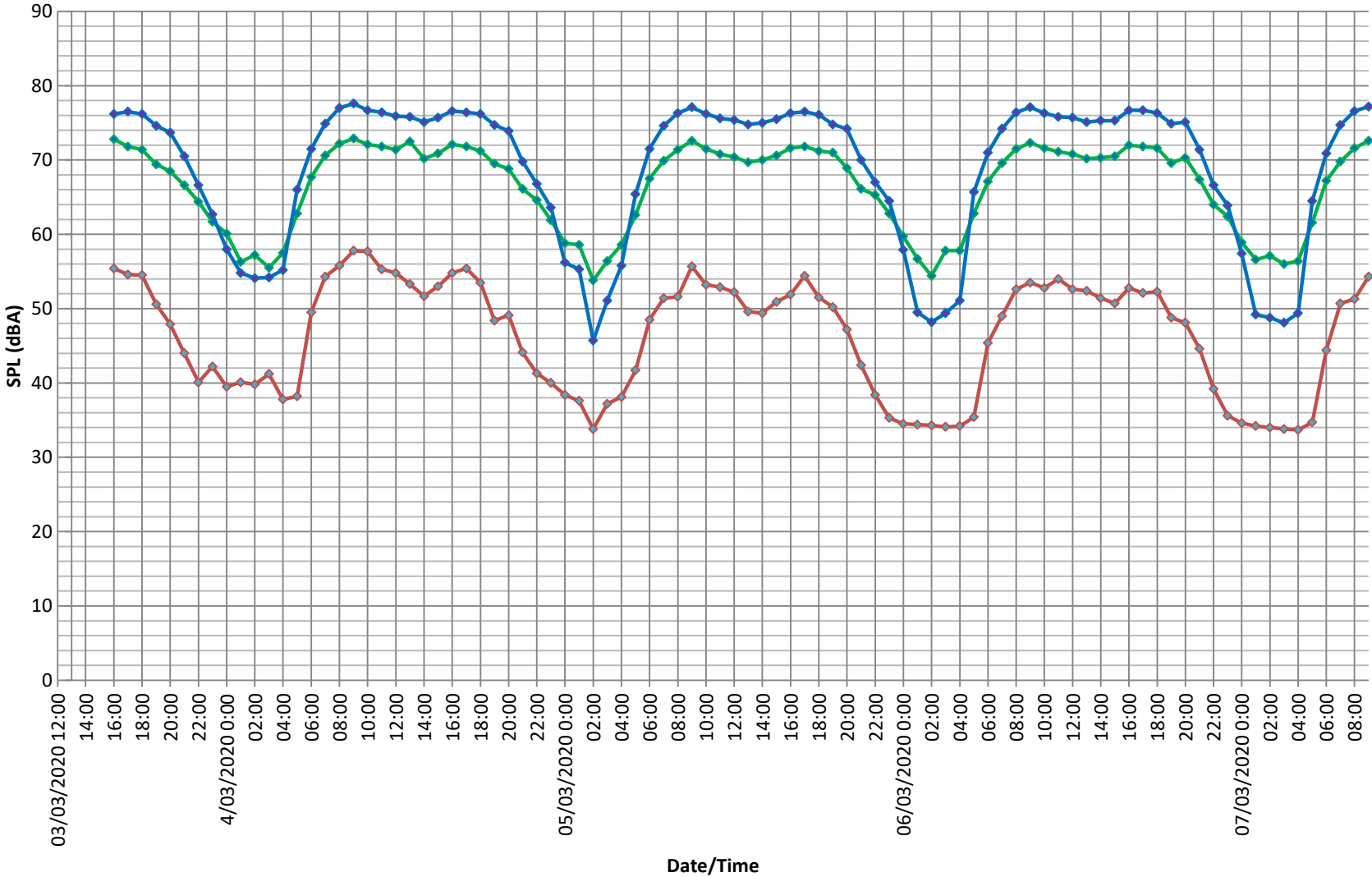
Masterplan R9 (BERM) B	
Project number	-
Date	20.04.30
Drawn by	RHA
Checked by	RHA
Scale	A3
As indicated	A-015

APPENDIX B

FIGURES B1
NOISE MONITORING RESULTS

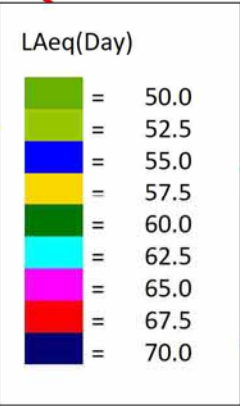
Noise Logging - Pinjarra Road

— LAeq — LA10 — LA90



APPENDIX C

FIGURES C1 – C2
 $L_{Aeq(16hr)}$ DAY NOISE CONTOURS



PINJARRA ROAD
FUTURE TRAFFIC FLOW

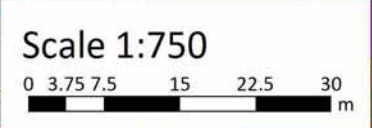
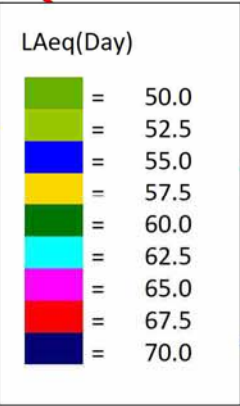
2.4m BUND,
WITH 0.5m BARRIER ON TOP
AND RESIDENCES

HERRING STORER ACOUSTICS

Job No : 20031
Date : 08 May 2020

Figure C1
Appendix C





PINJARRA ROAD
FUTURE TRAFFIC FLOW

2.4m BUND,
WITH 0.5m BARRIER ON TOP
AND RESIDENCES

HERRING STORER ACOUSTICS

Job No : 20031
Date : 12 May 2020

Figure C2
Appendix C2

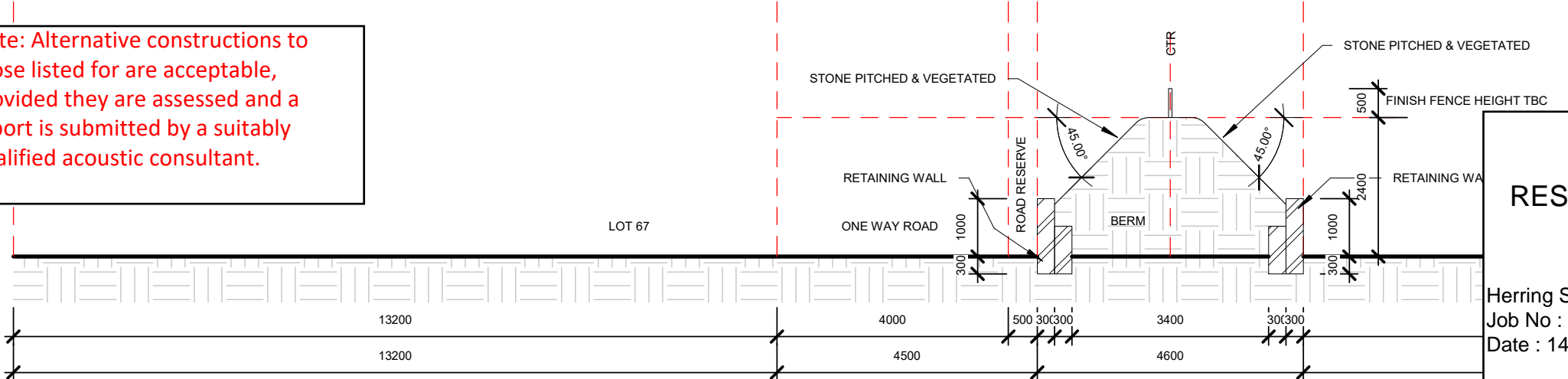
APPENDIX D

LOTS REQUIRING "QUIET HOUSE" DESIGN AND NOTIFICATIONS



- NOTES**
- 79 DWELLINGS
 13 - LARGE - BLUE
 37 - MEDIUM - RED
 13 - SMALL - YELLOW
 08 - DUPLEX UNITS - TEAL (x2 DWELLINGS)
- TOTAL SITE AREA = 29512m²
 TOTAL LOT NO' = 71
 SITE TO LOT AREA RATIO = 416m²
 AVERAGE LOT AREA = 243m²
 COMMUNAL SPACE AREA = 4607m²
 COMMUNAL SPACE LOT AREA RATIO = 16%
- KEY**
- TREE
 - DRIVEWAY
 - LANDSCAPING
 - FOOTPATH
- DWELLINGS**
- 16x A - THE ARALIA
 - 02x B - THE BAYBERRY - 8x6
 - 11x C - THE CARAWAY - 1x1 - 19x10
 - 09x D - THE FOXGLOVE - 2x1 - 19x10
 - 0x E - THE GINGER
 - 15x F - THE LAVENDER - 2x1 - 20x11.5
 - 06x G - THE NETTLE - 2x2 - 20x12.5
 - 07x H - THE PEPPERMINT - 2x1 - 20x11.5
 - 10x I - THE ROSEMARY - 3x2 - 20x12.5
 - 03x J - THE SANTOLINA - 3x1 - 20x12.5
- *LOT BOUNDARIES DELINEATED BY 1800mm HIGH FENCING

Note: Alternative constructions to those listed for are acceptable, provided they are assessed and a report is submitted by a suitably qualified acoustic consultant.



607 PINJARRA ROAD
 FURNISSDALE
 RESIDENCES REQUIRING QUIET HOUSE DESIGN
 AND / OR NOTIFICATIONS ON TITLES

Herring Storer Acoustics
 Job No : 20031
 Date : 14 May 2020

2 **Berm 45 Pitch**
 1 : 100

FIGURE D1
 APPENDIX D

RICHARD HAMMOND ARCHITECT
 16/342 SOUTH TERRACE, SOUTH FREMANTLE
 0438 918 753 | RICHARD@HRARCHITECTS.COM.AU

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No.	Description	Date

PROVIDENCE MANDURAH
 607 PINJARRA RD
 FURNISSDALE

Masterplan R9 (BERM) B		A-015
Project number	-	
Date	20.04.30	
Drawn by	RHA	
Checked by	RHA	
Scale@A3	As indicated	

APPENDIX E

“QUIET HOUSE” DESIGN – GENERAL INFORMATION

Road Traffic and Passenger Rail - Quiet House Requirements
(Based on Table 3 of State Planning Policy 5.4 2019)

Exposure Category	Orientation to corridor	Acoustic ratings					Mechanical ventilation/air conditioning considerations
		Walls	External doors	Windows	Roofs and ceilings of highest floors	Outdoor Living areas	
A Quiet House A	Facing	Bedroom and Indoor Living and work areas ➤ $R_w + C_{tr}$ 45dB	Bedrooms: ➤ $R_w + C_{tr}$ 28dB Indoor Living and work areas: ➤ $R_w + C_{tr}$ 25dB	Bedrooms: Window size dependant ➤ Minimum $R_w + C_{tr}$ 28 dB Indoor Living and work areas Window size dependant ➤ Minimum $R_w + C_{tr}$ 25 dB	➤ $R_w + C_{tr}$ 35dB	➤ At least one outdoor living area located on the opposite side of the building from the transport corridor and/or at least one ground level outdoor living area screened using a solid continuous fence or other structure of minimum 2 metres height above ground level	➤ Acoustically rated openings and ductwork to provide a minimum sound reduction performance of Rw 40dB into sensitive spaces
	Side On		Bedrooms: ➤ $R_w + C_{tr}$ 25dB Indoor Living and work areas: ➤ $R_w + C_{tr}$ 22dB	Bedrooms: Window size dependant ➤ Minimum $R_w + C_{tr}$ 25 dB Indoor Living and work areas Window size dependant ➤ Minimum $R_w + C_{tr}$ 22 dB			
	Opposite		No specific requirements	No specific requirements			
B Quiet House B	Facing	Bedroom and indoor living and work areas ➤ $R_w + C_{tr}$ 50dB	Bedrooms ➤ $R_w + C_{tr}$ 31dB Indoor Living and work areas: ➤ $R_w + C_{tr}$ 28dB	Bedrooms: Window size dependant ➤ Minimum $R_w + C_{tr}$ 31 dB Indoor Living and work areas Window size dependant ➤ Minimum $R_w + C_{tr}$ 28 dB	➤ $R_w + C_{tr}$ 35dB	➤ At least one outdoor living area located on the opposite side of the building from the corridor and/or at least one ground level outdoor living area screened using a solid continuous fence or other structure of minimum 2.4 metres height above ground level	➤ Acoustically rated openings and ductwork to provide a minimum sound reduction performance of Rw 40dB into sensitive spaces
	Side-On		Bedrooms ➤ $R_w + C_{tr}$ 28dB Indoor Living and work areas: ➤ $R_w + C_{tr}$ 28dB	Bedrooms: Window size dependant ➤ Minimum $R_w + C_{tr}$ 28 dB Indoor Living and work areas Window size dependant ➤ Minimum $R_w + C_{tr}$ 25 dB			
	Opposite		Bedrooms ➤ $R_w + C_{tr}$ 25dB Indoor Living and work areas: ➤ $R_w + C_{tr}$ 25dB	Bedrooms: Window size dependant ➤ Minimum $R_w + C_{tr}$ 25 dB Indoor Living and work areas Window size dependant ➤ Minimum $R_w + C_{tr}$ 22 dB			
C Quiet House C	Facing	Bedroom and indoor living and work areas ➤ $R_w + C_{tr}$ 50dB	Bedrooms ➤ No External doors to bedrooms facing the corridor Indoor Living and work areas ➤ $R_w + C_{tr}$ 31dB	Bedrooms: Window size dependant ➤ Minimum $R_w + C_{tr}$ 31dB) Indoor Living and work areas Window size dependant ➤ Minimum $R_w + C_{tr}$ 31dB	➤ $R_w + C_{tr}$ 40dB	➤ At least one outdoor living area located on the opposite side of the building from the corridor and/or at least one ground level outdoor living area screened using a solid continuous fence or other structure of minimum 2.4 metres height above ground level	➤ Acoustically rated openings and ductwork to provide a minimum sound reduction performance of Rw 40dB into sensitive spaces.
	Side-on		Bedrooms ➤ $R_w + C_{tr}$ 31dB Indoor Living and work areas ➤ $R_w + C_{tr}$ 28dB	Bedrooms: Window size dependant ➤ Minimum $R_w + C_{tr}$ 31 dB Indoor Living and work areas Window size dependant ➤ Minimum $R_w + C_{tr}$ 28 dB			
	Opposite		Bedrooms: ➤ $R_w + C_{tr}$ 28dB Indoor Living and work areas: ➤ $R_w + C_{tr}$ 28dB	Bedrooms: Window size dependant ➤ Minimum $R_w + C_{tr}$ 28 dB Indoor Living and work areas Window size dependant ➤ Minimum $R_w + C_{tr}$ 25 dB			

Note: The above treatments are a deemed to satisfy construction. Alternative designs are acceptable, provided they are certified by a suitable qualified acoustic consultant

Annexure 8
Local Development Plan

LOCAL DEVELOPMENT PLAN PROVISIONS

The provisions of the Shire of Murray Town Planning Scheme No.4, The Furnissdale West Structure Plan and State Planning Policy 7.3 Residential Design Codes (R-Codes) Volume 1 are varied as follows:

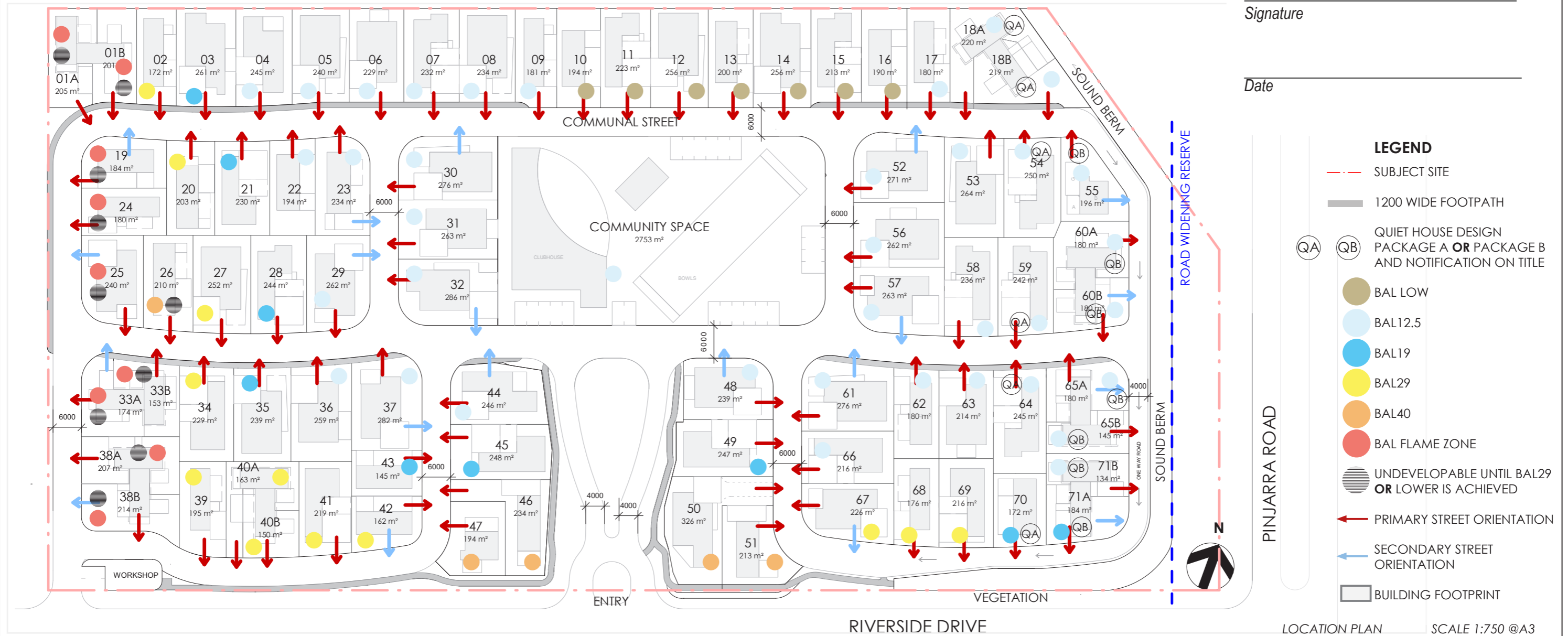
1. Garages with roller doors will be set back a minimum of 1.5m from the communal street or footpath to communal street in the event that there is a footpath between the dwelling and communal street.
2. Where a garage is located in front or within 1m of the building facing the communal street, the garage door and its supporting structures is not to occupy more than 55% of the frontage (of the lot boundaries) at the setback line as viewed from the street.
3. All communal road carriageways to be constructed in accordance with the widths shown on this LDP to suit 8km/h vehicle speed limit, subject to approval by the Shire of Murray.
4. All Carports & Garages with roller doors must be remote automated controlled due to reduced driveway length.
5. Setbacks to lot boundaries with Major Openings no less than 1.0m subject to separate approval by the Shire of Murray.

Additional provisions:

6. Dwellings subject of this LDP are subject to an approved Bushfire Management Plan and have been assigned a bushfire attack level (as indicated on this LDP). Dwellings and incidental structures constructed on the lots shall be constructed in accordance with AS3959-2018 (or equivalent), and shall comply with any additional planning and built form controls as specified in the approved Bushfire Management Plan. A copy of the Bushfire Management Plan prepared by Allering & Associates and dated August 2020 can be obtained from the Shire of Murray.
7. Dwellings which are currently impacted by BAL-40/BAL-FZ will be restricted from development until BAL-29 or lower can be achieved. Until the required separation distances to achieve an Asset Protection Zone of BAL-29 or lower can be achieved for dwellings 1A, 1B, 19, 24, 25, 33A, 33B, 38A and 38B, the development of those dwellings cannot occur.
8. Dwellings adjacent to Pinjarra Road (as indicated on this LDP) may be affected by vehicle noise and, as such, these dwellings will need to be designed to comply with Quiet House Design Requirements. Details of Quiet House Design Requirements are outlined within the Noise Management Plan prepared by Herring Storer Acoustic Report dated May 2020. A copy of the Noise Management Plan can be obtained from the Shire of Murray. All construction for these dwellings must be in accordance with these guidelines.
9. All building permits for dwellings subject to the Quiet House Guidelines must include an Acoustic Report by a qualified acoustic engineer verifying that the design and construction of the dwelling adequately attenuates noise emissions from Pinjarra Road.

Approval

This LDP has been approved by the Shire of Murray under clause 52 of the Planning and Development (Local Planning Schemes) Regulations 2015.



Signature

Date

LEGEND

- SUBJECT SITE
- 1200 WIDE FOOTPATH
- QA QB QUIET HOUSE DESIGN PACKAGE A OR PACKAGE B AND NOTIFICATION ON TITLE
- BAL LOW
- BAL12.5
- BAL19
- BAL29
- BAL40
- BAL FLAME ZONE
- UNDEVELOPABLE UNTIL BAL29 OR LOWER IS ACHIEVED
- PRIMARY STREET ORIENTATION
- SECONDARY STREET ORIENTATION
- BUILDING FOOTPRINT

LOCATION PLAN

SCALE 1:750 @A3

LOCAL DEVELOPMENT PLAN

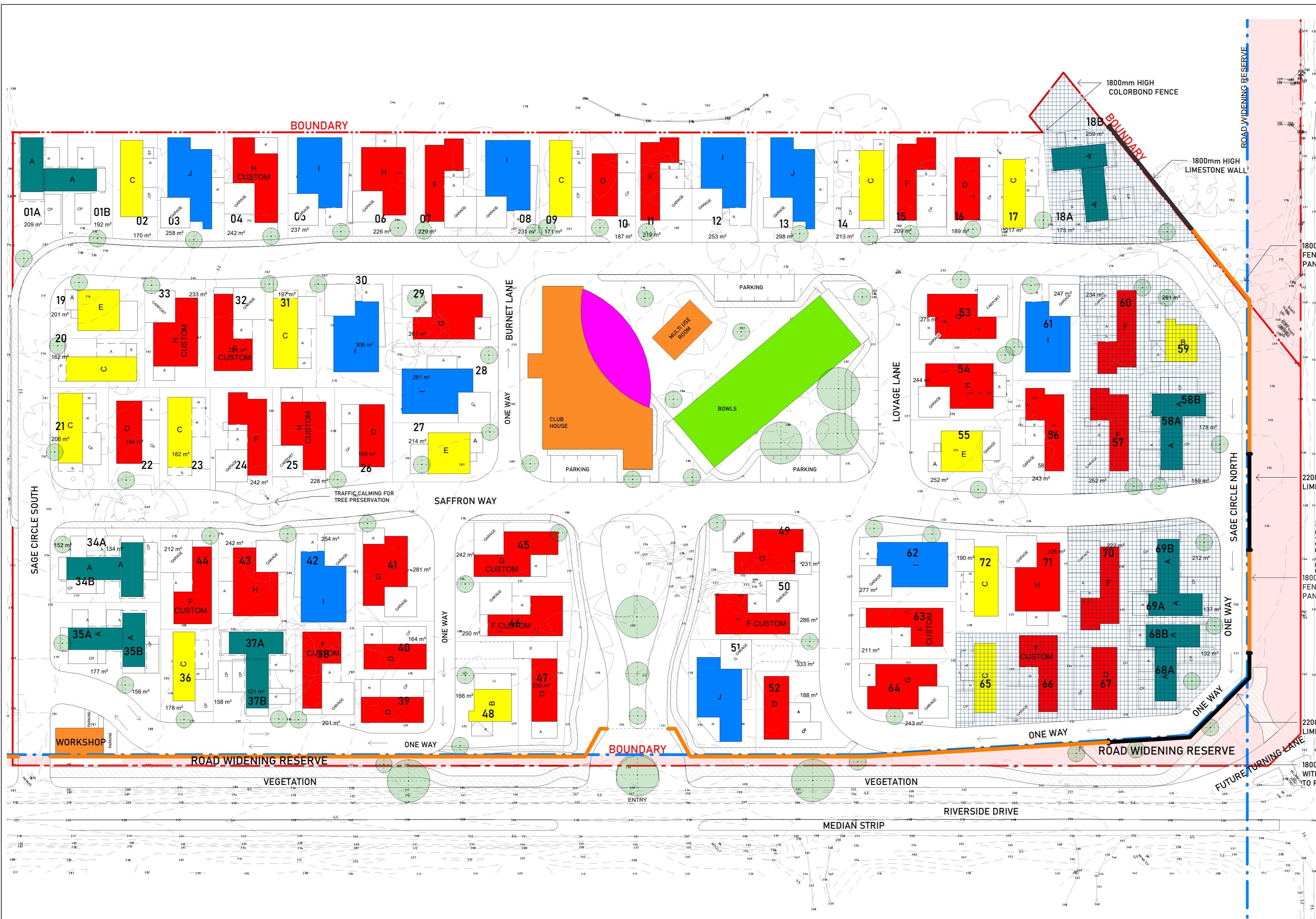
PROVIDENCE LIFESTYLE, FURNISSDALE - 607 PINJARRA RD, FURNISSDALE, 6209

RICHARD HAMMOND ARCHITECT

22.05.2020

LDP for PROVIDENCE LIFESTYLE

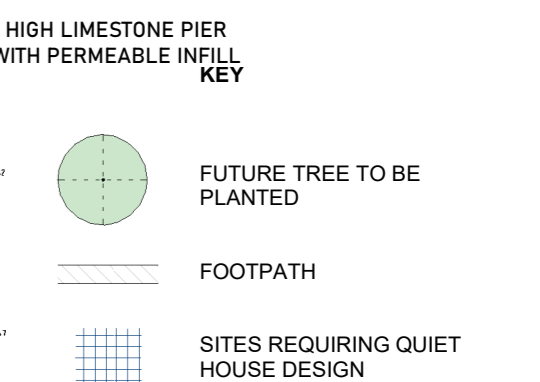




NOTES

80 DWELLINGS
 11 - LARGE - BLUE
 37 - MEDIUM - RED
 16 - SMALL - YELLOW
 08 - DUPLEX UNITS - TEAL (x2 DWELLINGS)

TOTAL SITE AREA = 27979m²
 TOTAL LOT NO^s = 79
 AVERAGE LOT AREA = 215m²
 COMMUNAL SPACE AREA = 3000m²
 COMMUNAL SPACE LOT AREA RATIO = 10.7%



- 16x DWELLINGS
 02x A - THE ARALIA - 1x1
 11x B - THE BAYBERRY - 2x1
 09x C - THE CARAWAY - 1x1
 03x D - THE FOXGLOVE - 2x1
 15x E - THE GINGER - 1x1
 06x F - THE LAVENDER - 2x1
 07x G - THE NETTLE - 2x2
 08x H - THE PEPPERMINT - 2x1
 03x I - THE ROSEMARY - 3x2
 03x J - THE SANTOLINA - 3x1

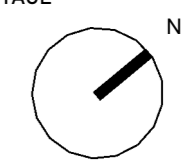
*LOT BOUNDARIES DELINEATED BY 1800mm HIGH FENCING

2200mm HIGH LIMESTONE WALL

1800mm HIGH LIMESTONE PIER FENCE WITH PERMEABLE INFILL PANELS

2200mm HIGH LIMESTONE WALL

1800mm HIGH LIMESTONE PIER FENCE WITH PERMEABLE INFILL PANELS TO RIVERSIDE DRIVE FRONTAGE



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No.	Description	Date
16	Revision 14 - Workshop Revised	21.02.15
17	Revision 15 - Riverside Drive Road Widening Amendments	21.02.16
18	Revision 16 - Minor Rev. Quiet House Design Sites added & Boundary Wall Updated	21.03.23

PROVIDENCE MANDURAH

607 PINJARRA RD

FURNISSDALE

MASTERPLAN

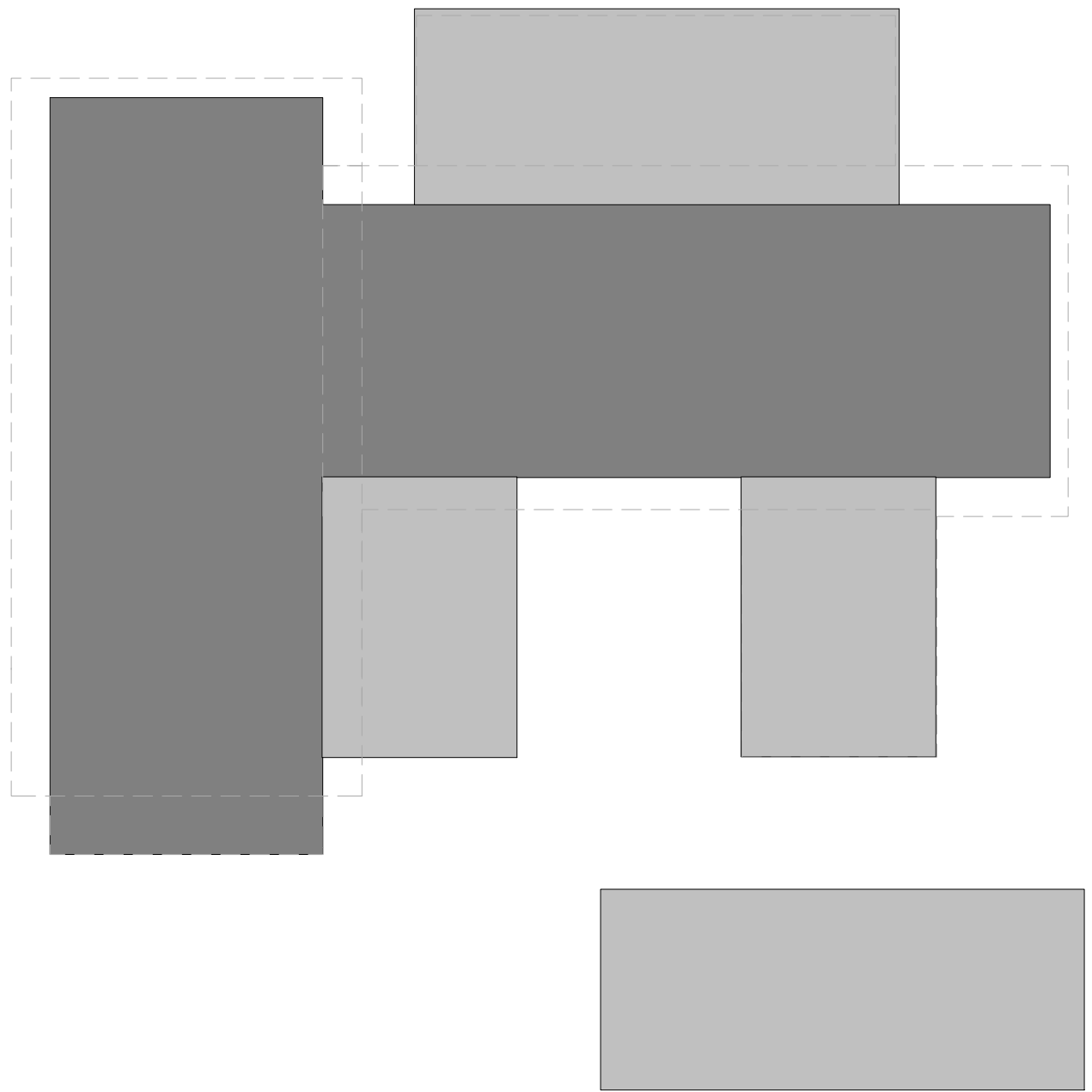
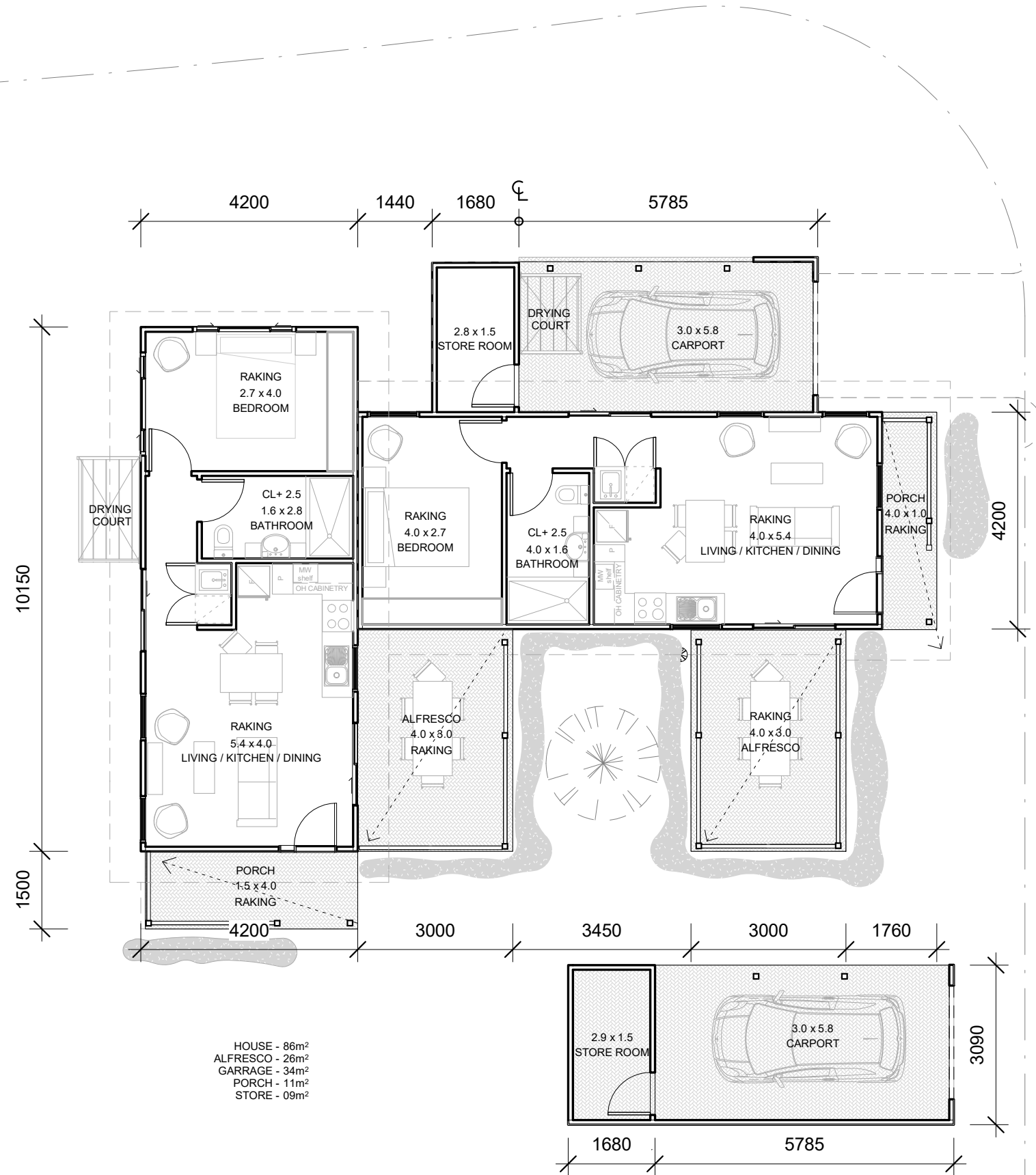
Project number	-	A2.01
Date	21.03.23	
Drawn by	RHA	
Checked by	RHA	

Scale@A2 1 : 500

HOUSE : 42m²
 ALFRESCO: 12m²
 CARPORT: 17m²
 STORE: 4m²

NOTE:
 SUSPENDED CEILING HEIGHTS
 AT 2.5m

■ SITE BUILT
 ■ PREFABRICATED



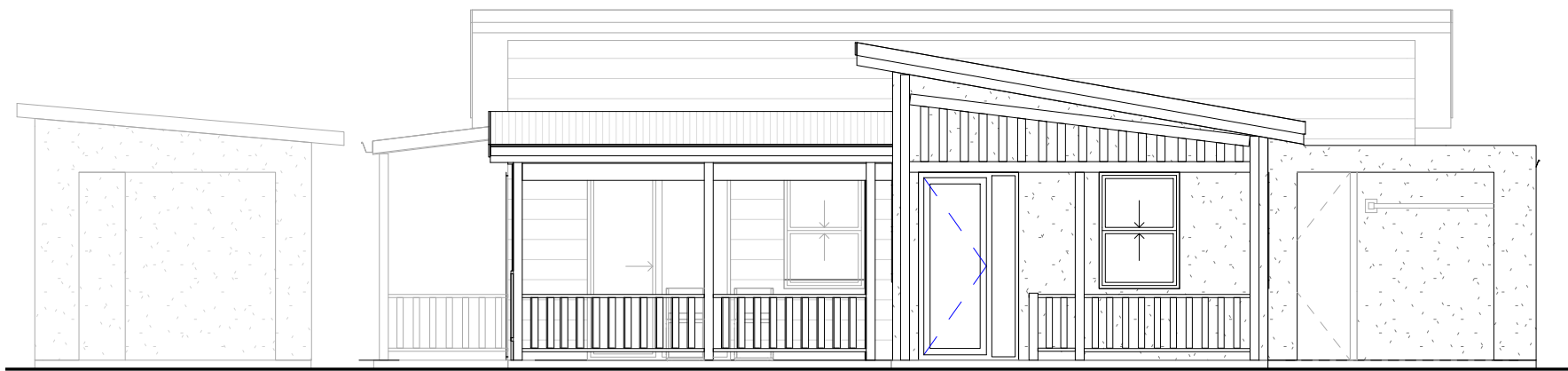
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 16/342 SOUTH TERRACE SOUTH FREMANTLE
 0438 918 753
 rharchitect@bigpond.com

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No.	Description	Date

'The Aralia'
 Providence Lifestyle
 'A'

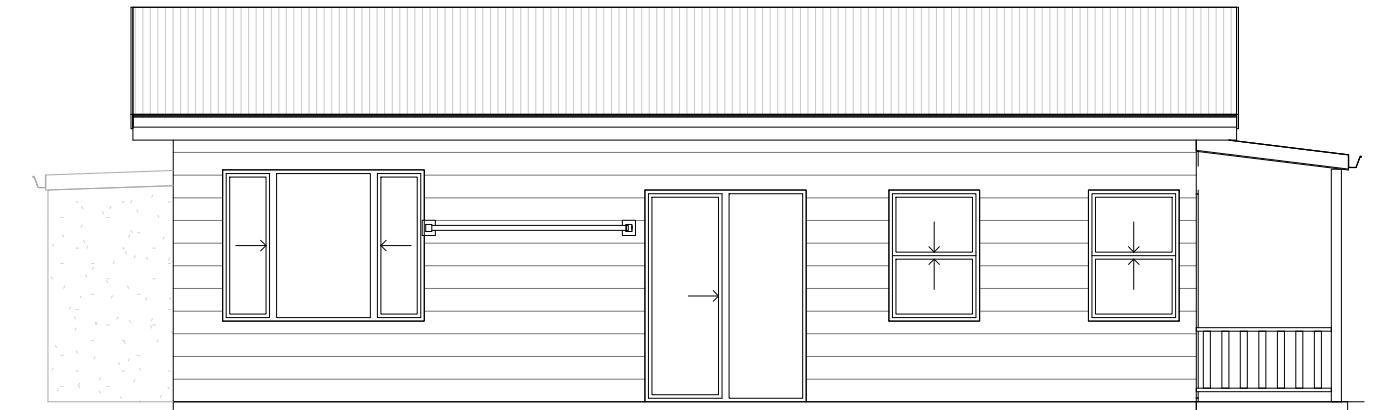
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Date	20.07.14	
Drawn by	RHA	Scale
Checked by	RHA	
		1 : 100



1

FRONT ELEVATION

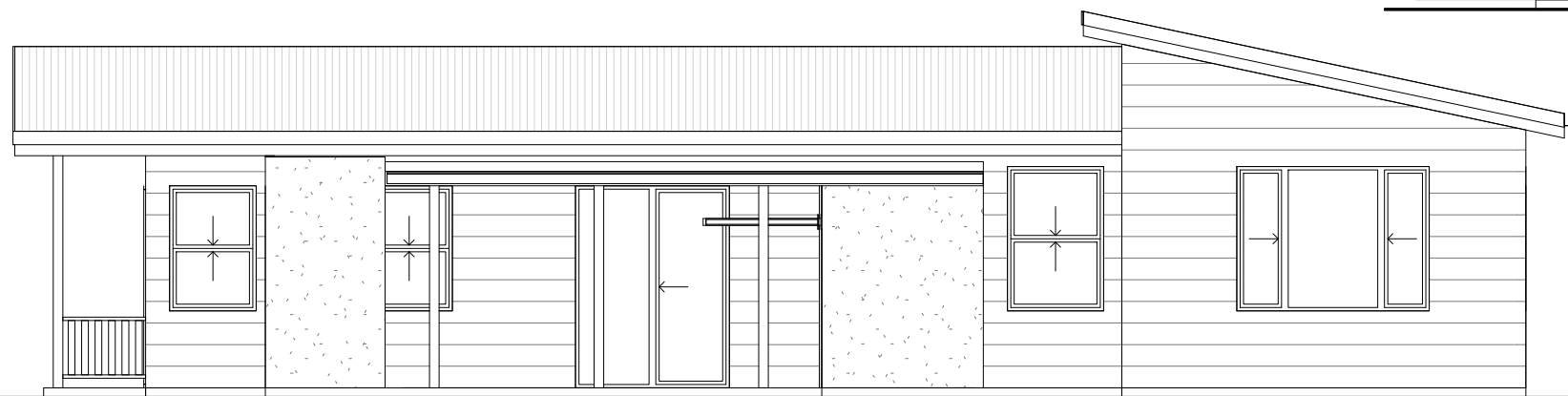
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2

REAR ELEVATION 1

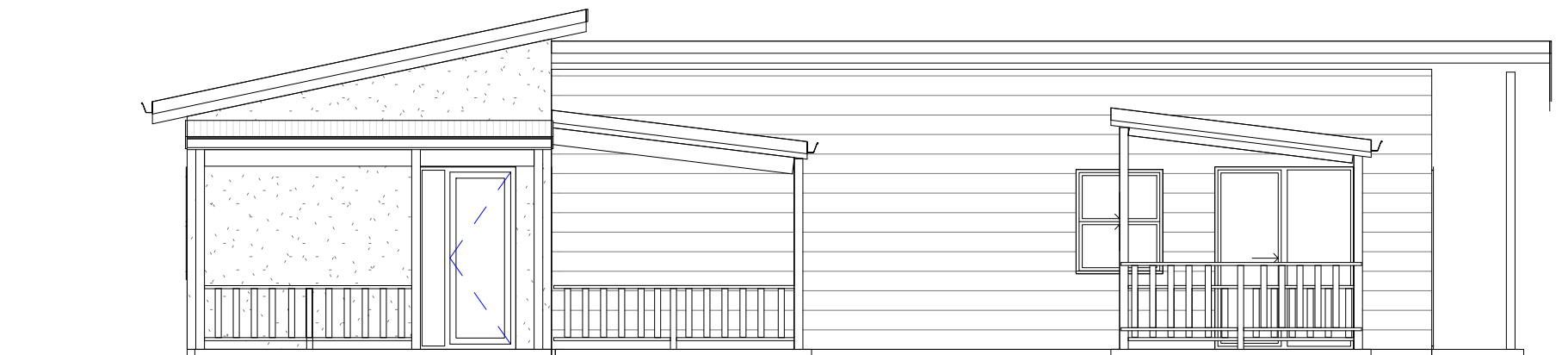
1 : 75



3

SIDE ELEVATION 1

1 : 75



4

SIDE ELEVATION 2

1 : 75

MATERIALS AND FINISHES

STREET ELEVATIONS TO BE PRIMELINE F.C WEATHERBOARD AND FLAT FIBRE CEMENT SHEET w/ ROLL-ON SAND FINISH TEXTURE

SIDE AND REAR ELEVATIONS TO BE PRIMELINE F.C WEATHERBOARD PAINT FINISH

ALL ROOFS TO BE CUSTOM ORB w/ COLORBOND FASCIA AND GUTTER IN SIMILAR FINISH

PATIO TUBE STRUCTURES TO CARPORT AND ALFRESCO

FINAL COLOUR FINISHES TO BE CONFIRMED



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No.	Description	Date
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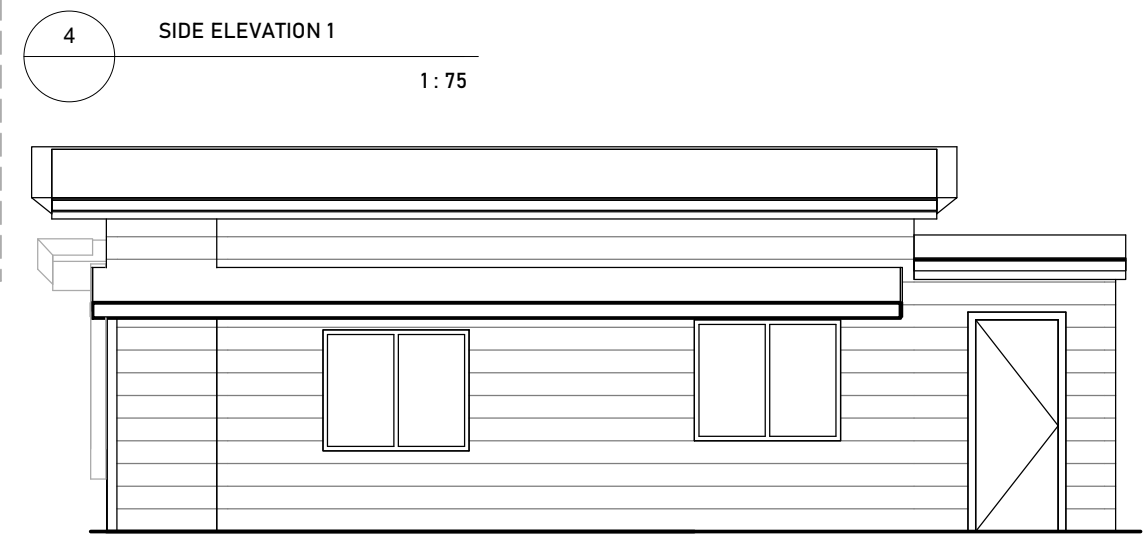
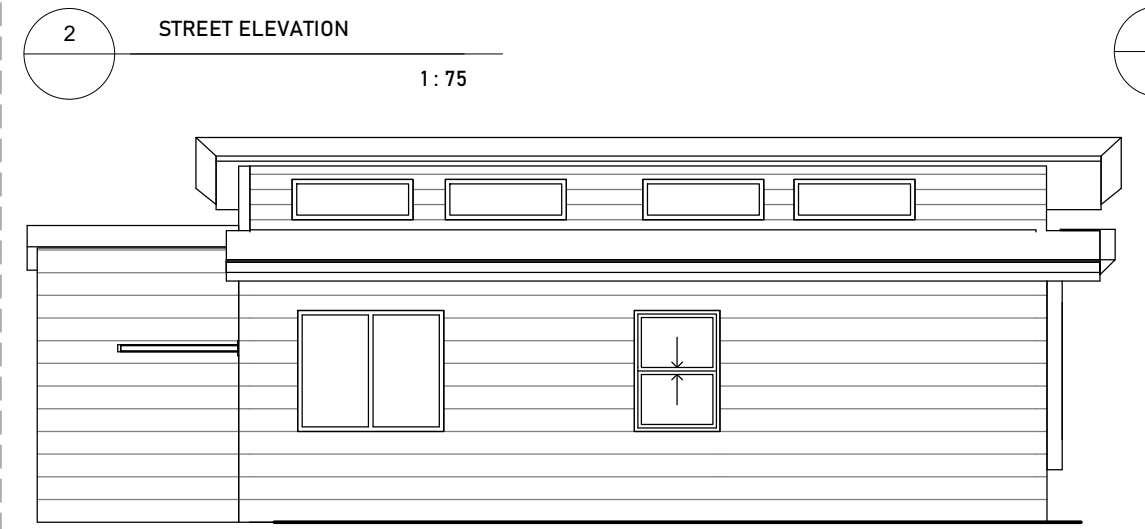
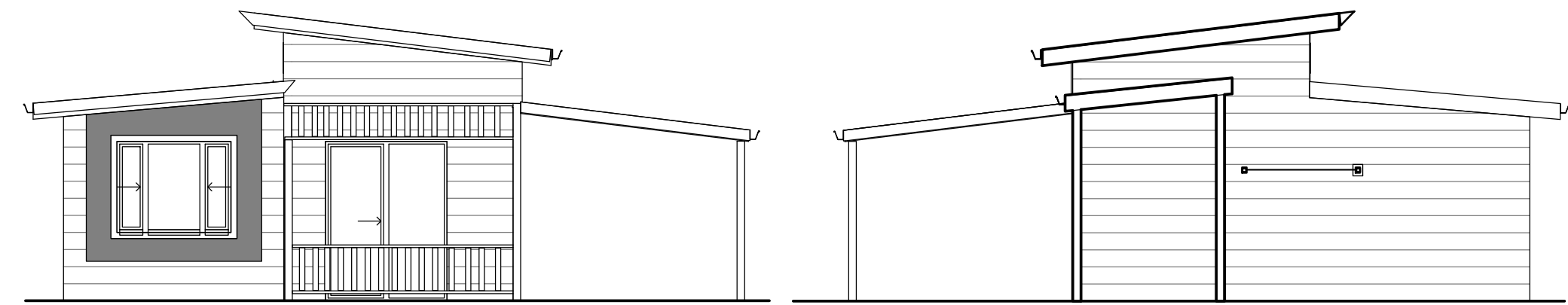
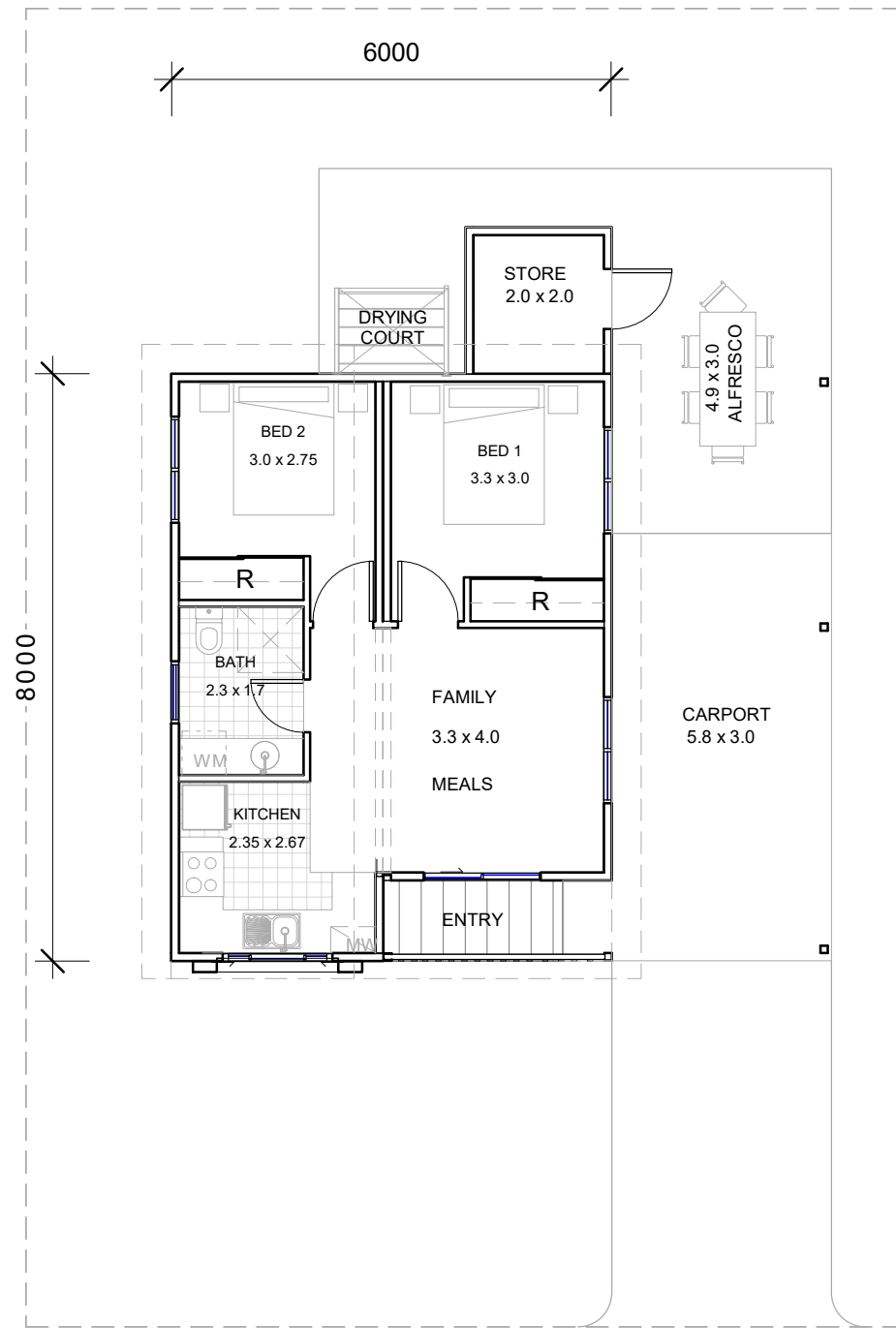
'The Aralia'

Providence Lifestyle

'A'

ELEVATIONS

Project number	xx	A-101
Date	20.07.14	
Drawn by	RHA	Scale
Checked by	RHA	
		1 : 75



MATERIALS AND FINISHES
 STREET ELEVATIONS TO BE PRIMELINE F.C WEATHERBOARD AND FLAT FIBRE CEMENT SHEET w/ ROLL-ON SAND FINISH TEXTURE

SIDE AND REAR ELEVATIONS TO BE PRIMELINE F.C WEATHERBOARD PAINT FINISH

ALL ROOFS TO BE CUSTOM ORB w/ COLORBOND FASCIA AND GUTTER IN SIMILAR FINISH

PATIO TUBE STRUCTURES TO CARPORT AND ALFRESCO

FINAL COLOUR FINISHES TO BE CONFIRMED

1 FLOOR PLAN
1: 100



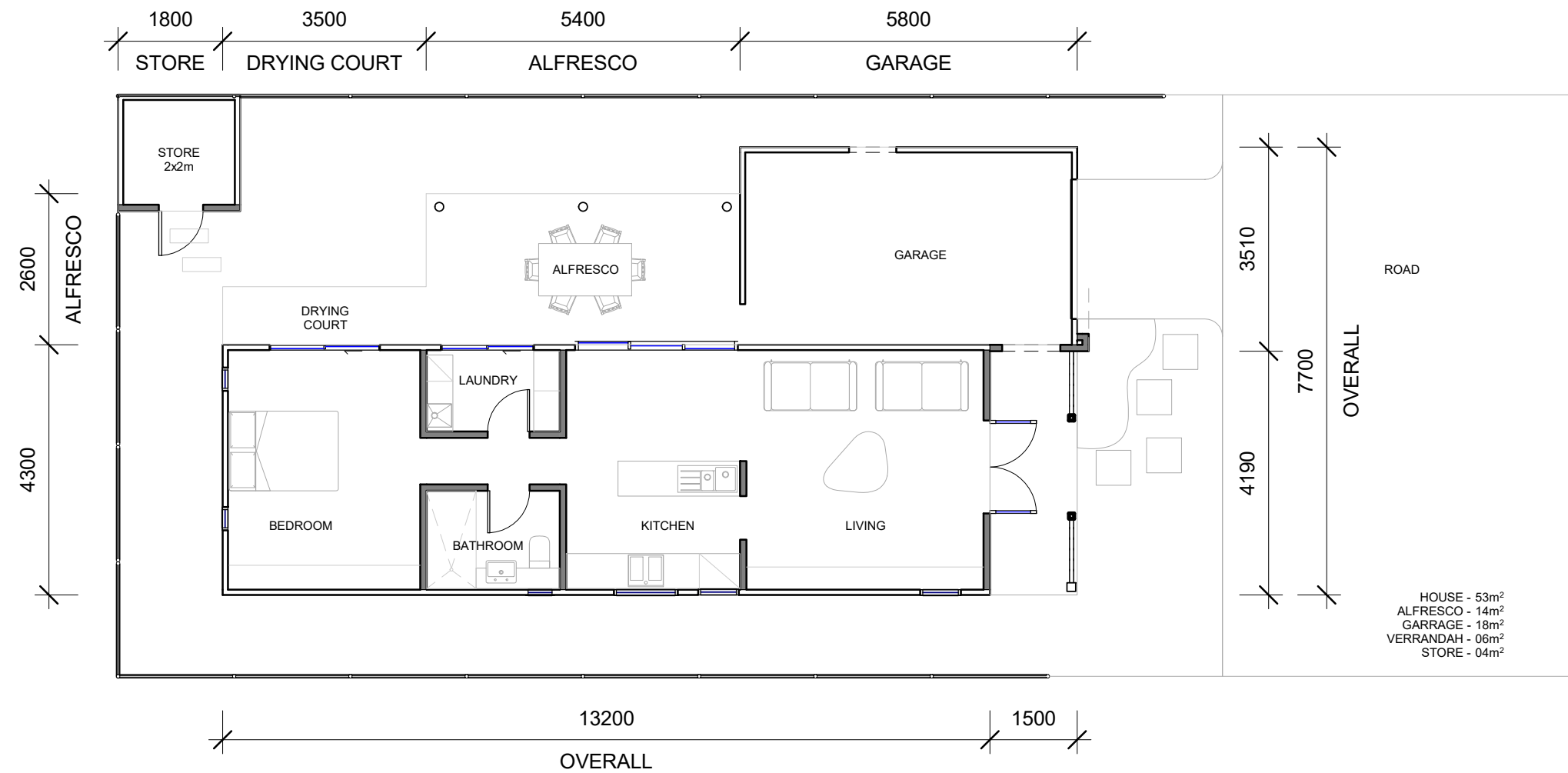
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No.	Description	Date
0	PRELIMINARY	20.03.11
1	HOME NAME UPDATED	20.07.14

'THE BAYBERRY'
 PROVIDENCE LIFESTYLE
 'B'

FLOOR PLAN & ELEVATIONS		
Project number	A-100	
Date	20.07.14	
Drawn by	RHA	
Checked by	RHA	Scale@A3 As indicated



1 FLOOR PLAN
 A-101 1:100



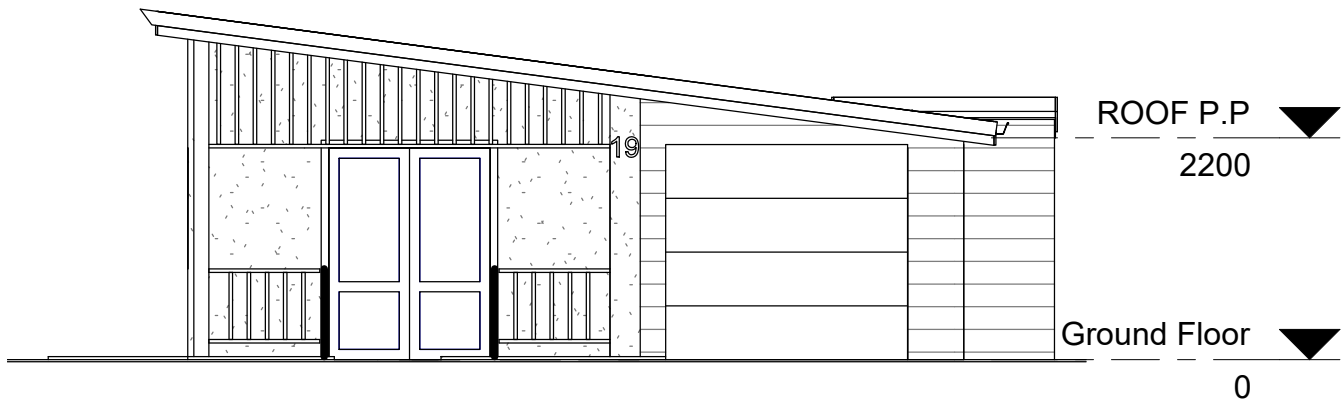
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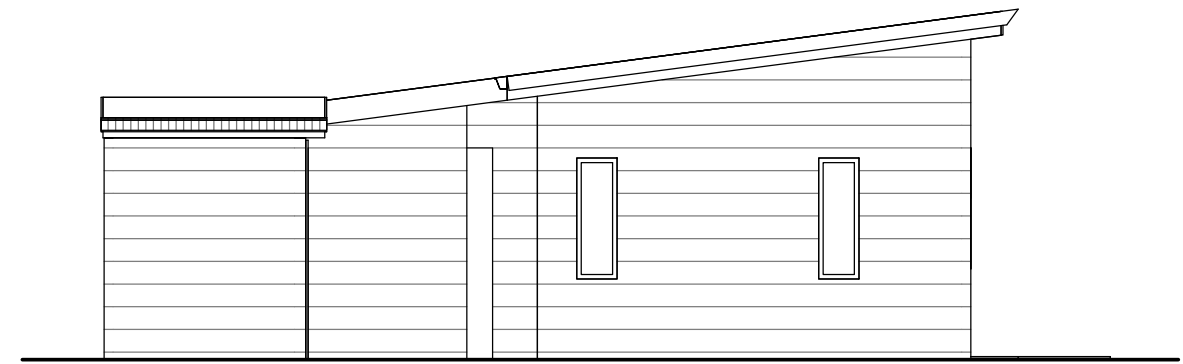
No.	Description	Date
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1	HOME NAME UPDATED	20.07.14

'THE CARAWAY'
 PROVIDENCE LIFESTYLE
 'C'

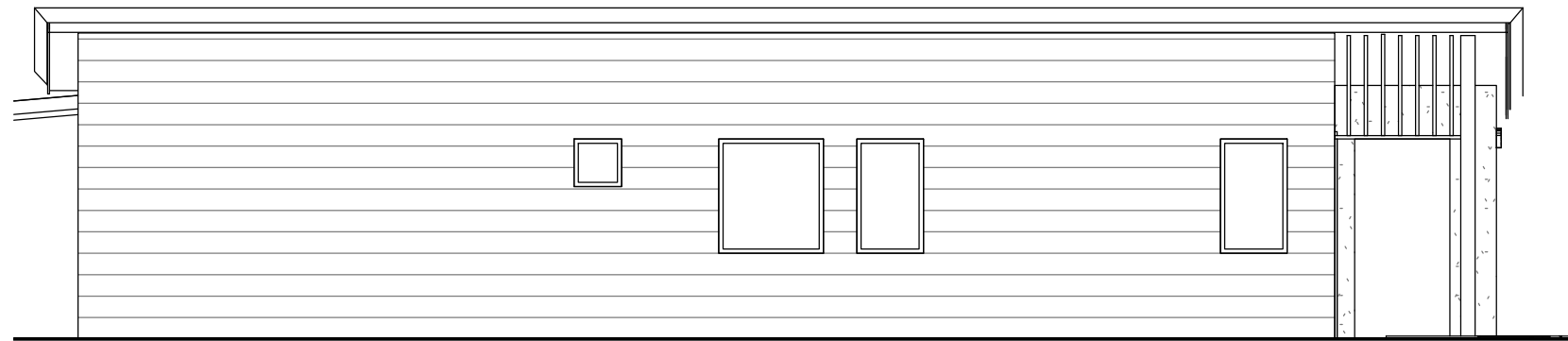
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Project number	Project Number	
Date	20.07.14	
Drawn by	RHA	
Checked by	RHA	
Scale@A3	1:100	



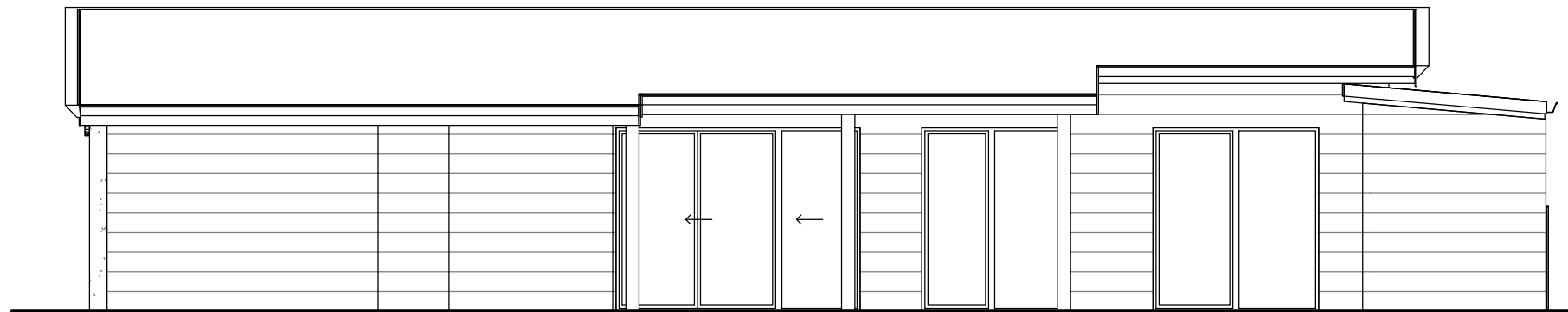
1 STREET ELEVATION
1:75



2 REAR ELEVATION
1:75



3 SIDE ELEVATION 1
1:75



4 SIDE ELEVATION 2
1:75

MATERIALS AND FINISHES
 STREET ELEVATIONS TO BE PRIMELINE F.C WEATHERBOARD AND FLAT FIBRE CEMENT SHEET w/ ROLL-ON SAND FINISH TEXTURE
 SIDE AND REAR ELEVATIONS TO BE PRIMELINE F.C WEATHERBOARD PAINT FINISH
 ALL ROOFS TO BE CUSTOM ORB w/ COLORBOND FASCIA AND GUTTER IN SIMILAR FINISH
 PATIO TUBE STRUCTURES TO CARPORT AND ALFRESCO
 FINAL COLOUR FINISHES TO BE CONFIRMED



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No.	Description	Date
0	PRELIMINARY	20.11.03
1	HOME NAME UPDATED	20.07.14

'THE CARAWAY'
 PROVIDENCE LIFESTYLE
 'C'

ELEVATIONS		
Project number	Project Number	A-101
Date	20.07.14	
Drawn by	RHA	
Checked by	RHA	
Scale@A3		1:75

MATERIALS AND FINISHES

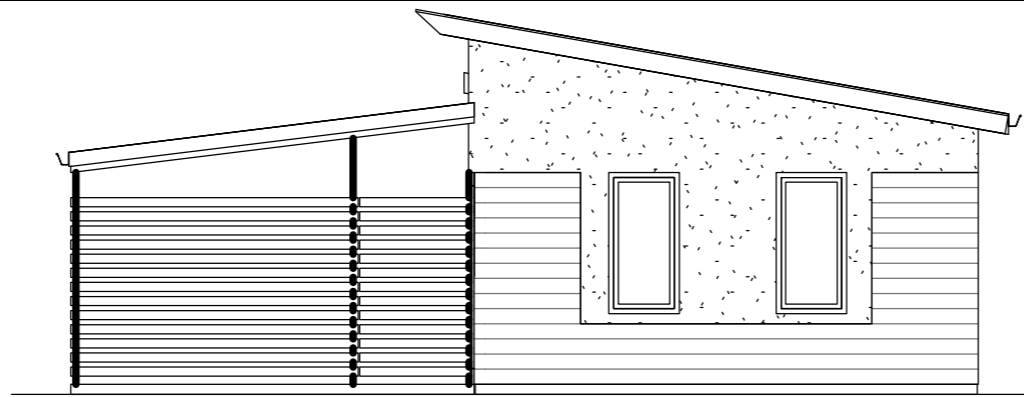
STREET ELEVATIONS TO BE PRIMELINE F.C WEATHERBOARD AND FLAT FIBRE CEMENT SHEET w/ ROLL-ON SAND FINISH TEXTURE

SIDE AND REAR ELEVATIONS TO BE PRIMELINE F.C WEATHERBOARD PAINT FINISH

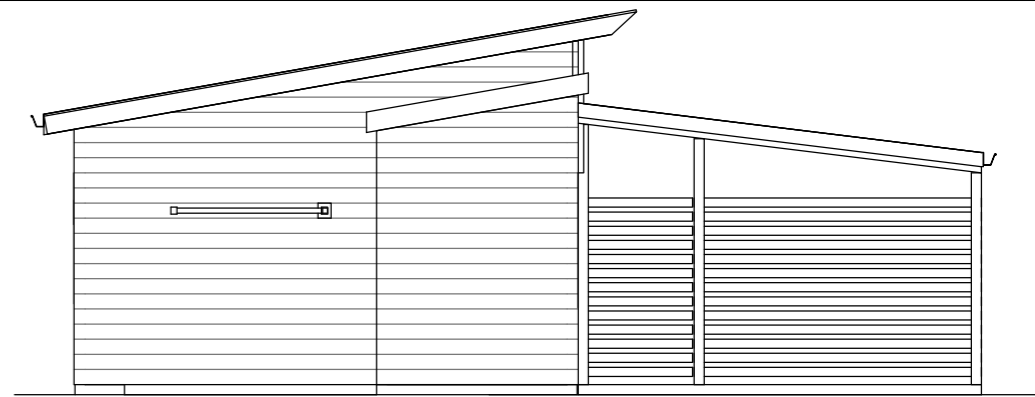
ALL ROOFS TO BE CUSTOM ORB w/ COLORBOND FASCIA AND GUTTER IN SIMILAR FINISH

PATIO TUBE STRUCTURES TO CARPORT AND ALFRESCO

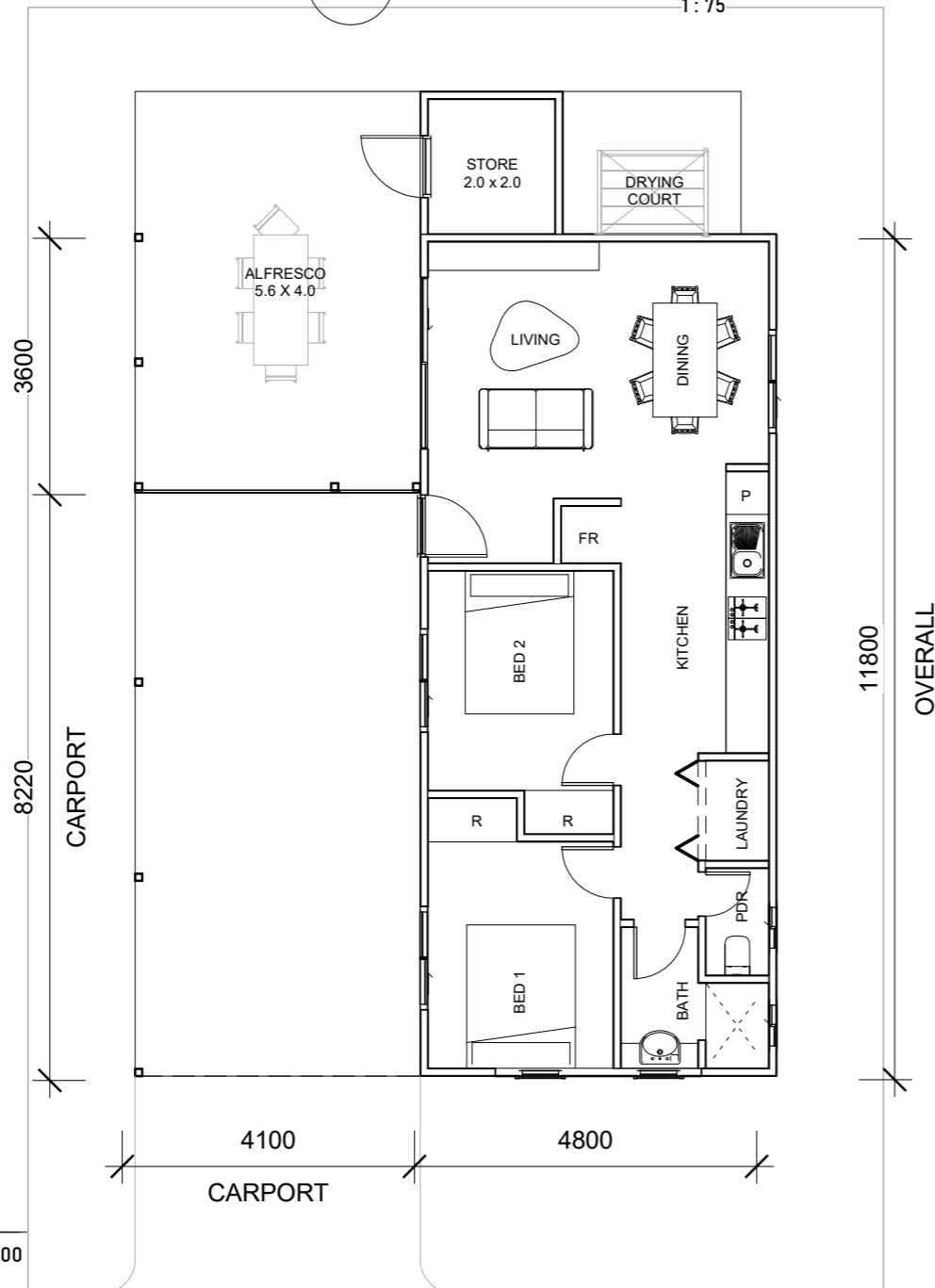
FINAL COLOUR FINISHES TO BE CONFIRMED



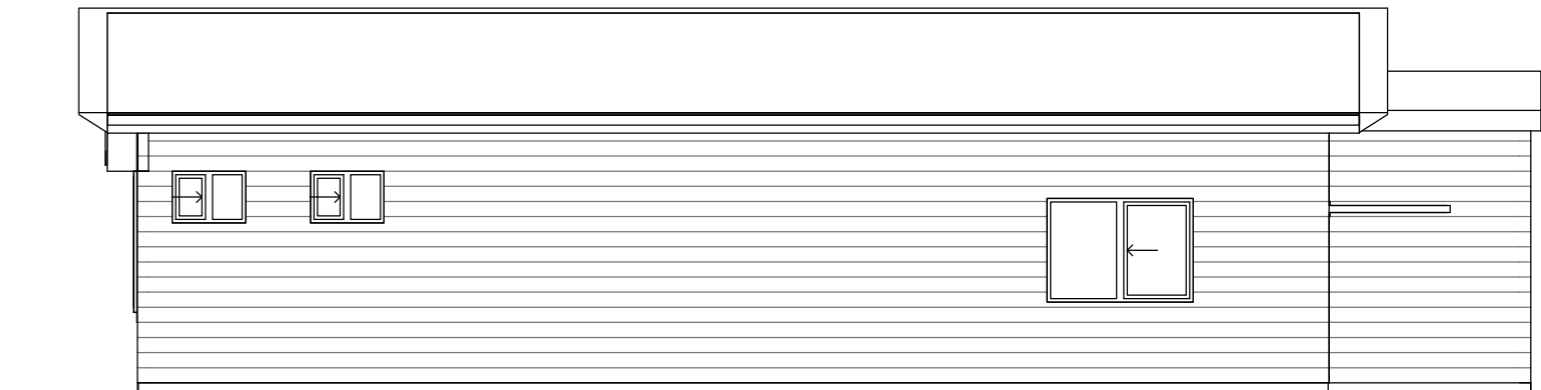
2 STREET ELEVATION
1:75



3 REAR ELEVATION
1:75



1 FLOOR PLAN
1:100



4 SIDE ELEVATION 1
1:75



5 SIDE ELEVATION 2
1:75



RICHARD HAMMOND ARCHITECT
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No.	Description	Date
0	PRELIMINARY	20.03.11
1	HOME NAME UPDATED	20.07.14

'THE FOXGLOVE
PROVIDENCE LIFESTYLE
'D'

FLOOR PLAN & ELEVATIONS		
Project number	A100	
Date	20.07.14	
Drawn by	RHA	
Checked by	RHA	Scale@A3 As indicated

MATERIALS AND FINISHES

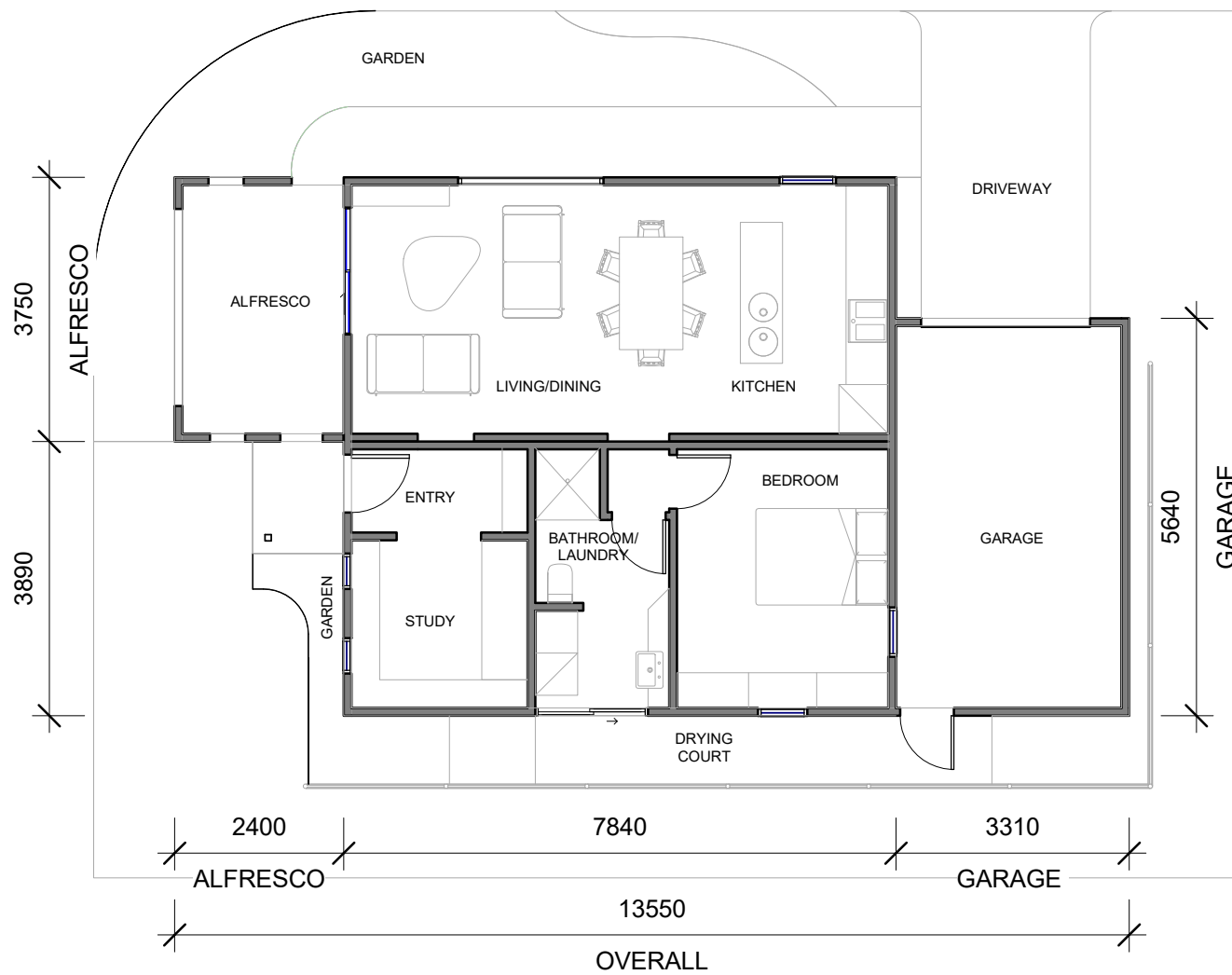
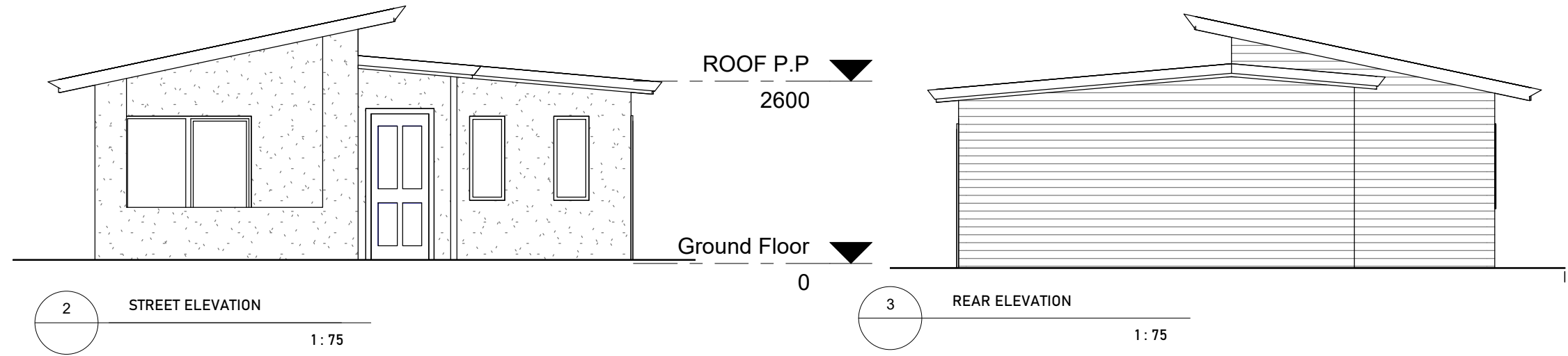
STREET ELEVATIONS TO BE PRIMELINE F.C WEATHERBOARD AND FLAT FIBRE CEMENT SHEET w/ ROLL-ON SAND FINISH TEXTURE

SIDE AND REAR ELEVATIONS TO BE PRIMELINE F.C WEATHERBOARD PAINT FINISH

ALL ROOFS TO BE CUSTOM ORB w/ COLORBOND FASCIA AND GUTTER IN SIMILAR FINISH

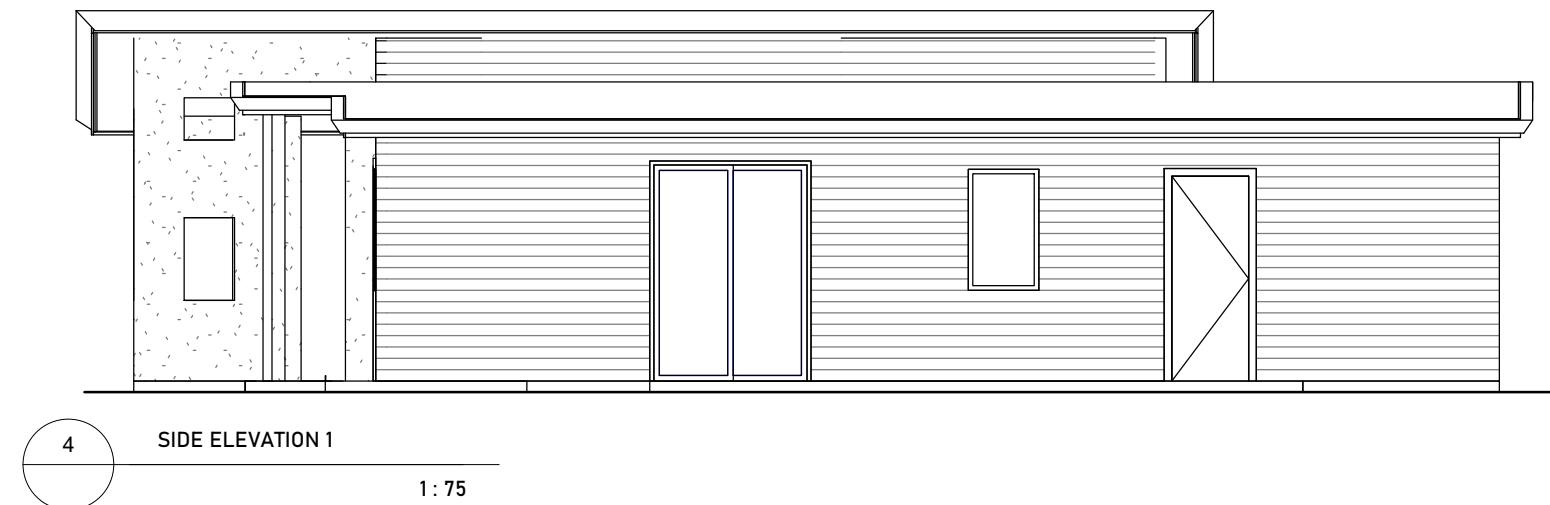
PATIO TUBE STRUCTURES TO CARPORT AND ALFRESCO

FINAL COLOUR FINISHES TO BE CONFIRMED



1 FLOOR PLAN
A-100 1:100

HOUSE - 57m²
ALFRESCO - 08m²
GARRAGE - 17m²
VERRANDAH - 02m²



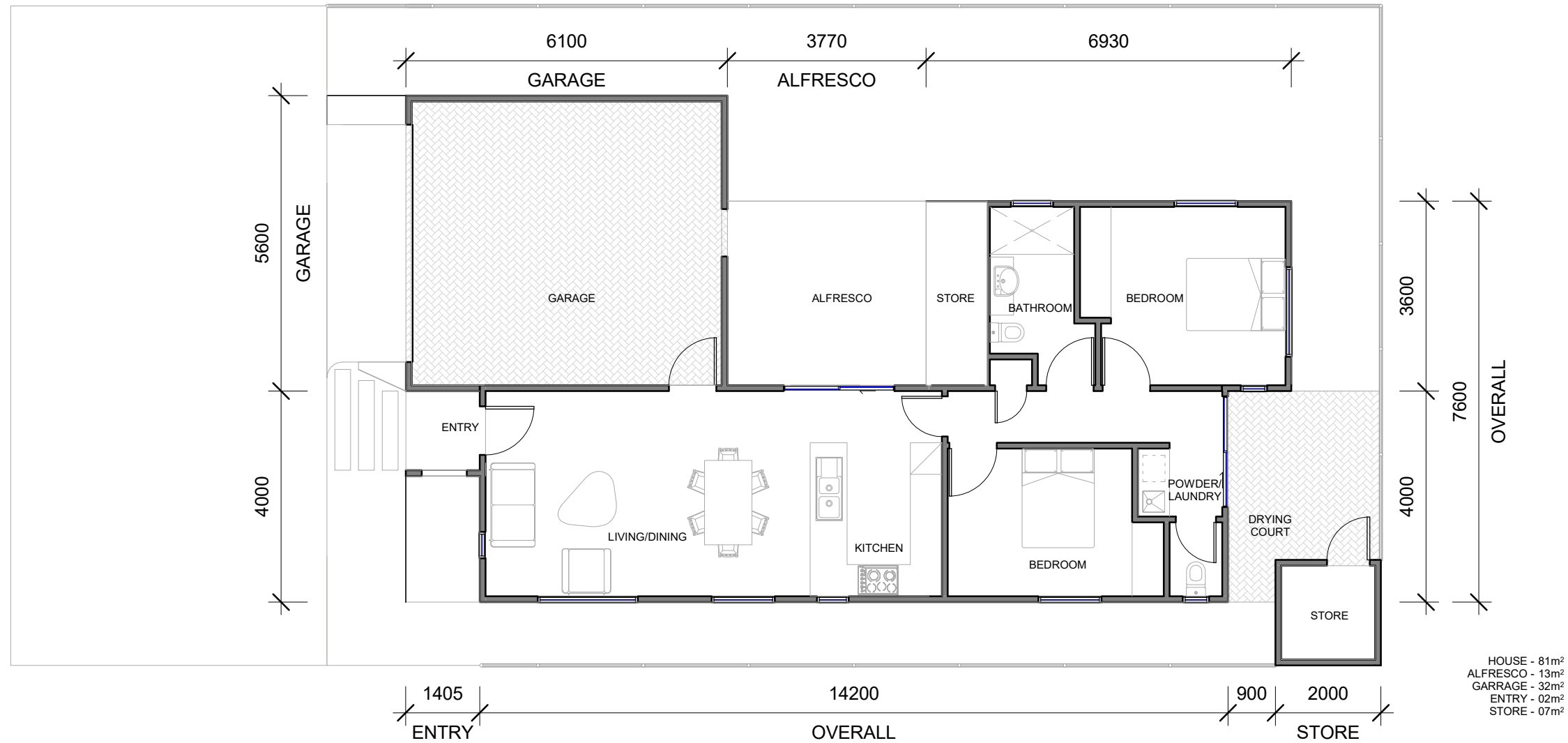
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0438 918 753 | RICHARD@HRARCHITECTS.COM.AU

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No.	Description	Date
0	PRELIMINARY	20.03.11
1	HOME NAME UPDATED	20.07.14

THE GINGER
PROVIDENCE LIFESTYLE
'E'

FLOOR PLAN & ELEVATIONS	
Project number	A-100
Date	20.07.14
Drawn by	RHA
Checked by	RHA
Scale@A3	As indicated



1 FLOOR PLAN
A-101 1:100



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No.	Description	Date
0	PRELIMINARY	20.03.11
1	HOME NAME UPDATED	20.07.14

'THE LAVENDER'

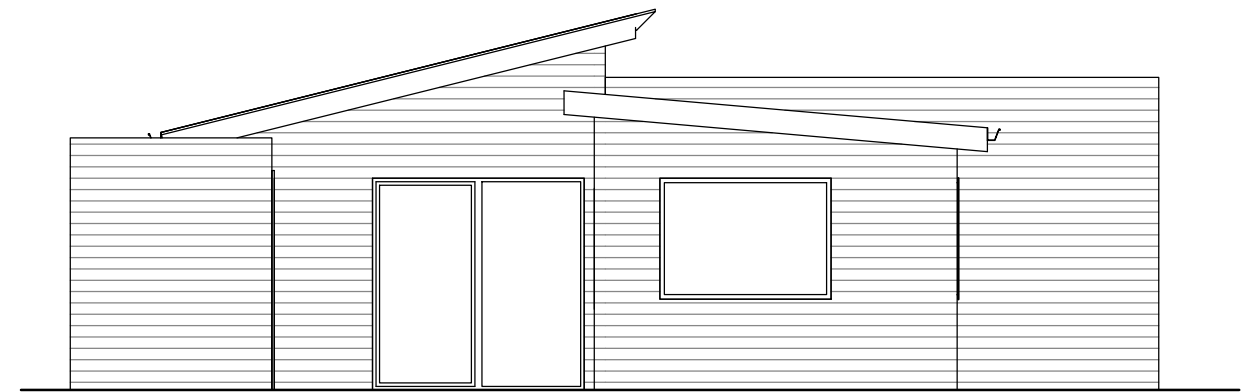
PROVIDENCE LIFESTYLE

'F'

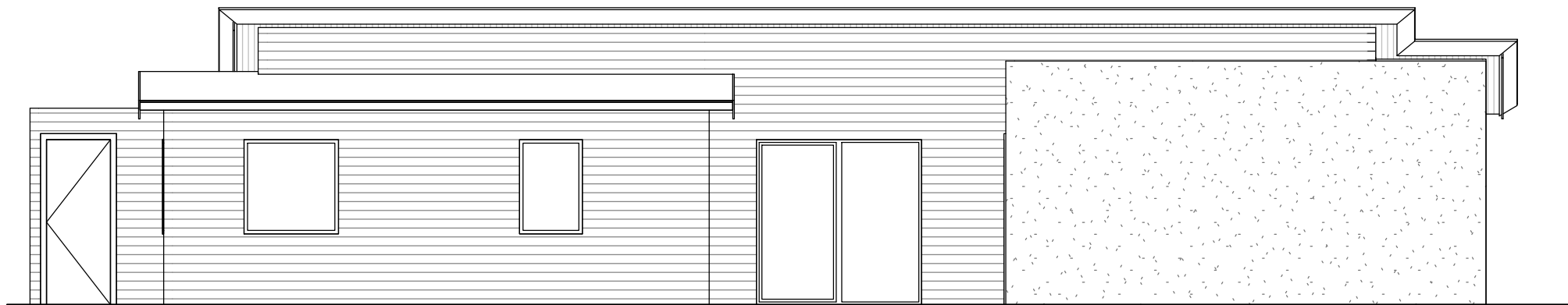
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Project number		
Date	20.07.14	
Drawn by	RHA	
Checked by	RHA	
Scale@A3	1:100	



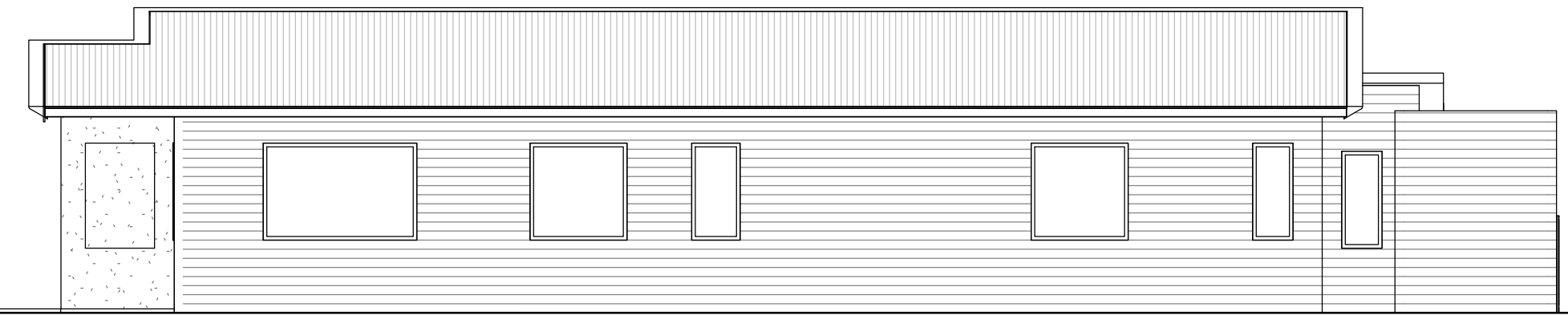
1 STREET ELEVATION
1 : 75



2 REAR ELEVATION
1 : 75



3 SIDE ELEVATION 1
1 : 75



4 SIDE ELEVATION 2
1 : 75

MATERIALS AND FINISHES
 STREET ELEVATIONS TO BE PRIMELINE F.C WEATHERBOARD AND FLAT FIBRE CEMENT SHEET w/ ROLL-ON SAND FINISH TEXTURE
 SIDE AND REAR ELEVATIONS TO BE PRIMELINE F.C WEATHERBOARD PAINT FINISH
 ALL ROOFS TO BE CUSTOM ORB w/ COLORBOND FASCIA AND GUTTER IN SIMILAR FINISH
 PATIO TUBE STRUCTURES TO CARPORT AND ALFRESCO
FINAL COLOUR FINISHES TO BE CONFIRMED



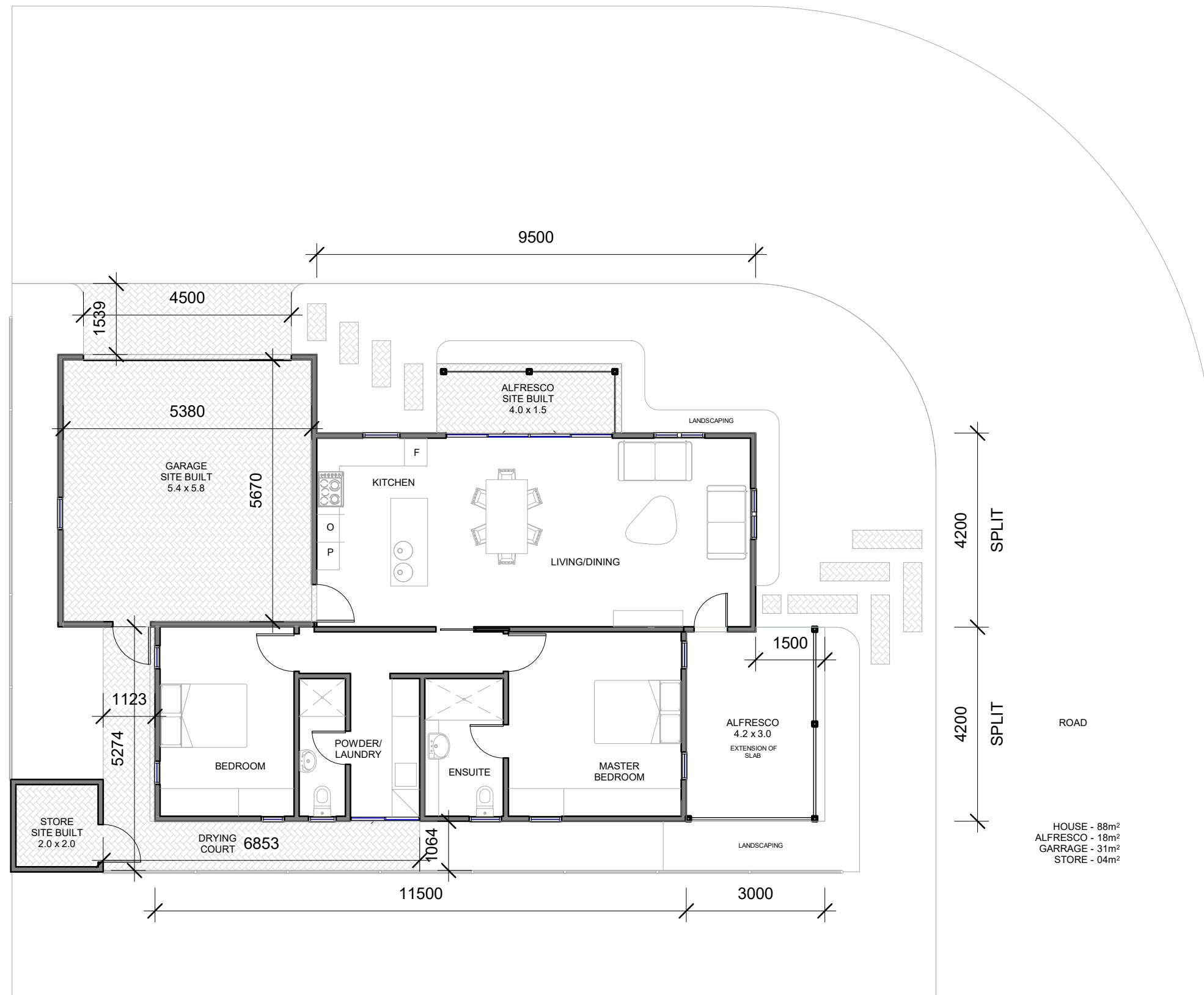
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No.	Description	Date
0	PRELIMINARY	20.03.11
1	HOME NAME UPDATED	20.07.14

'THE LAVENDER'
 PROVIDENCE LIFESTYLE
 'F'

ELEVATIONS		
Project number		A- 101
Date	20.07.14	
Drawn by	RHA	
Checked by	RHA	
Scale@A3		1 : 75



1 FLOOR PLAN
A-102 1:100



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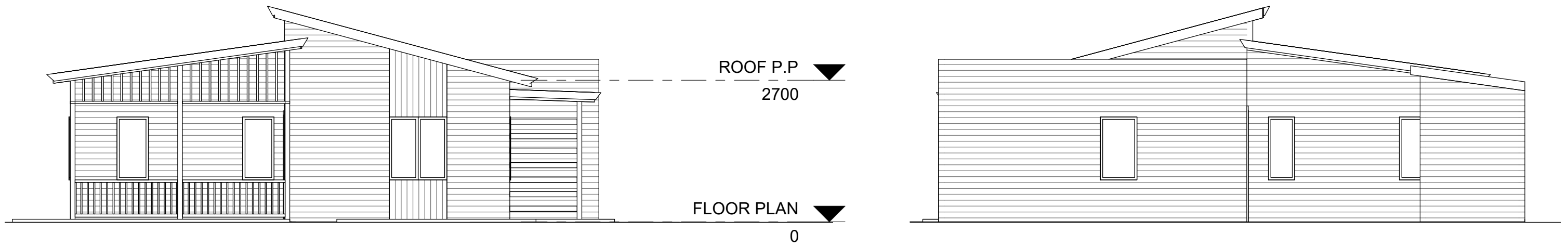
No.	Description	Date
0	PRELIMINARY	20.03.11
1	HOME NAME UPDATED	20.07.14

'THE NETTLE'

PROVIDENCE LIFESTYLE

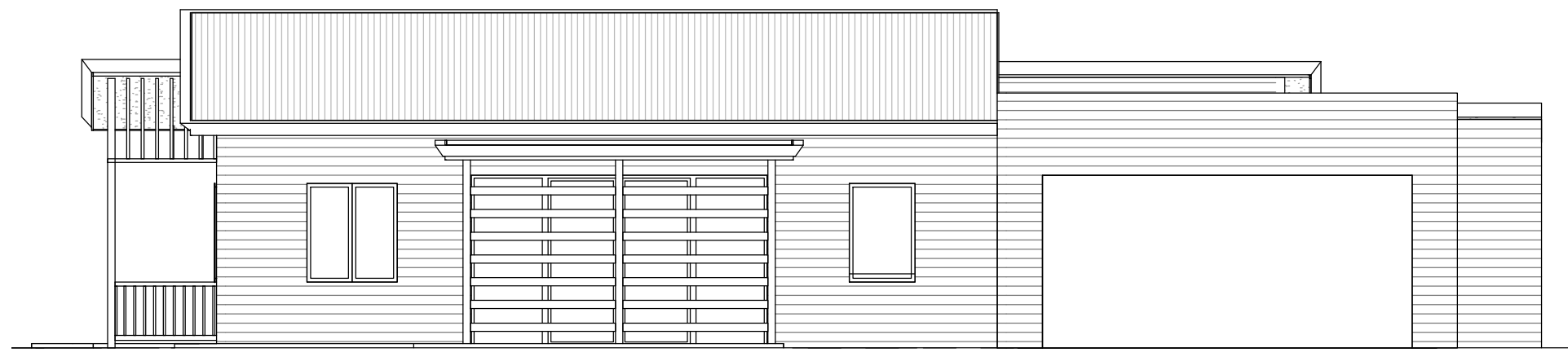
'G'

FLOOR PLAN		A-101	
Project number		A-101	1:100
Date	20.07.14		
Drawn by	RHA	Scale@A3	
Checked by	RHA		

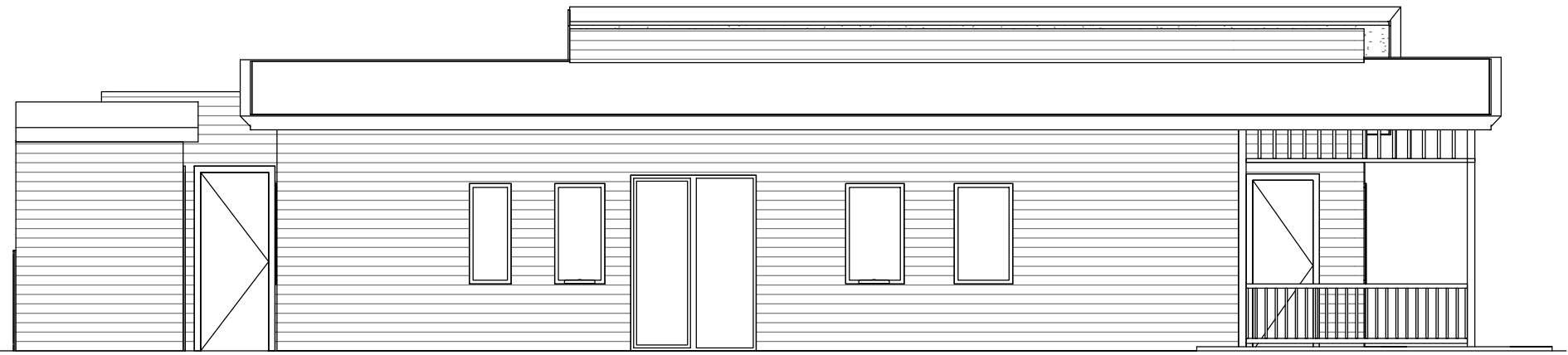


1 STREET ELEVATION
1:75

2 REAR ELEVATION
1:75



3 SIDE ELEVATION 1
1:75



4 SIDE ELEVATION 2
1:75

MATERIALS AND FINISHES
 STREET ELEVATIONS TO BE PRIMELINE F.C WEATHERBOARD AND FLAT FIBRE CEMENT SHEET w/ ROLL-ON SAND FINISH TEXTURE
 SIDE AND REAR ELEVATIONS TO BE PRIMELINE F.C WEATHERBOARD PAINT FINISH
 ALL ROOFS TO BE CUSTOM ORB w/ COLORBOND FASCIA AND GUTTER IN SIMILAR FINISH
 PATIO TUBE STRUCTURES TO CARPORT AND ALFRESCO
FINAL COLOUR FINISHES TO BE CONFIRMED



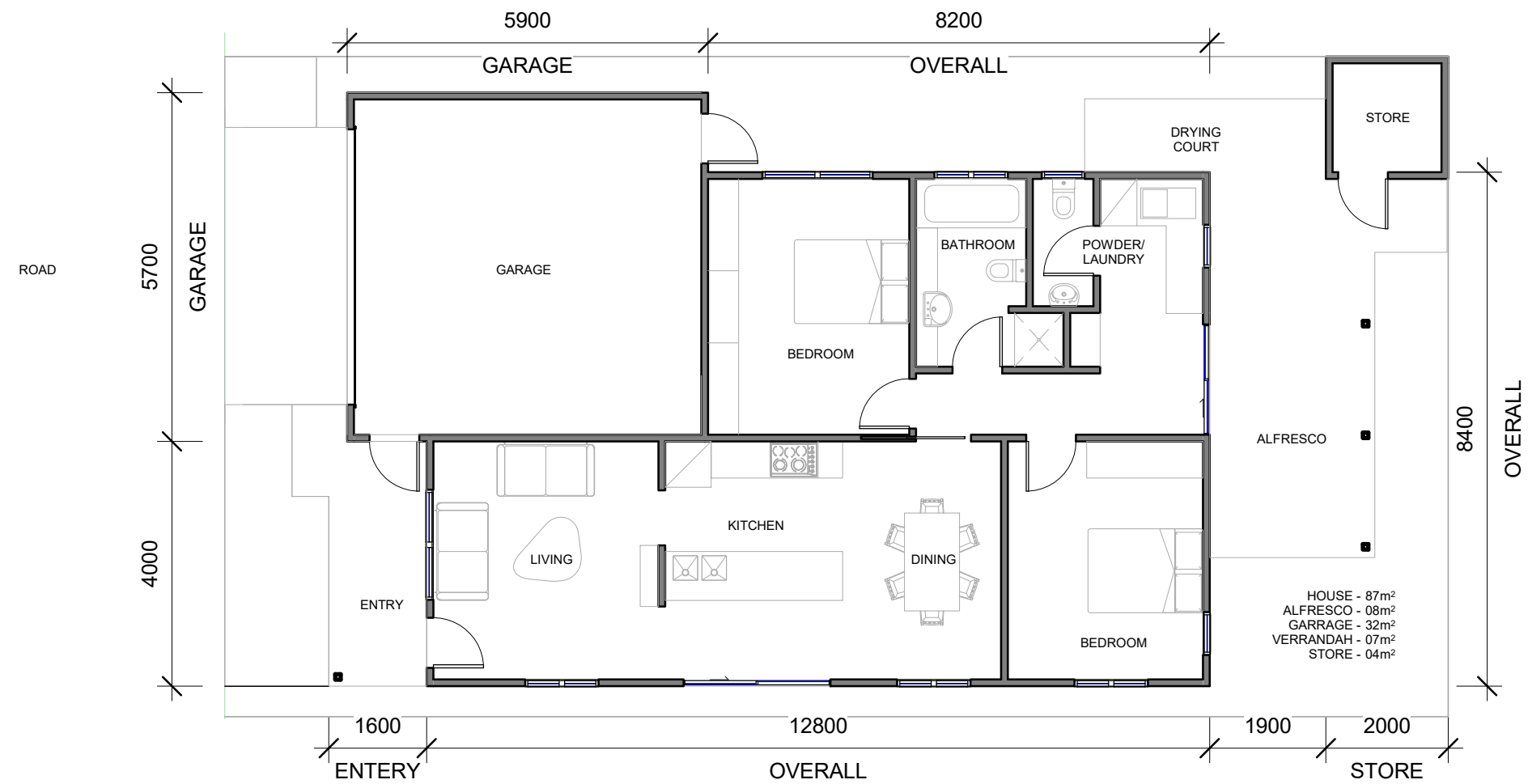
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No.	Description	Date
0	PRELIMINARY	20.03.11
1	HOME NAME UPDATED	20.07.14

'THE NETTLE'
 PROVIDENCE LIFESTYLE
 'G'

ELEVATIONS		
Project number		A-102
Date	20.07.14	
Drawn by	RHA	
Checked by	RHA	
Scale@A3		1:75



1 FLOOR PLAN
A-101 1:100



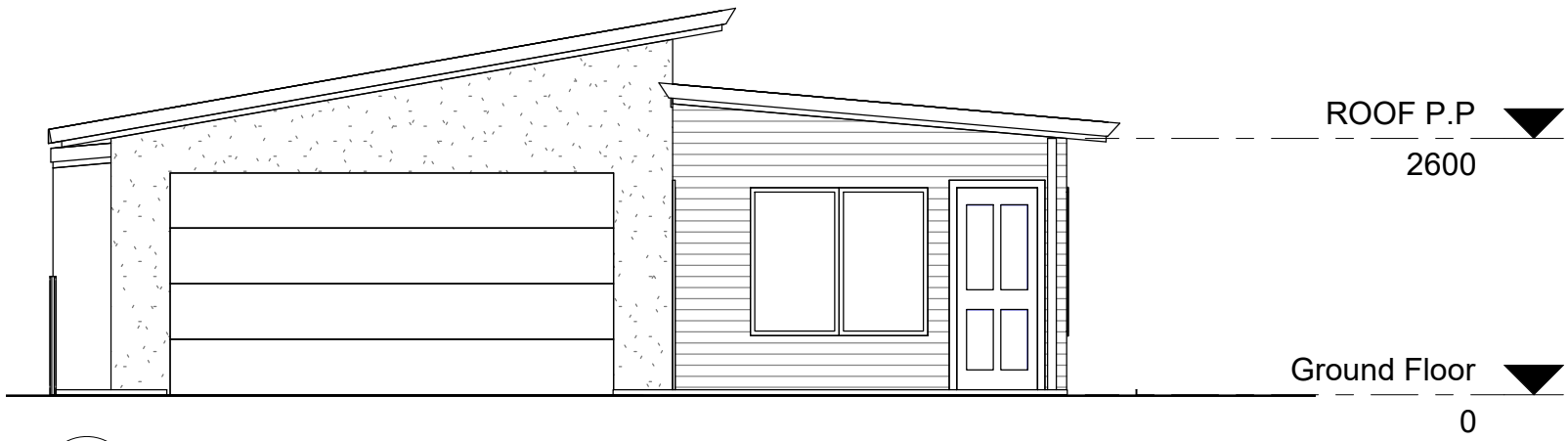
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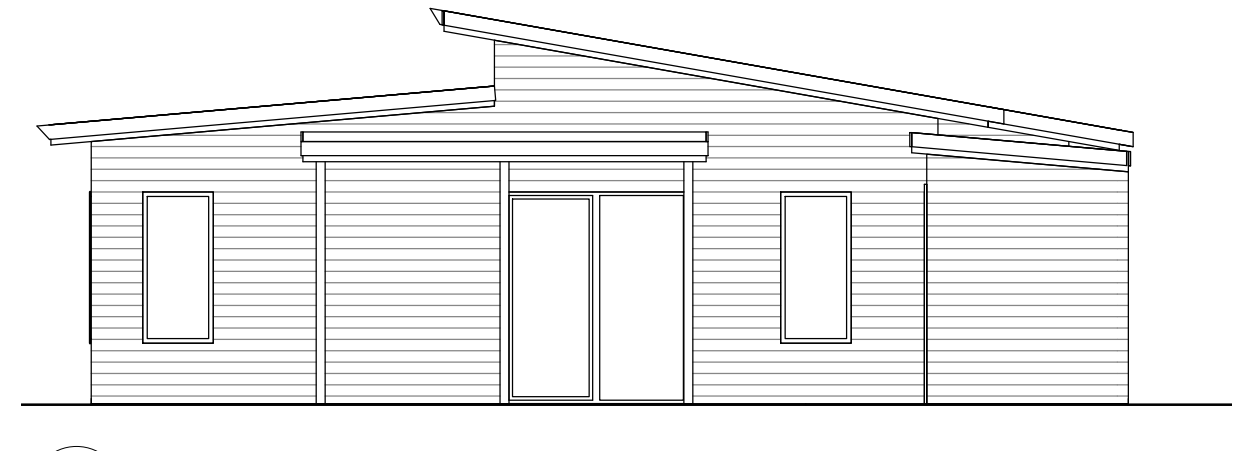
No.	Description	Date
0	PRELIMINARY	20.03.11
1	HOME NAME UPDATED	20.07.14

'THE PEPPERMINT'
PROVIDENCE LIFESTYLE
'H'

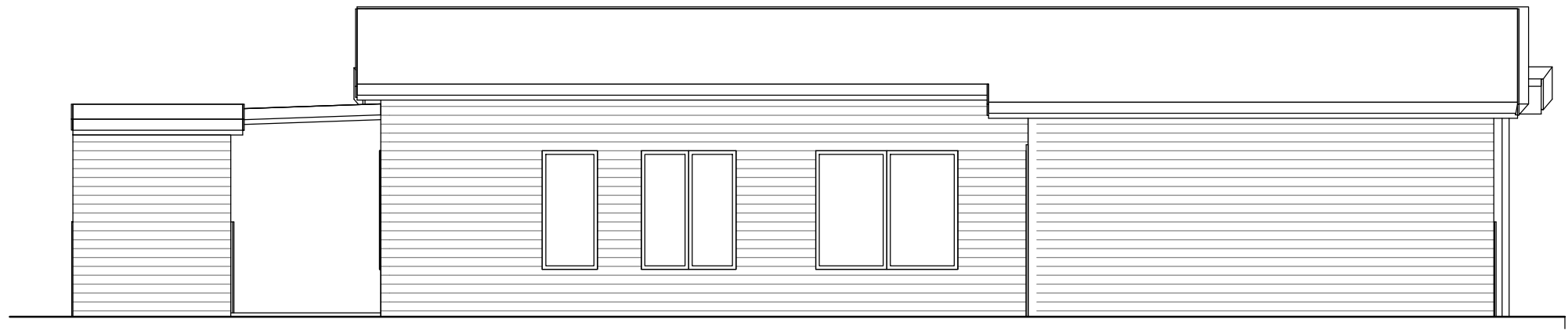
FLOOR PLAN		A-100
Project number	20.07.14	
Date	RHA	
Drawn by	RHA	
Checked by	Scale@A3	1:100



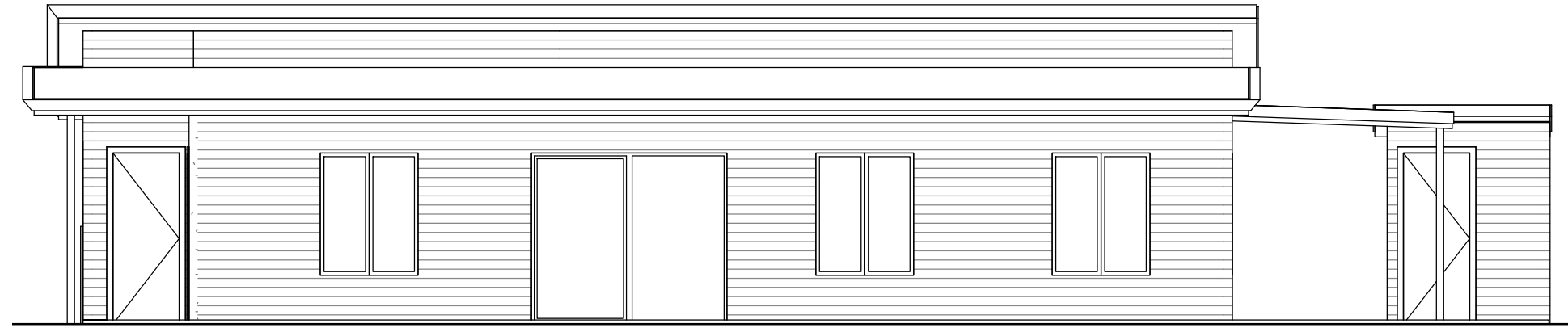
1 STREET ELEVATION
1:75



2 REAR ELEVATION
1:75



3 SIDE ELEVATION 1
1:75



4 SIDE ELEVATION 2
1:75

MATERIALS AND FINISHES
 STREET ELEVATIONS TO BE PRIMELINE F.C WEATHERBOARD AND FLAT FIBRE CEMENT SHEET w/ ROLL-ON SAND FINISH TEXTURE
 SIDE AND REAR ELEVATIONS TO BE PRIMELINE F.C WEATHERBOARD PAINT FINISH
 ALL ROOFS TO BE CUSTOM ORB w/ COLORBOND FASCIA AND GUTTER IN SIMILAR FINISH
 PATIO TUBE STRUCTURES TO CARPORT AND ALFRESCO
FINAL COLOUR FINISHES TO BE CONFIRMED



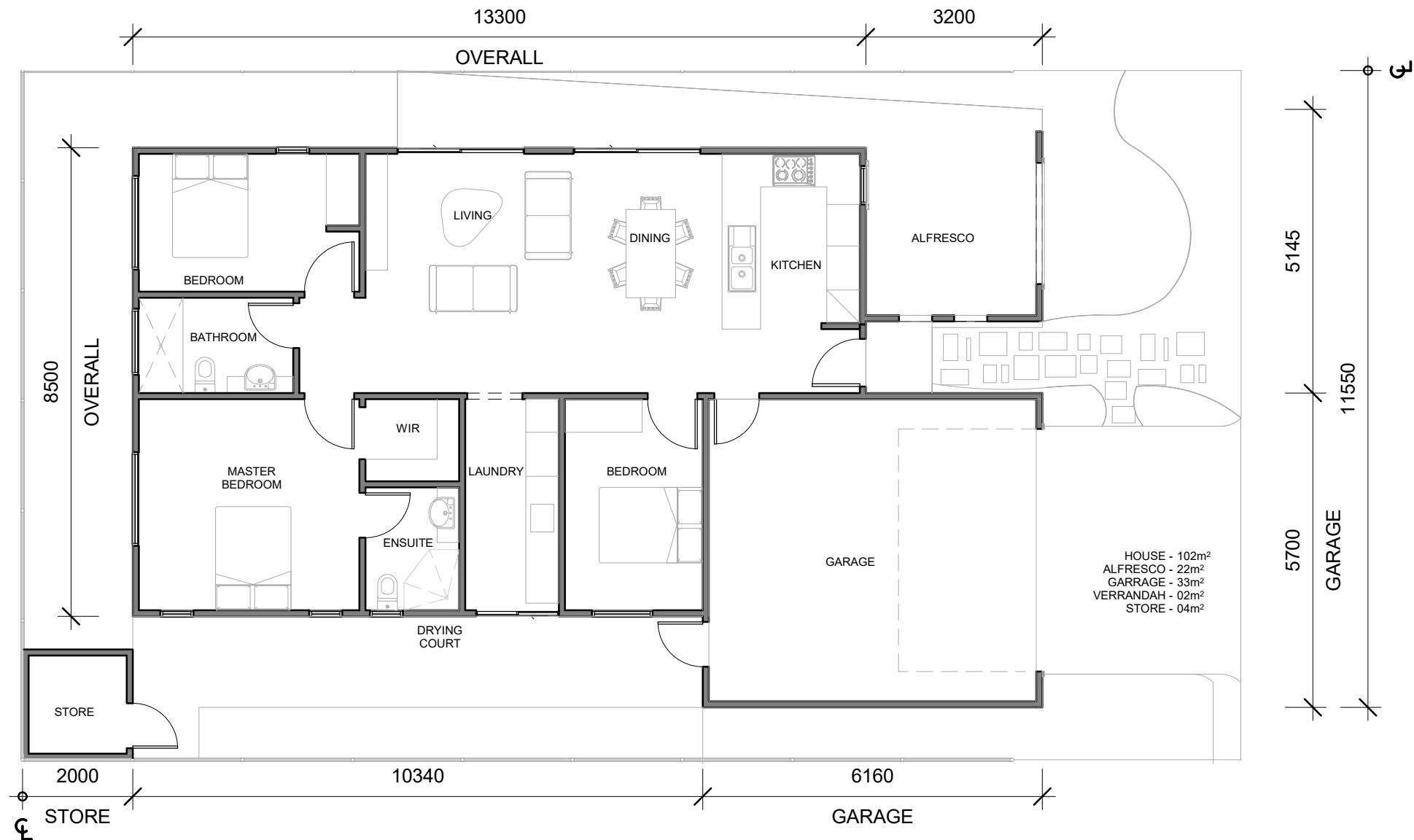
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No.	Description	Date

'THE PEPPERMINT'
 PROVIDENCE LIFESTYLE
 'H'

ELEVATIONS		
Project number	A-101	
Date	20.07.14	
Drawn by	RHA	
Checked by	RHA	Scale@A3
		1:75



1 FLOOR PLAN
A - 101 1 : 100



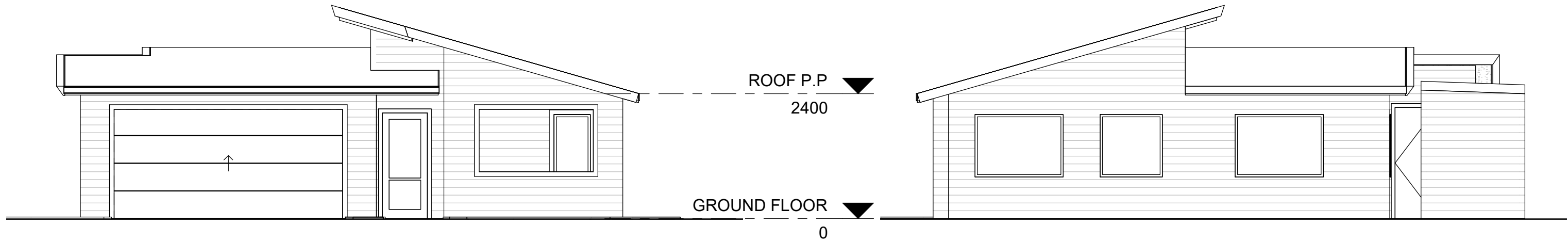
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No.	Description	Date
0	PRELIMINARY	20.03.11
1	HOME NAME UPDATED	20.07.14

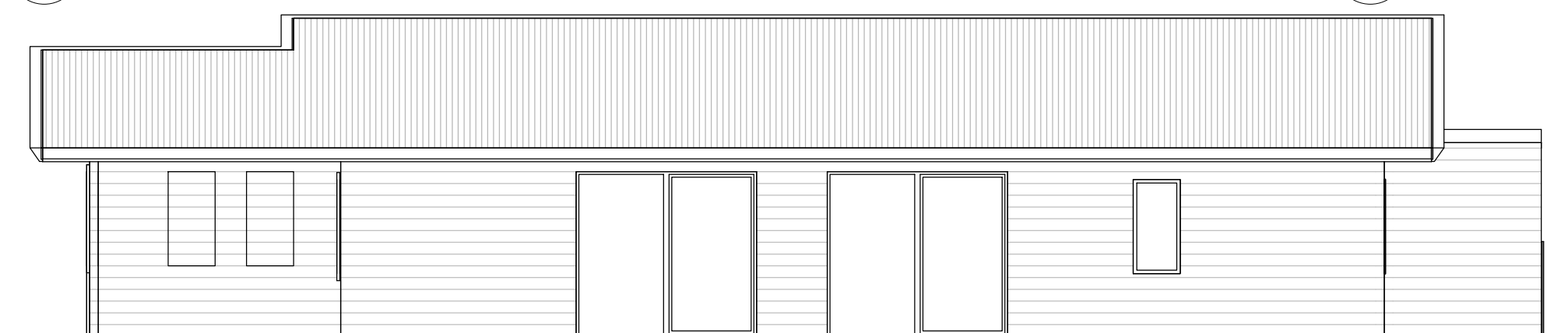
'THE ROSEMARY
PROVIDENCE LIFESTYLE
'I'

FLOOR PLAN		A - 100
Project number		
Date	20.07.14	
Drawn by	RHA	
Checked by	RHA	
Scale@A3	1 : 100	

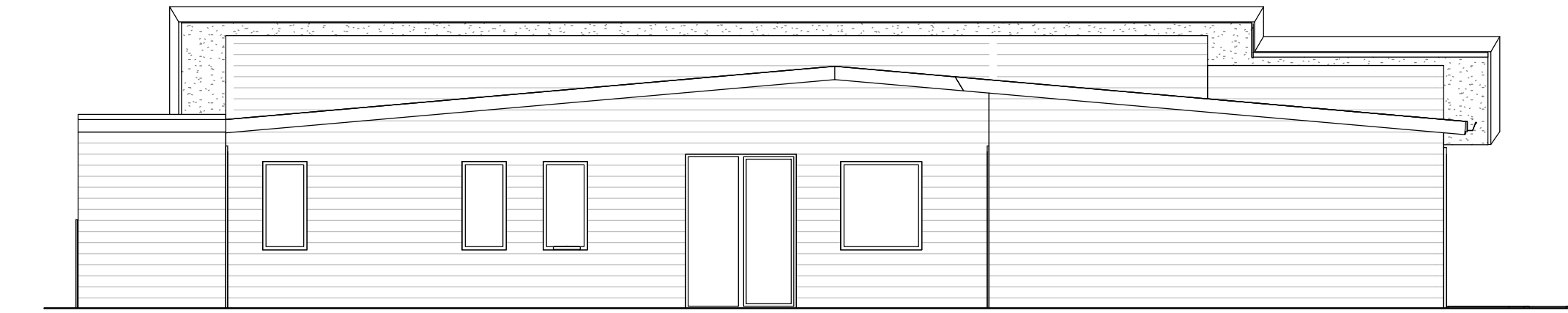


1 STREET ELEVATION
1:75

2 REAR ELEVATION
1:75



3 SIDE ELEVATION 1
1:75



4 SIDE ELEVATION 2
1:75

MATERIALS AND FINISHES
 STREET ELEVATIONS TO BE PRIMELINE F.C WEATHERBOARD AND
 FLAT FIBRE CEMENT SHEET w/ ROLL-ON SAND FINISH TEXTURE
 SIDE AND REAR ELEVATIONS TO BE PRIMELINE F.C WEATHERBOARD
 PAINT FINISH
 ALL ROOFS TO BE CUSTOM ORB w/ COLORBOND FASCIA AND GUTTER
 IN SIMILAR FINISH
 PATIO TUBE STRUCTURES TO CARPORT AND ALFRESCO
FINAL COLOUR FINISHES TO BE CONFIRMED



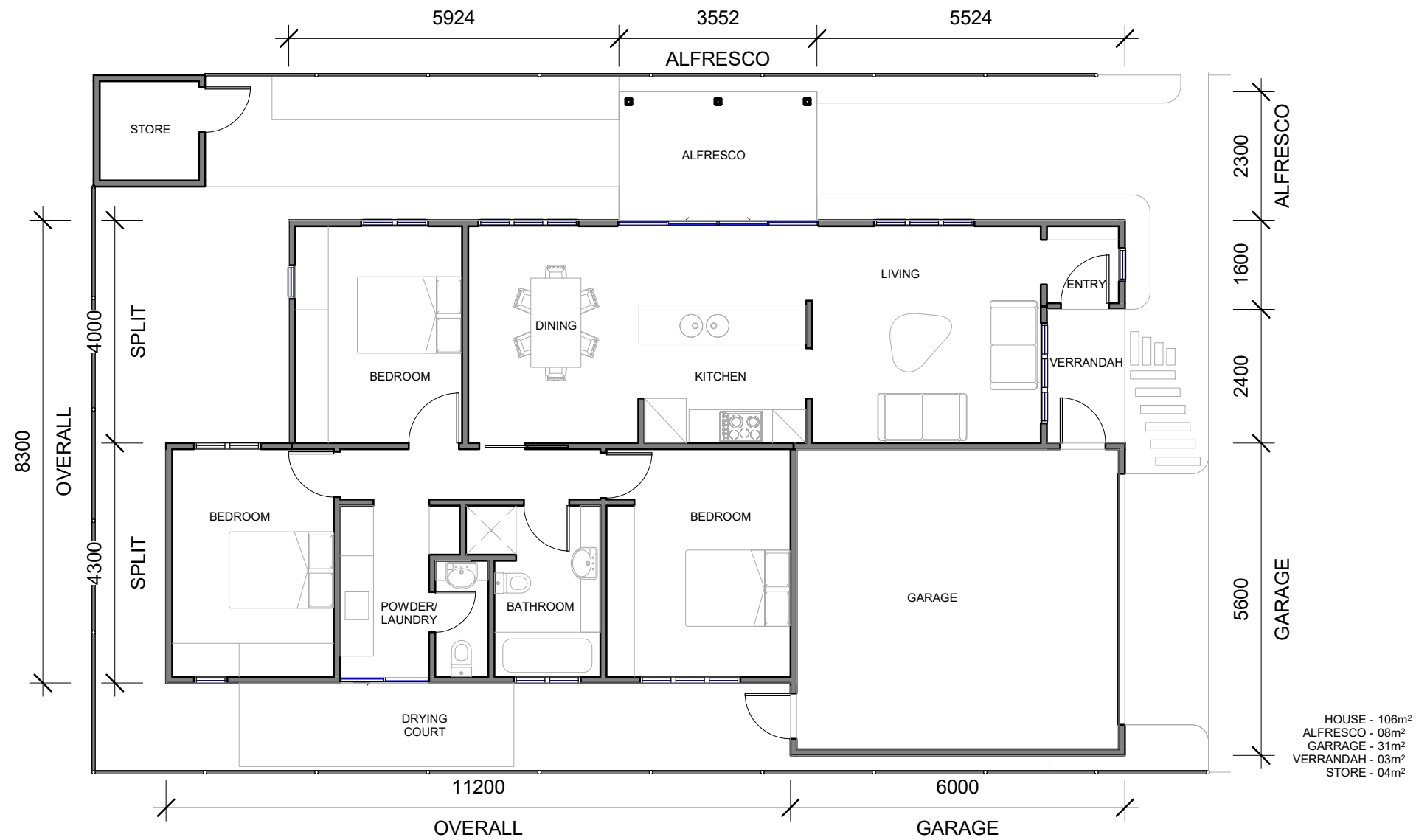
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No.	Description	Date

'THE ROSEMARY
 PROVIDENCE LIFESTYLE
 'I'

ELEVATIONS		
Project number		A - 101
Date	20.07.14	
Drawn by	RHA	
Checked by	RHA	
	Scale@A3	1:75



1 FLOOR PLAN
A-101 1:100



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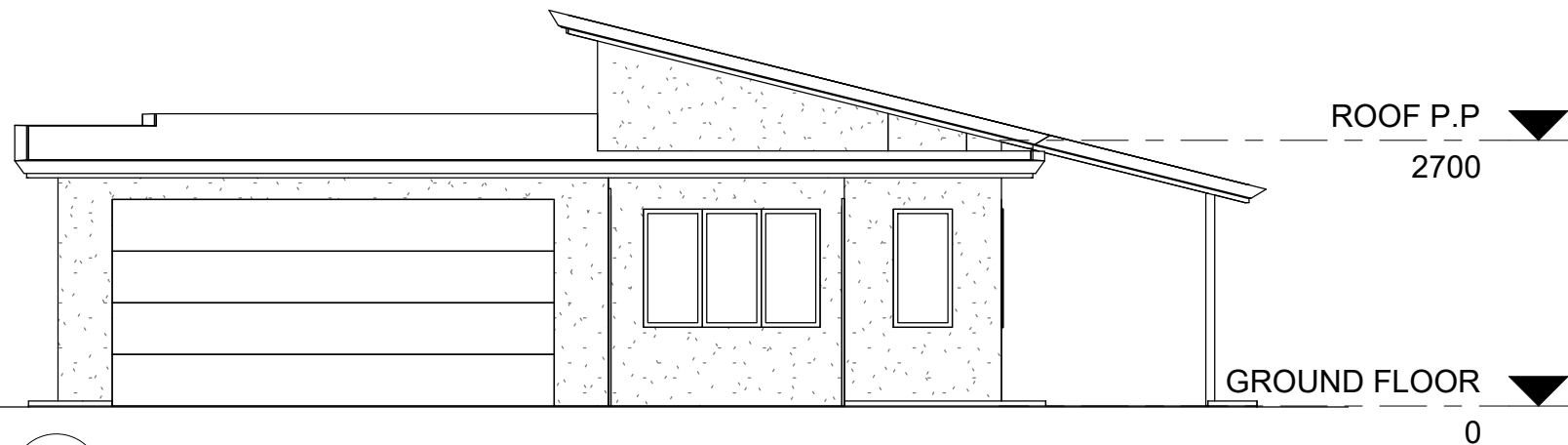
No.	Description	Date
0	PRELIMINARY	20.03.11
1	HOME NAME UPDATED	20.07.14

'THE SANTOLINA'

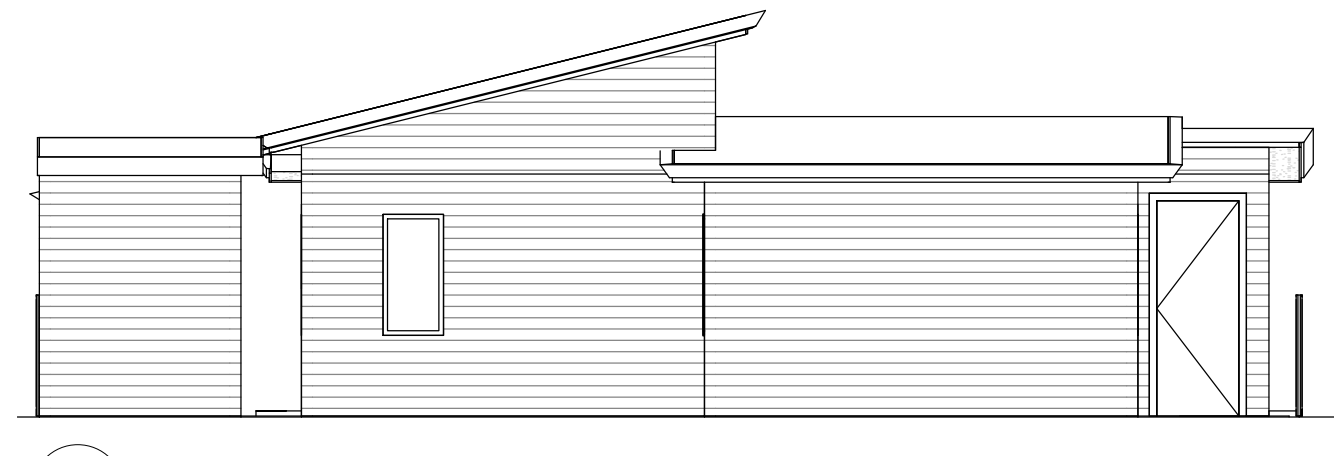
PROVIDENCE LIFESTYLE

'J'

FLOOR PLAN		A-100
Project number		
Date	20.07.14	
Drawn by	RHA	
Checked by	RHA	
Scale@A3	1:100	



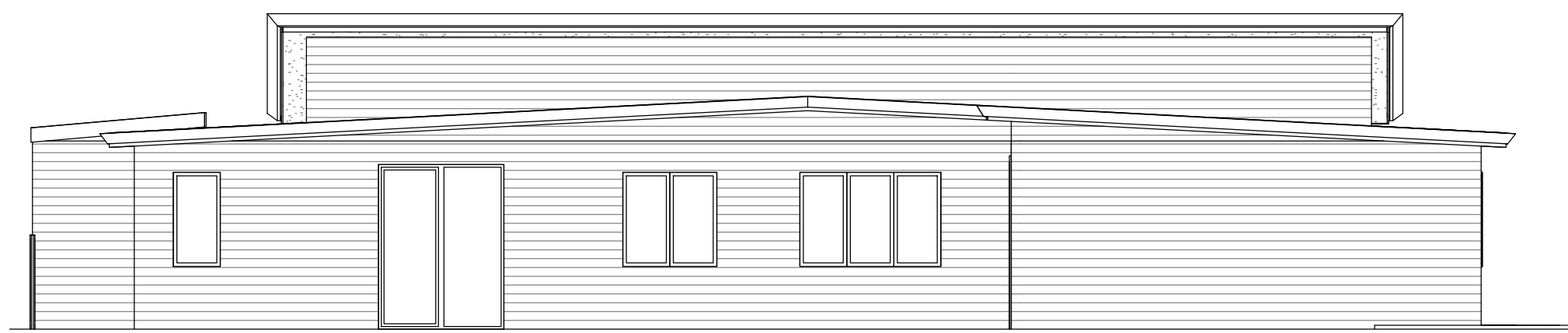
1 STREET ELEVATION
1:75



2 REAR ELEVATION
1:75



3 SIDE ELEVATION 1
1:75



4 SIDE ELEVATION 2
1:75

MATERIALS AND FINISHES
 STREET ELEVATIONS TO BE PRIMELINE F.C WEATHERBOARD AND FLAT FIBRE CEMENT SHEET w/ ROLL-ON SAND FINISH
 SIDE AND REAR ELEVATIONS TO BE PRIMELINE F.C WEATHERBOARD PAINT FINISH
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FINAL COLOUR FINISHES TO BE CONFIRMED



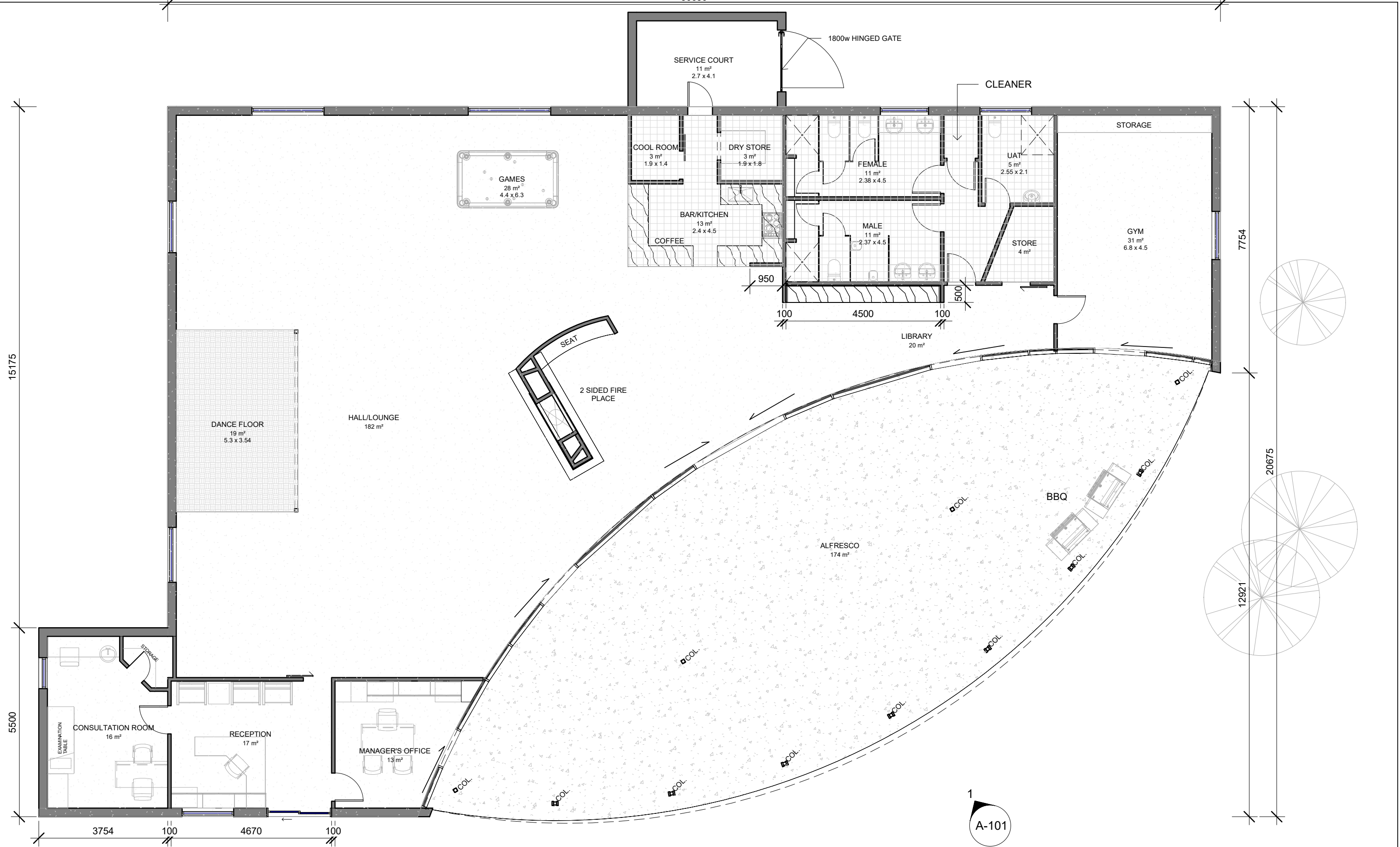
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No.	Description	Date

'THE SANTOLINA'
 PROVIDENCE LIFESTYLE
 'J'

ELEVATIONS		
Project number		A- 101
Date	20.07.14	
Drawn by	RHA	
Checked by	RHA	
	Scale@A3	1:75



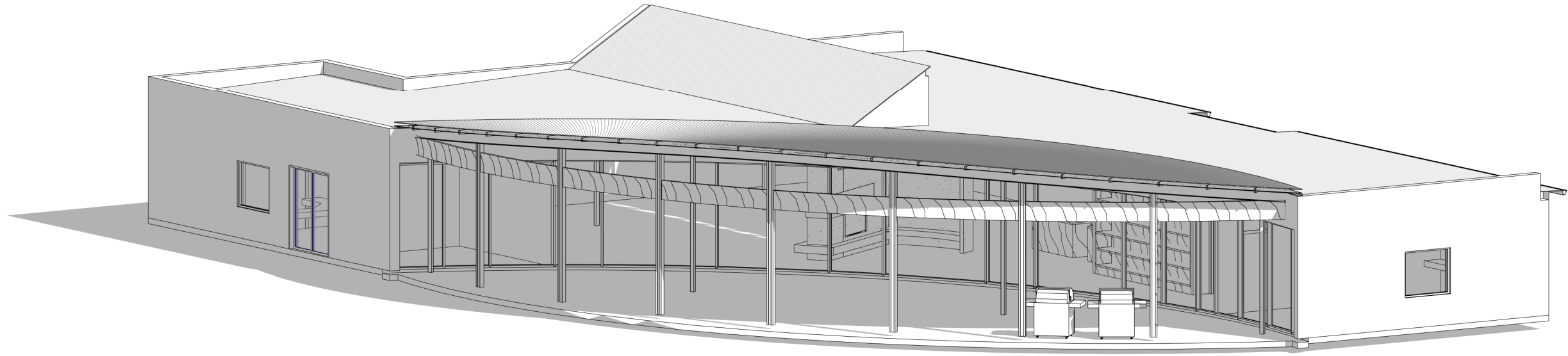
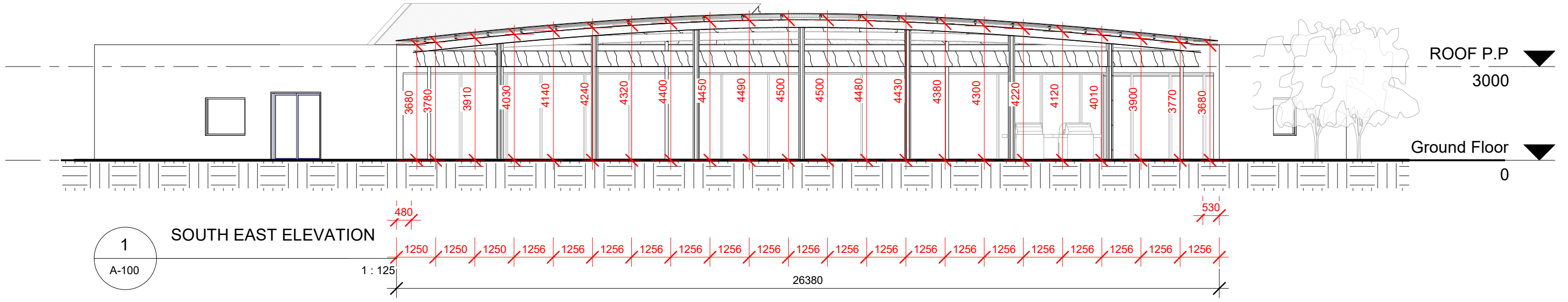
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No.	Description	Date

FURNISSDALE LIFESTYLE VILLAGE
CLUBHOUSE

GROUND PLAN EXTENSION			
Project number	xx	A-102	
Date	17.02.20		
Drawn by	Author		
Checked by	Checker		
		Scale@A3	1 : 100



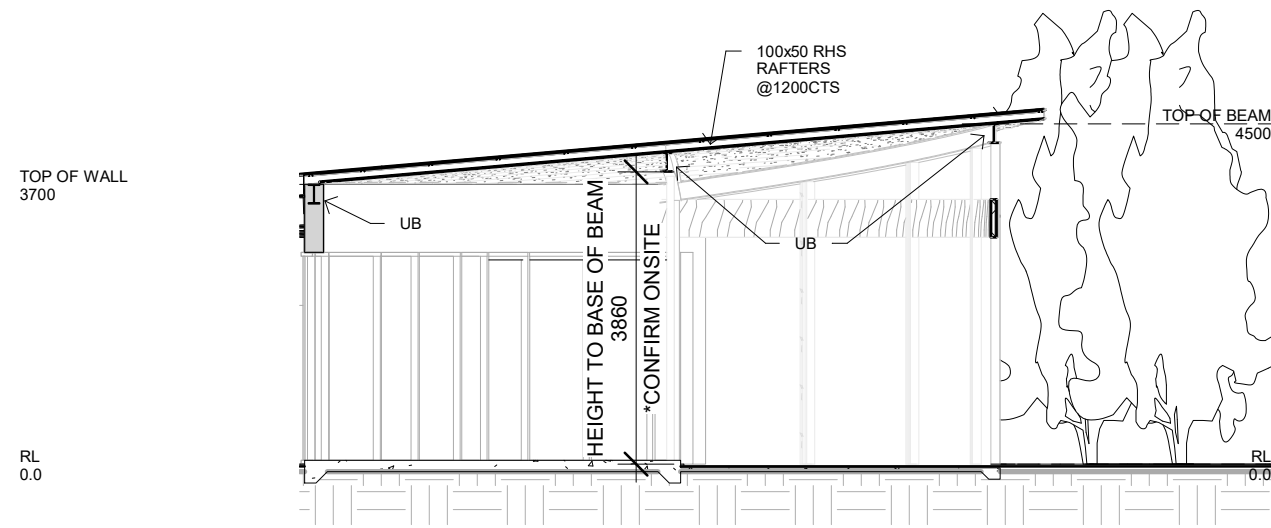
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No.	Description	Date

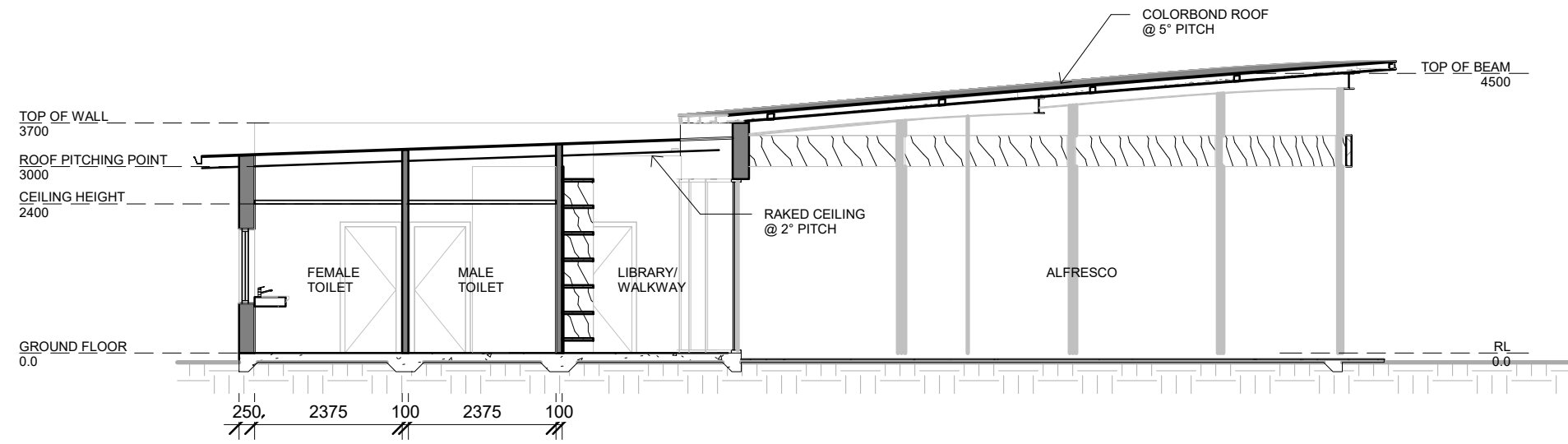
FURNISSDALE LIFESTYLE VILLAGE
CLUBHOUSE

ELEVATION			
Project number	xx	A-101	1 : 125
Date	17.02.20		
Drawn by	RHA		
Checked by	RHA		
Scale@A3			



1 Alfresco Roof Section

1 : 100



2 Bathroom Alfresco Section

1 : 100



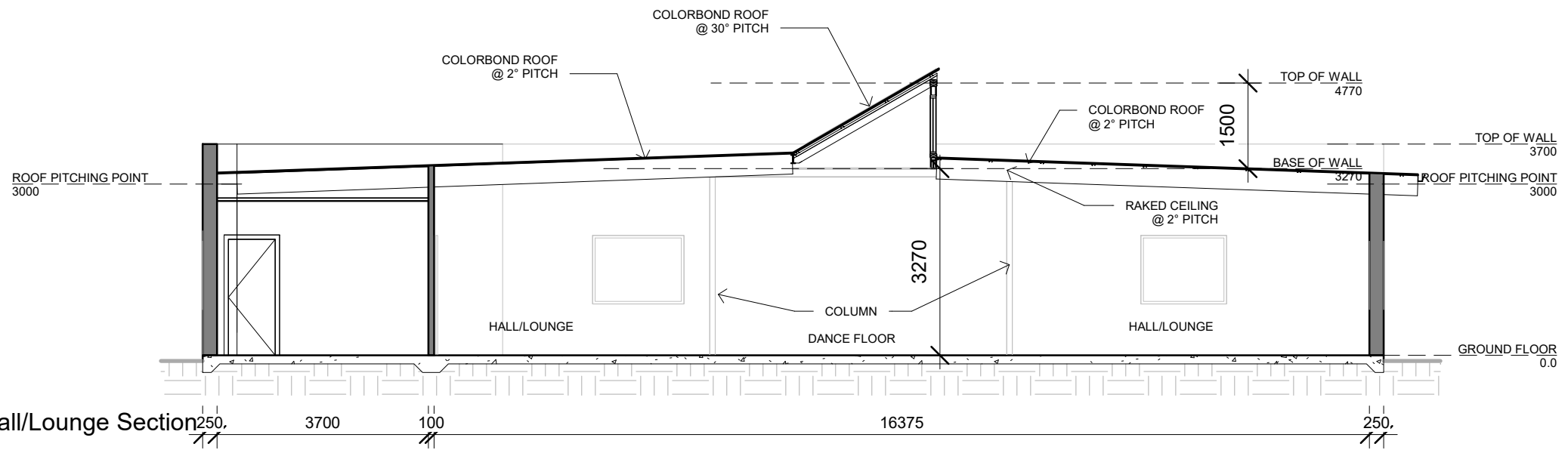
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No.	Description	Date

FURNISSDALE LIFESTYLE VILLAGE
CLUBHOUSE

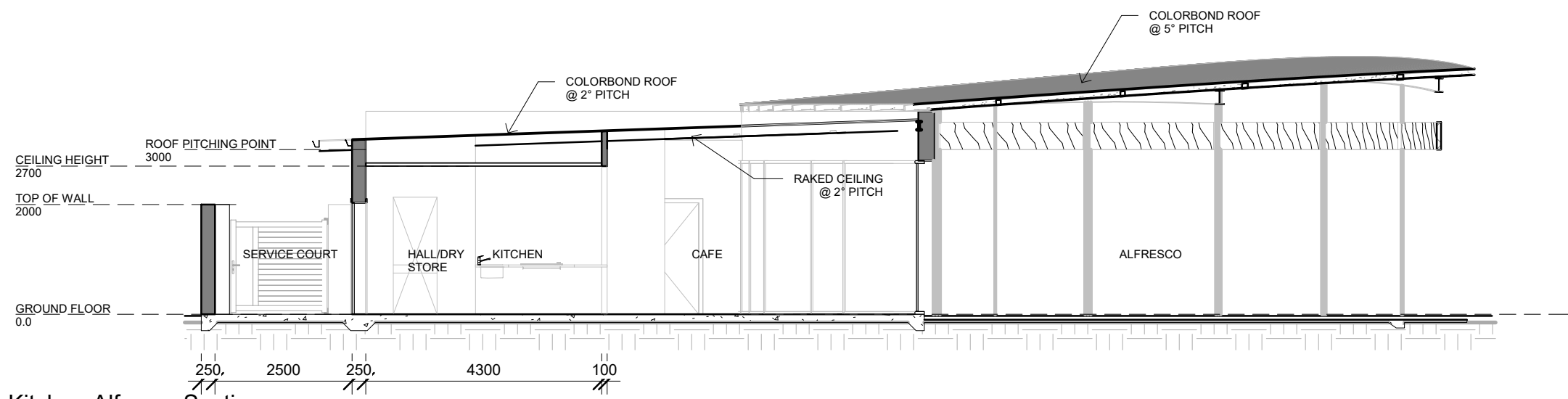
SECTIONS 1		
Project number	xx	A401
Date	17.02.20	
Drawn by	Author	
Checked by	Checker	
Scale@A3		1 : 100



1
A201

Hall/Lounge Section

1 : 100



2

Kitchen Alfresco Section

1 : 100



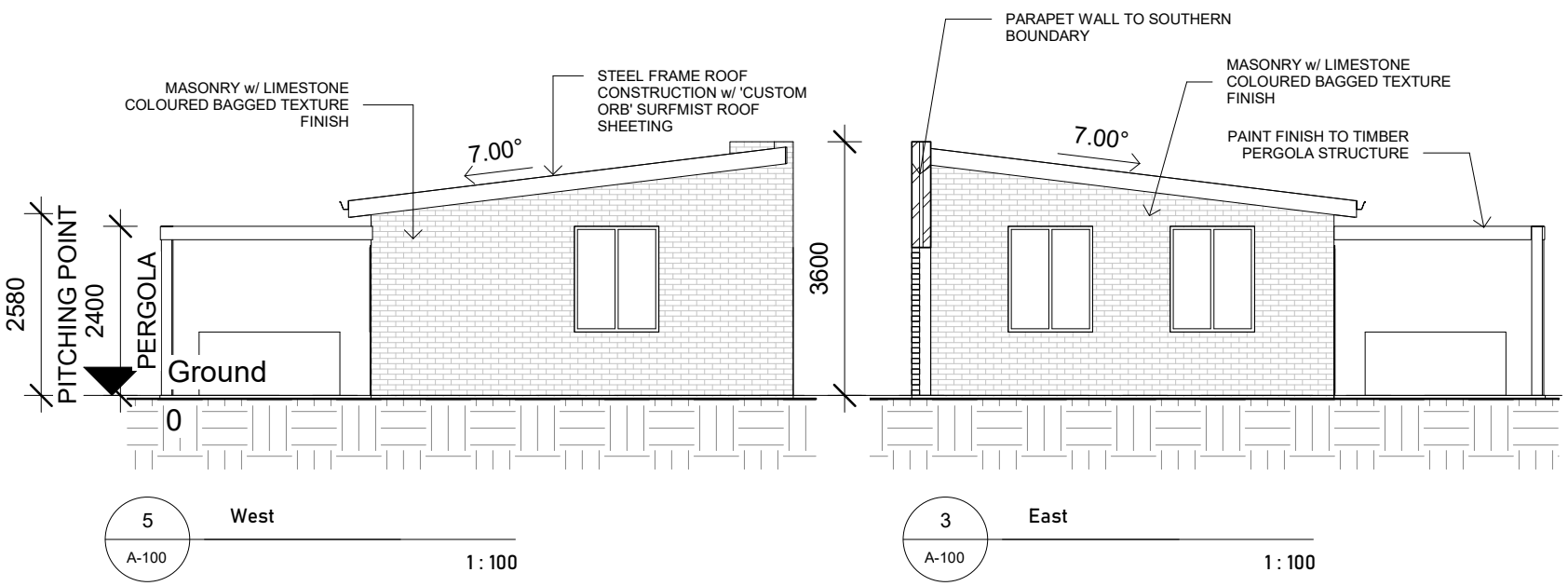
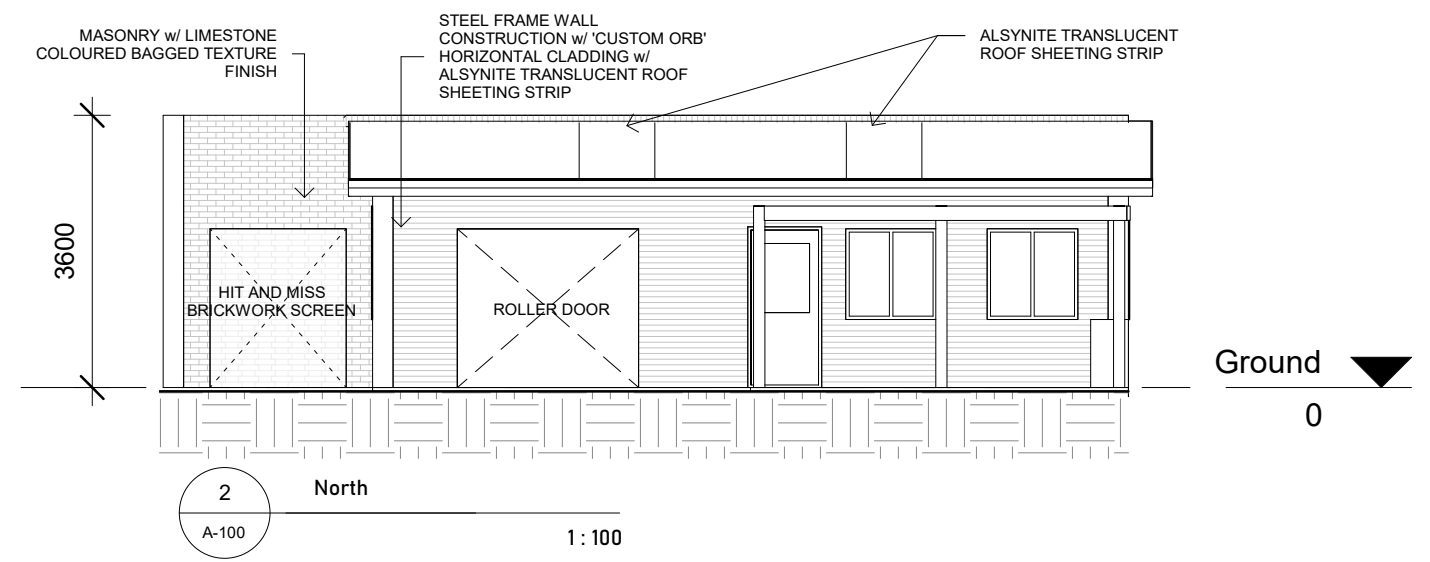
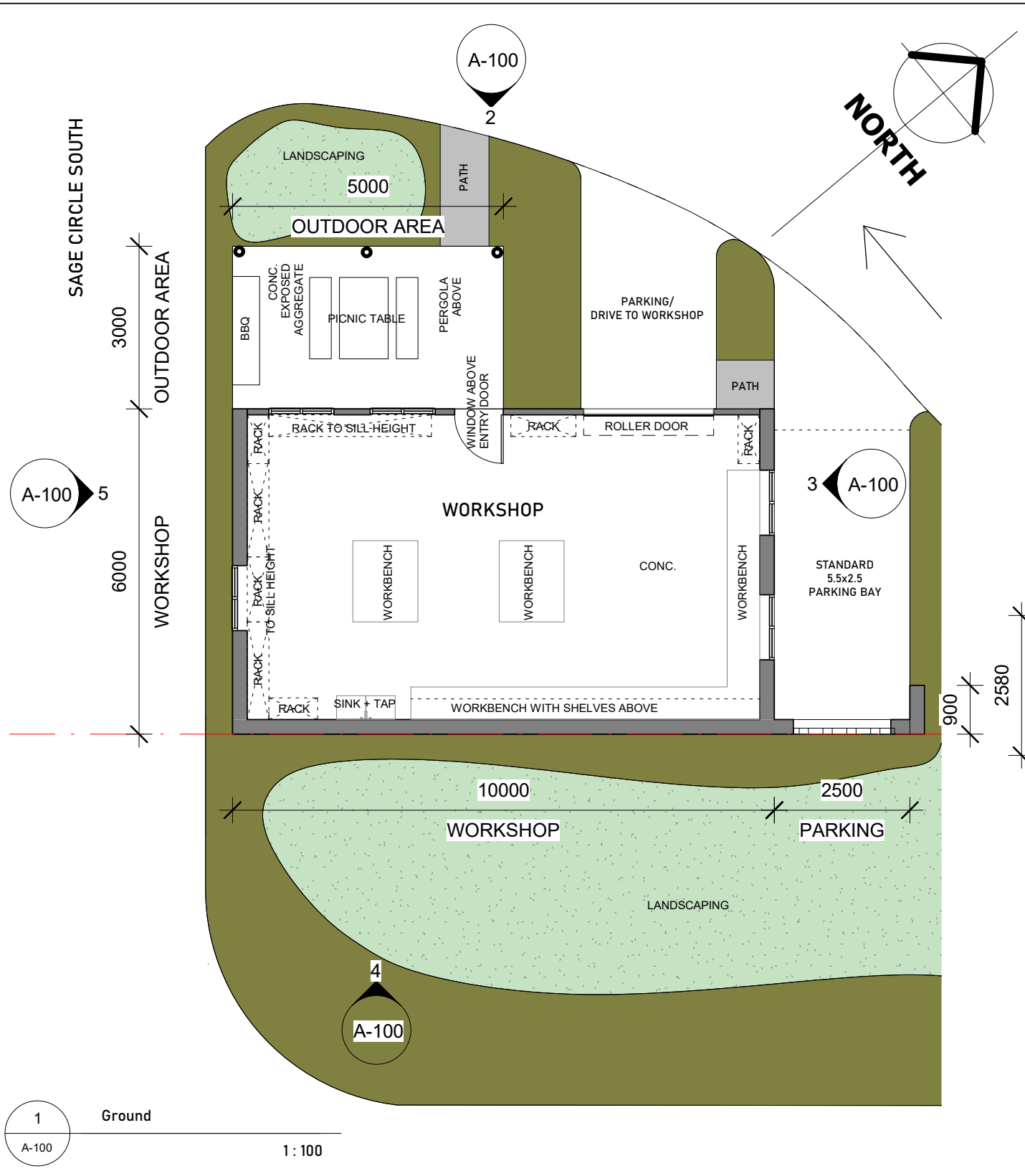
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No.	Description	Date

FURNISSDALE LIFESTYLE VILLAGE
CLUBHOUSE

SECTIONS 2		
Project number	xx	A402
Date	17.02.20	
Drawn by	Author	
Checked by	Checker	
Scale@A3		1 : 100



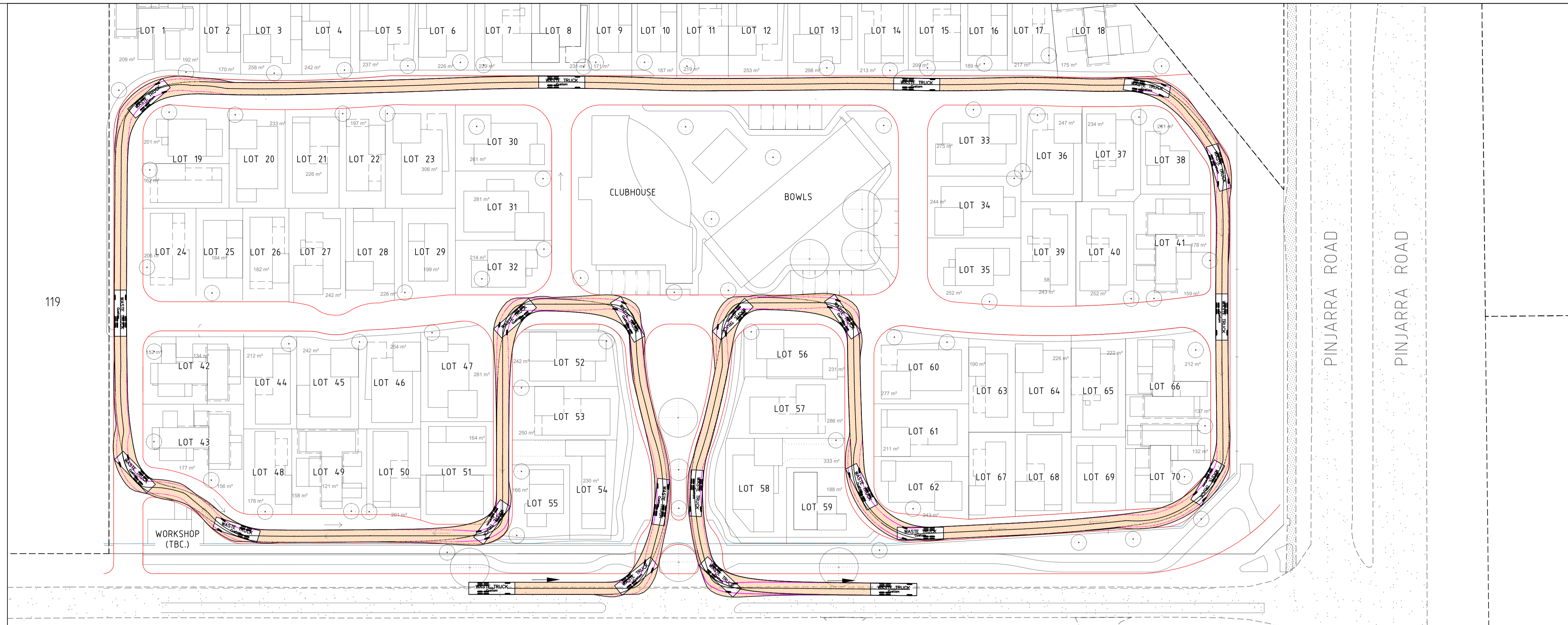
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No.	Description	Date

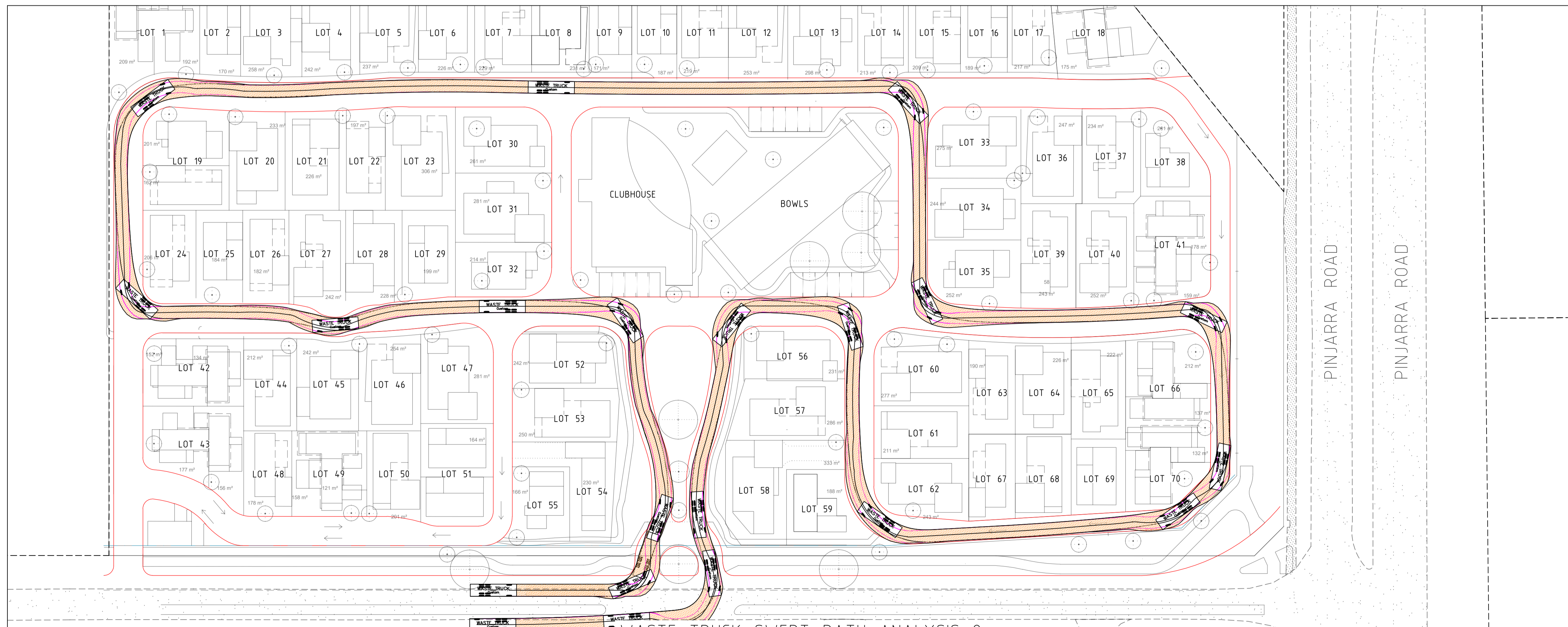
PROVIDENCE MANDURAH
 607 PINJARRA RD
 FURNISSDALE

PRELIMINARY WORKSHOP		A-100
Project number		
Date	15.02.2021	
Drawn by	RHA	
Checked by	RHA	
Scale	Scale@A3	1:100



WASTE TRUCK SWEEP PATH ANALYSIS 1

SCALE 1 : 400

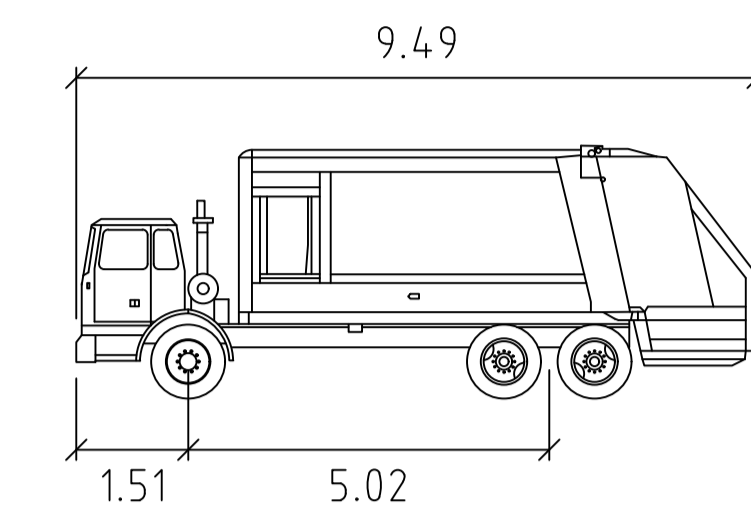


WASTE TRUCK SWEEP PATH ANALYSIS 2

SCALE 1 : 400

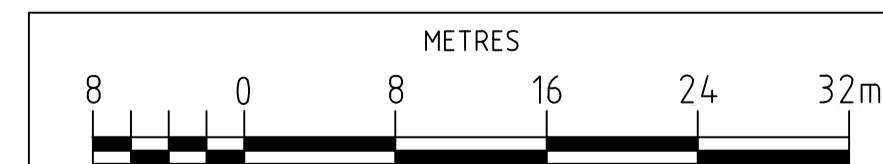
LEGEND

- EXISTING PAVEMENT
- VEHICLE TURNING PATH
- OUTSIDE FRONT WHEEL PATH



WASTE TRUCK

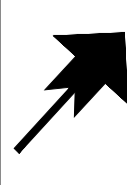
- Width : 2.50 meters
 Track : 2.50
 Lock to Lock Time : 4.0
 Steering Angle : 40.0



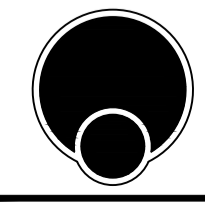
1:400

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NORTH POINT



No.	DATE	REVISION	BY
B	26.03.21	LOT BOUNDARY AMENDED & PATH UPDATED	M.M.
A	16.02.21	ISSUED FOR REVIEW	M.M.



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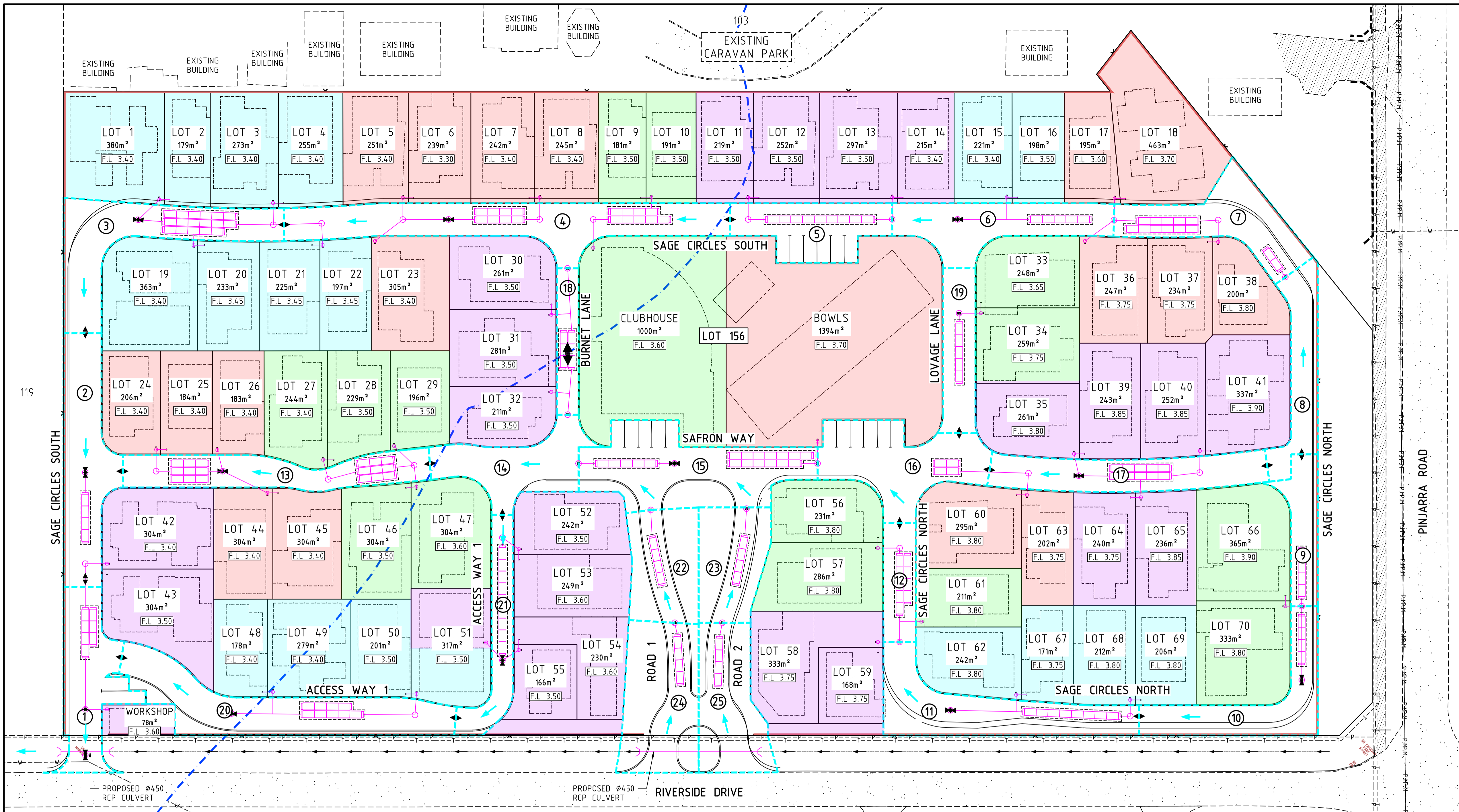
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 PO BOX 945 BALCATTA 6914
 P: 9240 6560 F: 9240 6561
 www.westcoastengineering.com.au
 ABN: 42 128 451 310

CLIENT:

PROVIDENCE FURNISSDALE

**DRAWING: LOT 156 (#607) PINJARRA ROAD
 FURNISSDALE
 WASTE TRUCK SWEEP PATH**

SCALE AS SHOWN	DRAWING No.	REV. No.
DATE 09.11.20	WE20/73-23	B
DRAWN M.M.	SHEET 1 OF 1 WAPC No -	
DESIGN M.M.	APPROVED FOR CONSTRUCTION	CAD FILE NO. WE20-73-23
CHECK J.D.		CAD DRAWING DO NOT MANUALLY ALTER



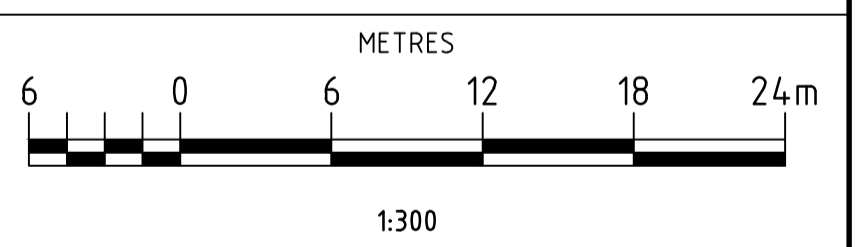
LEGEND

- EXISTING PAVEMENT
- EXISTING BITUMEN FOOTPATH
- PROPOSED DRAINAGE
- STORMTECH MODULES SC-740
- ROAD CATCHMENT AREA
- LOT CATCHMENT AREA
- HIGH POINT
- LOW POINT
- MANHOLE - FOR DETAILS SEE STANDARDS SOM
- GRATED PIT - FOR DETAILS SEE STANDARDS SOM
- FUTURE BUILDING LAYOUT
- AAMGL (ADJUSTED TO SEA LEVEL) 1.5m AHD
- OVERFLOW PATH FOR LARGE EVENTS

ROAD RUNOFF (1:100YR)

AREA NO.	AREA CONTRIBUTING (ha)	AREA EQUIVALENT (ha)	REQUIRED VOLUME (m ³)
1	0.0297	0.0267	4.51
2	0.0359	0.0323	5.14
3	0.0385	0.0347	6.26
4	0.0534	0.0481	7.83
5	0.0255	0.0230	4.37
6	0.0297	0.0267	4.51
7	0.0310	0.0279	4.58
8	0.0211	0.0190	3.26
9	0.0150	0.0135	2.25
10	0.0278	0.0250	4.15
11	0.0377	0.0339	5.52
12	0.0132	0.0119	2.16
13	0.0313	0.0282	4.58
14	0.0264	0.0238	4.08
15	0.0491	0.0442	7.28
16	0.0362	0.0326	5.95
17	0.0305	0.0275	4.49
18	0.0108	0.0097	1.71
19	0.0184	0.0166	2.71
20	0.0470	0.0423	7.12
21	0.0183	0.0165	2.71
22	0.0263	0.0237	4.08
23	0.0253	0.0228	4.37
24	0.0384	0.0346	6.26
25	0.0306	0.0275	4.49
TOTAL	0.7471	0.6727	114.37

NOTE:
0.90 COEFFICIENT FOR ROADS



WARNING!!
UNDERGROUND POWER, TELSTRA/BNB CABLES, WATER, SEWER, AND GAS IN THE VICINITY

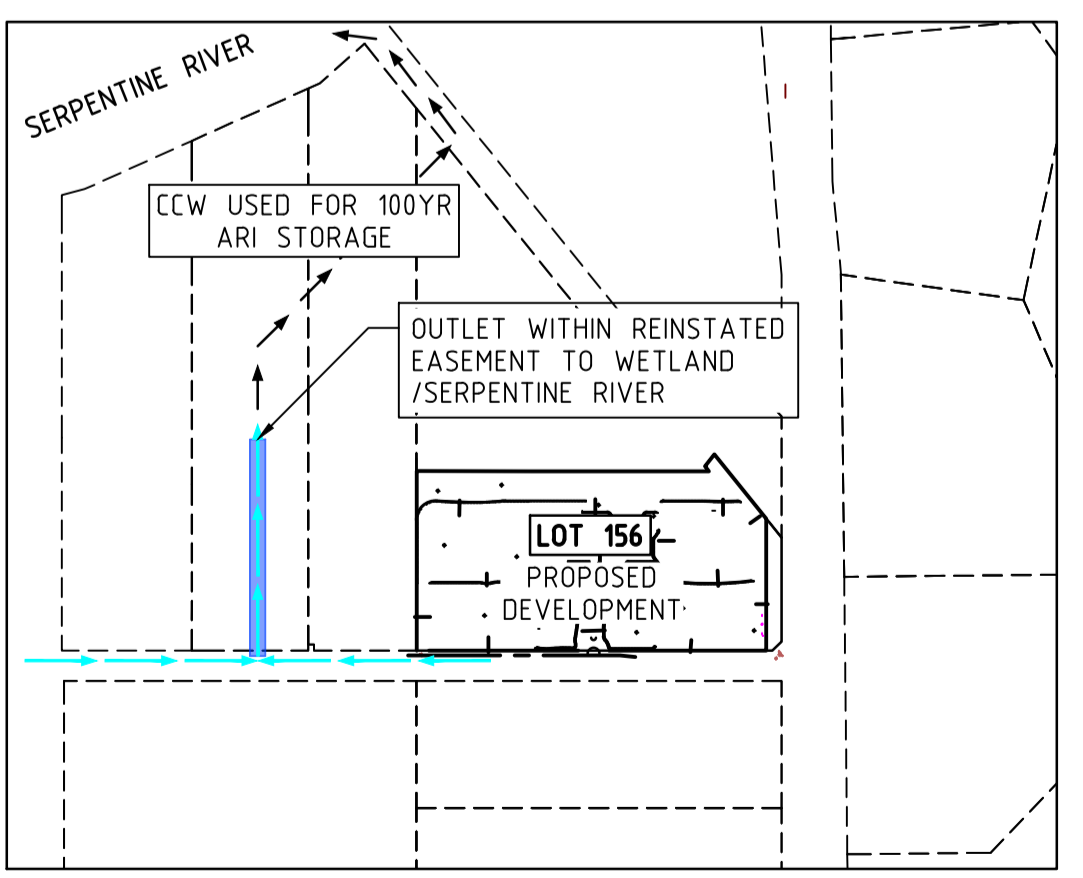
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LAYOUT PLAN
SCALE 1:400

STORMWATER STORAGE CALCULATIONS FOR LOTS 1:100 YR (1%) 12HR DURATION

LOT NO.	AREA (m ²)	ROOF AREA (m ²)	PAVED AREA (m ²)	STORAGE REQUIRED 1:100(m ³)	STORAGE REQUIRED FOR ROADS & LOTS (m ³)	TOTAL SC-740 CHAMBER PROVIDED	TOTAL STORAGE VOLUME PROVIDED (m ³)
LOT 1-4 & LOT 19-22	2016.9	1411.8	201.7	28.48m ³	34.74m ³	17	36.04m ³
LOT 5-8 & LOT 23	1282.0	897.4	128.2	18.24m ³	26.07m ³	13	27.56m ³
LOT 9,10 & CLUBHOUSE	1355.3	948.7	135.5	18.28m ³	18.28m ³ (LOT ONLY)	9	19.08m ³
BOWLS	1394.0	975.8	139.4	20.19m ³	26.14m ³	13	27.56m ³
LOT 11-14	983.1	688.2	98.3	13.61m ³	17.98m ³	9	19.08m ³
LOT 15-16	419.6	293.7	42.0	5.49m ³	10.0m ³	5	10.60m ³
LOT 17-18 & 36-38	1339.0	937.3	133.9	18.60m ³	23.18m ³	11	23.32m ³
LOT 24-26 & 44-45	1054.3	738	105.4	14.38m ³	18.96m ³	9	19.08m ³
LOT 27-29 & 46-47	1235.1	864.6	123.5	17.13m ³	17.13m ³ (LOT ONLY)	9	19.08m ³
LOT 30-32	754.0	527.8	75.4	9.76m ³	11.47m ³	6	12.72m ³
LOT 33-34	506.6	354.6	50.7	6.66m ³	9.37m ³	5	10.6m ³
LOT 35, 39-41 & 64-65	1567.7	1097.4	156.8	21.59m ³	26.08m ³	13	27.56m ³
LOT 42-43 & WORKSHOP	720.6	504.4	72.1	9.57m ³	14.08m ³	7	14.84m ³
LOT 48-51B	812.2	568.5	81.2	10.78m ³	17.9m ³	9	19.08m ³
LOT 51A-55	1122.4	785.7	112.2	15.21m ³	17.92m ³	9	19.08m ³
LOT 56-59 & 61	1274.9	892.5	127.5	16.5m ³	18.66m ³	9	19.08m ³
LOT 60 & 63	496.6	347.6	49.7	6.49m ³	6.49m ³ (LOT ONLY)	4	8.48m ³
LOT 62 & 67-69	829.0	580.3	82.9	10.89m ³	16.41m ³	8	16.96m ³
LOT 66 & 70	698.4	488.9	69.8	9.14m ³	15.54m ³	8	16.96m ³
TOTAL	19861.7m²	13903.2m²	5958.5m²	270.99m³	346.4m³	173 CHAMBERS	366.76m³

* ASSUMED PERMEABILITY RATE OF 5m/DAY * FOR PROPOSED LOT 1-69 (ASSUMED ROOF AREA = 0.7 x LOT AREA PAVED AREA = 0.1 x LOT AREA)



OVERFLOW DISCHARGE PLAN
SCALE 1:5000

DRAINAGE NOTES:

- THIS DRAWING TO BE READ IN CONJUNCTION WITH S.O.M STANDARD DRAWINGS AND DWG. WE20/73-31.
- ALL PVC PIPES TO BE CLASS SN8 UNLESS SHOWN OTHERWISE.
- GULLY'S TO HAVE GRATE ADJUSTED FOR PROPOSED PAVING AND HEAVY DUTY TRAFFICABLE LID COVER (TYP.).
- ALL GULLY'S TO BE INSTALLED TO SHIRE OF MURRAY SPECIFICATIONS & STANDARDS.
- STORMTECH UNDERGROUND STORAGE IS TO BE INSTALLED TO SPECIFICATIONS AND STANDARD DETAILS PROVIDED BY THE APPROVED MANUFACTURER, REFER TO DWG. WE20/73-31 FOR DETAILS.
- STORMWATER DRAINAGE BEDDING TO CONFORM TO THE SHIRE OF MURRAY STANDARDS.
- ALL MAIN DRAINAGE LINERS TO BE Ø1050 NOM. I.D. UNLESS INDICATED OTHERWISE.
- ALL PROPERTY CONNECTIONS TO BE TRAPPED 300mm MIN. SUBJECT TO S.O.M APPROVAL.
- THIS CONCEPT PLAN IS ONLY FOR PRESENTATION, NOT FOR CONSTRUCTION.

NOTES
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NO.	DATE	REVISION	BY
B	16.02.21	LOT LAYOUT & DRAINAGE AMENDED	M.M.
A	18.11.20	ISSUED FOR UWMP	M.M.

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PO BOX 945 BALCATTIA 6914
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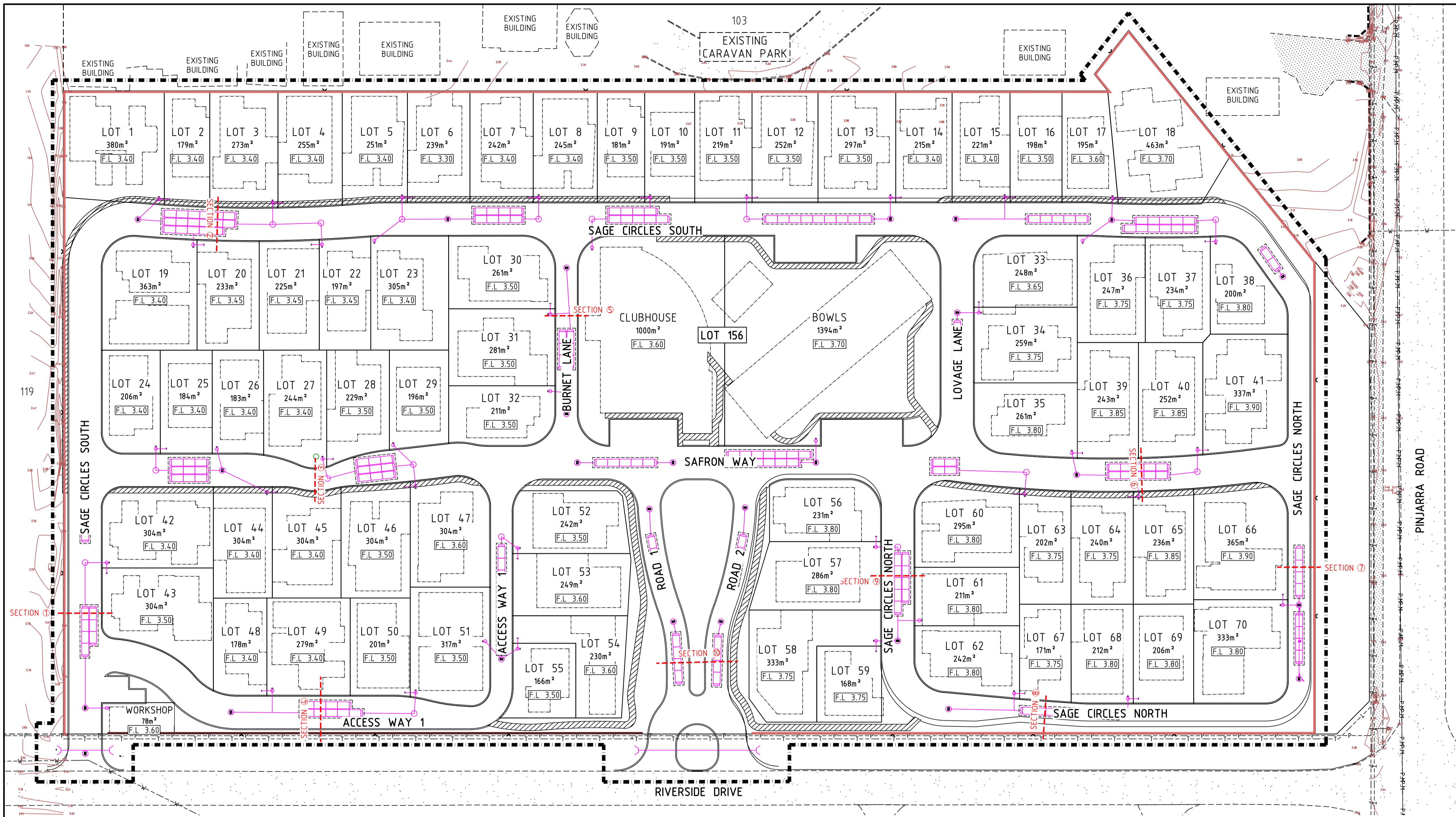
CLIENT: **PROVIDENCE FURNISSDALE**

DRAWING: **LOT 156 (#607) PINJARRA ROAD FURNISSDALE STORMWATER CONCEPT PLAN**

SCALE AS SHOWN
DATE 09.11.20
DRAWN M.M.
DESIGN M.M.
CHECK J.D.

DRAWING No. **WE20/73-30** REV. No. **B**

SHEET 1 OF 1 WAPC No. -
APPROVED FOR CONSTRUCTION
CAD FILE No. WE20-73-30
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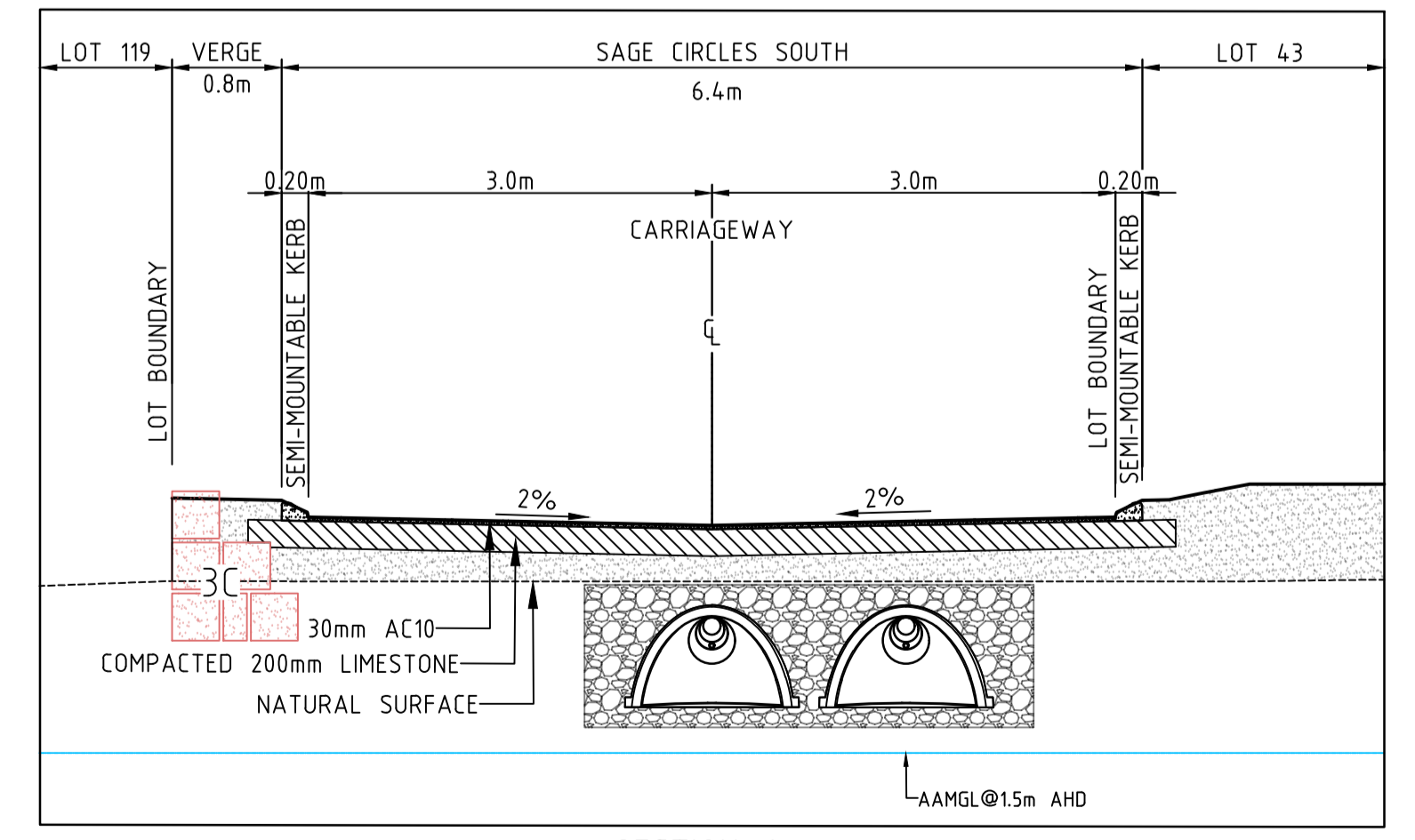
- LEGEND**
- EXISTING PAVEMENT
 - EXISTING BITUMEN FOOTPATH
 - NATURAL SURFACE CONTOUR(1.0m)
 - NATURAL SURFACE CONTOUR(0.2m)
 - NATURAL SURFACE SPOT LEVEL
 - FINISHED SURFACE SPOT LEVEL
 - FINISHED LOT LEVEL
 - EXTENT OF WORKS
 - EXISTING POWER
 - EXISTING WATER
 - EXISTING TELSTRA
 - EXISTING POWER LIGHT POLE
 - FACE OF RETAINING WALL
 - PROPOSED LIMESTONE RETAINING WALL
 - EXISTING TREES TO BE RETAINED & CONFIRM ON SITE
 - EXISTING FENCE

PRELIMINARY ONLY

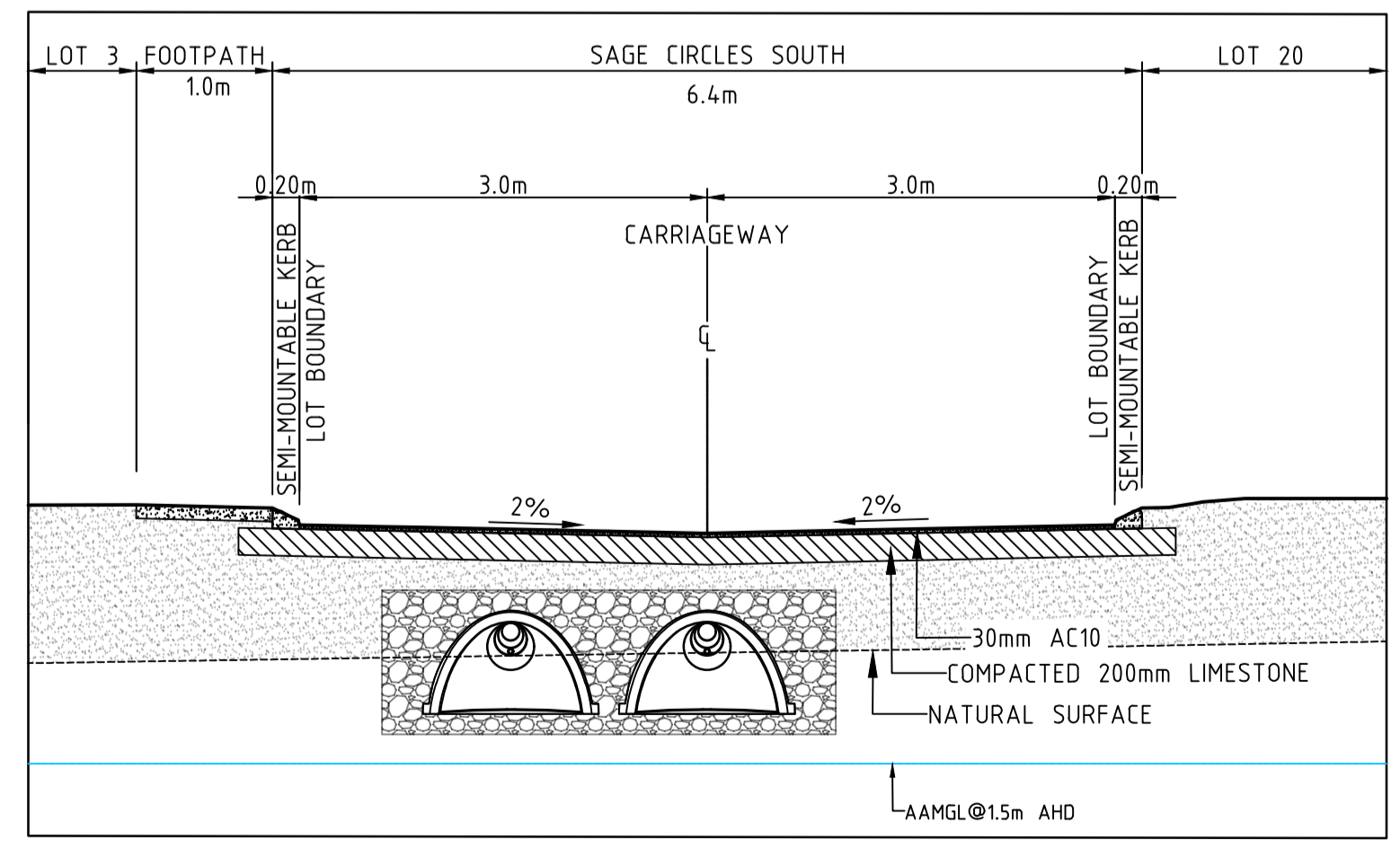
GENERAL NOTES

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH DWG WE20/73-12.

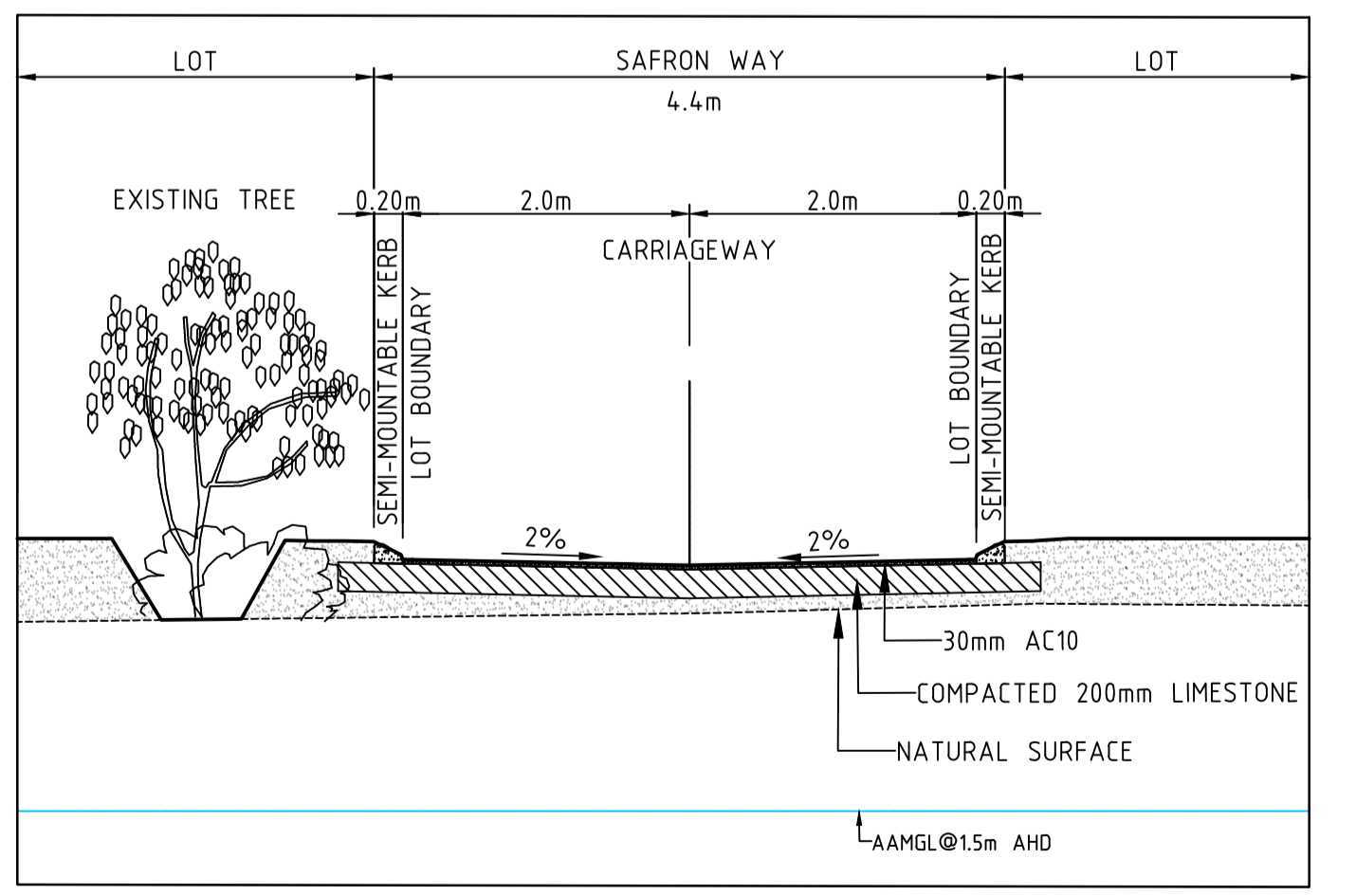
LAYOUT PLAN
SCALE 1:400



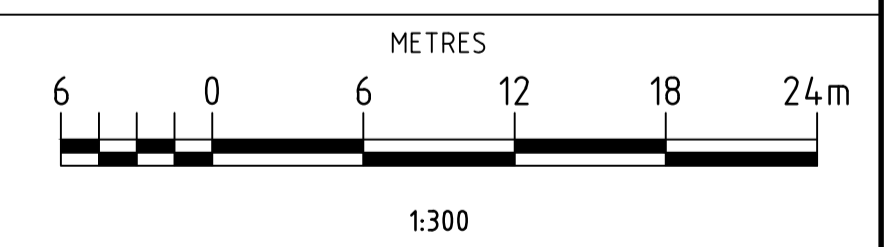
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HORIZONTAL SCALE 1:50
VERTICAL SCALE 1:50



SECTION 2
HORIZONTAL SCALE 1:50
VERTICAL SCALE 1:50



SECTION 3
HORIZONTAL SCALE 1:50
VERTICAL SCALE 1:50

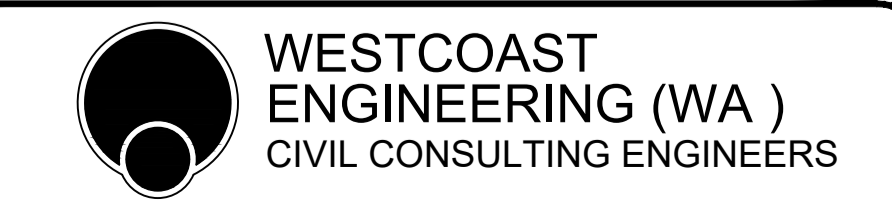


WARNING!!
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NORTH POINT			
No.	DATE	ISSUED FOR REVIEW	REVISION
A	16.02.21		
			J.C. BY

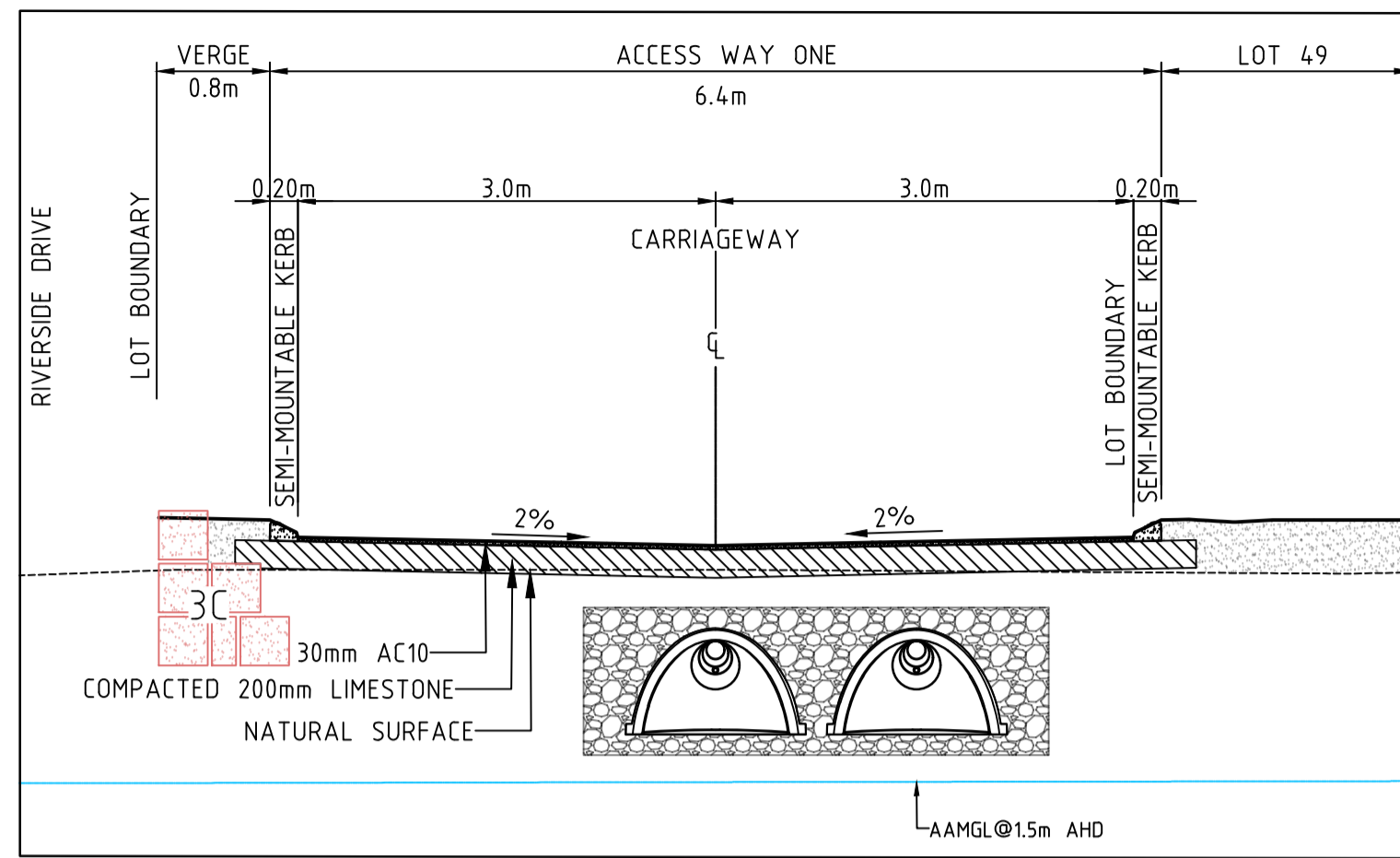


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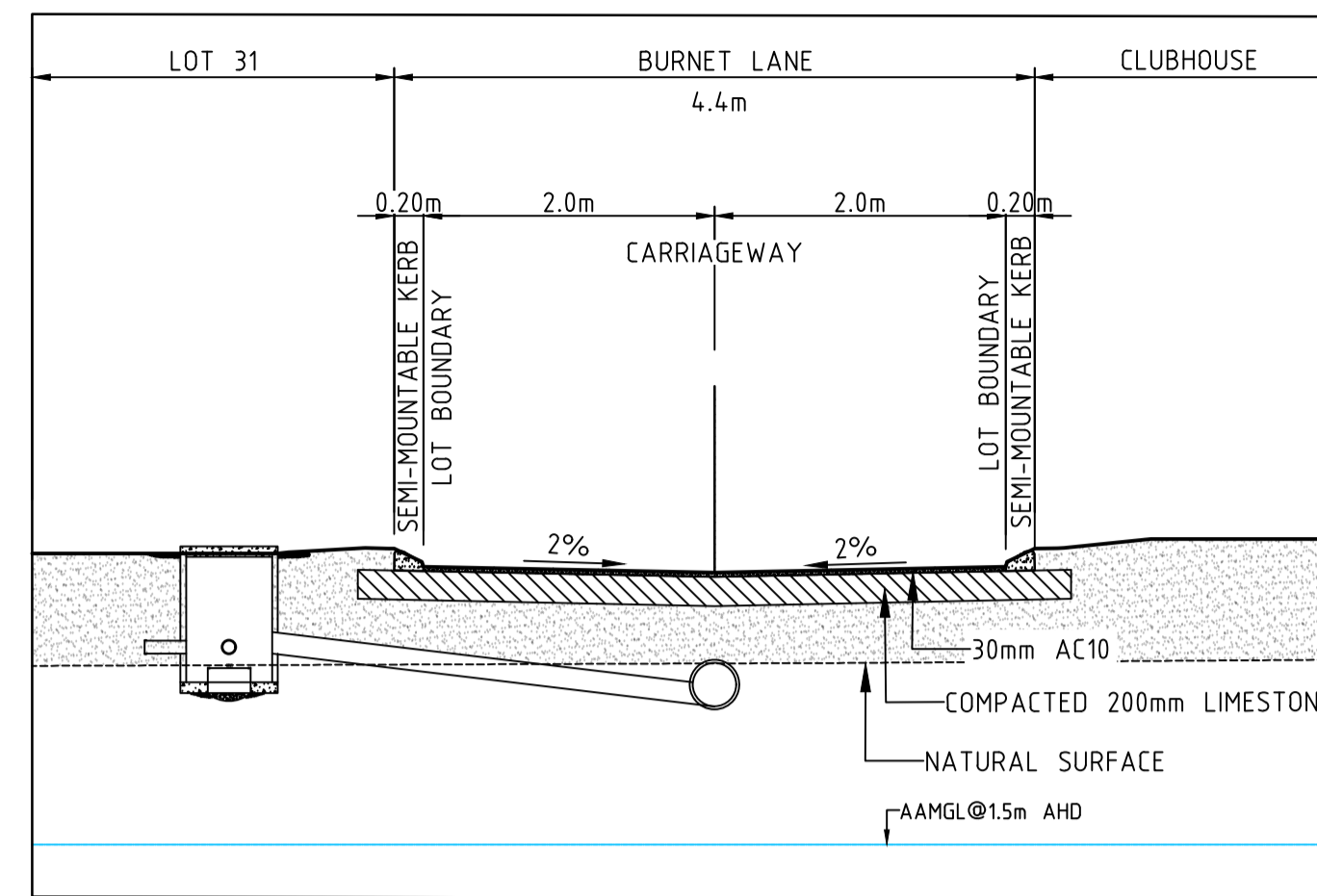
CLIENT: **PROVIDENCE FURNISSDALE**

DRAWING: **LOT 156 (#607) PINJARRA ROAD FURNISSDALE CROSS SECTION PLAN 1**

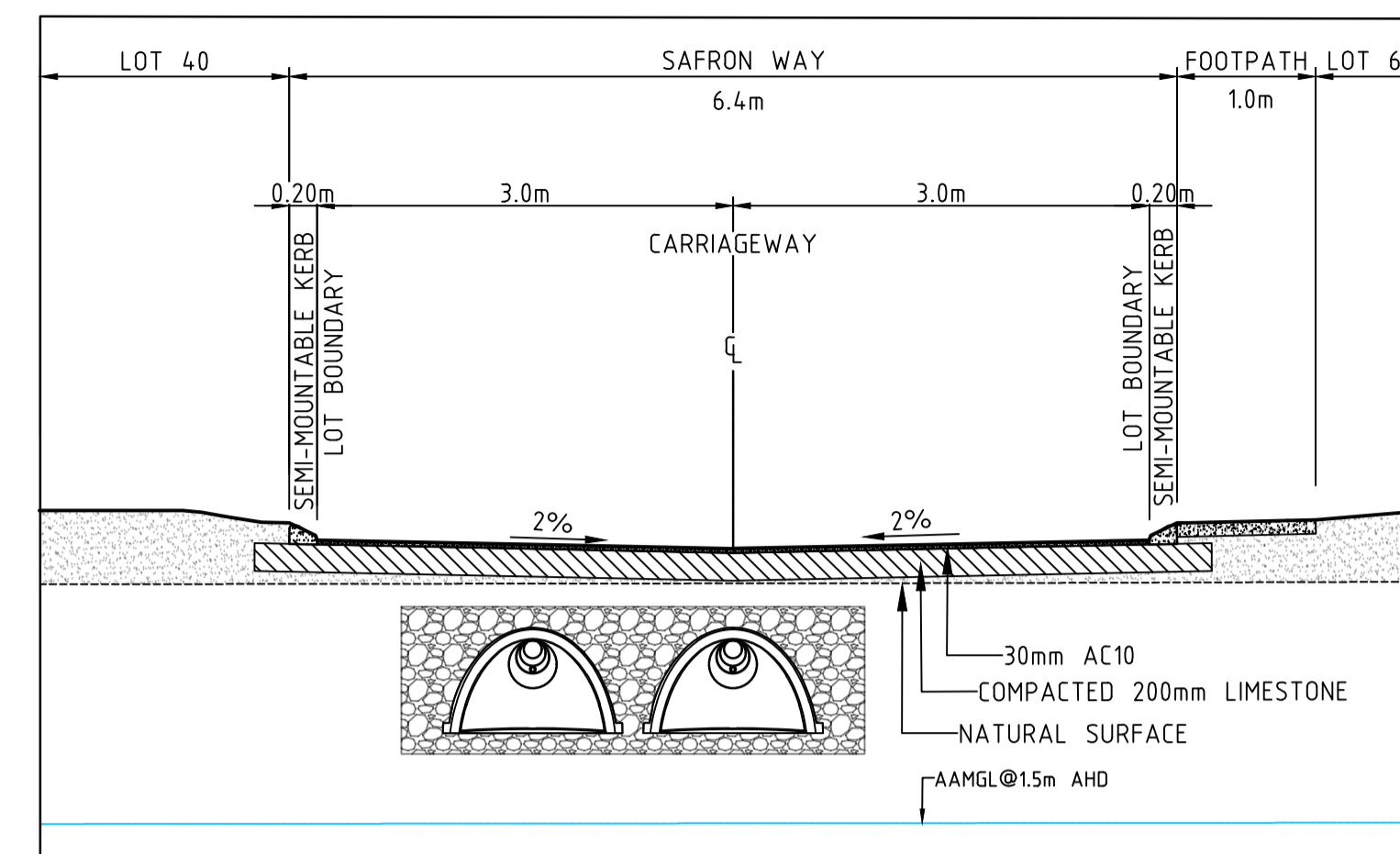
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DATE 15.02.21	WE20/73-11	A
DRAWN J.C.	SHEET 1 OF 1	WAPC No. -
DESIGN M.M.	APPROVED FOR CONSTRUCTION	CAD FILE No. WE20-73-10
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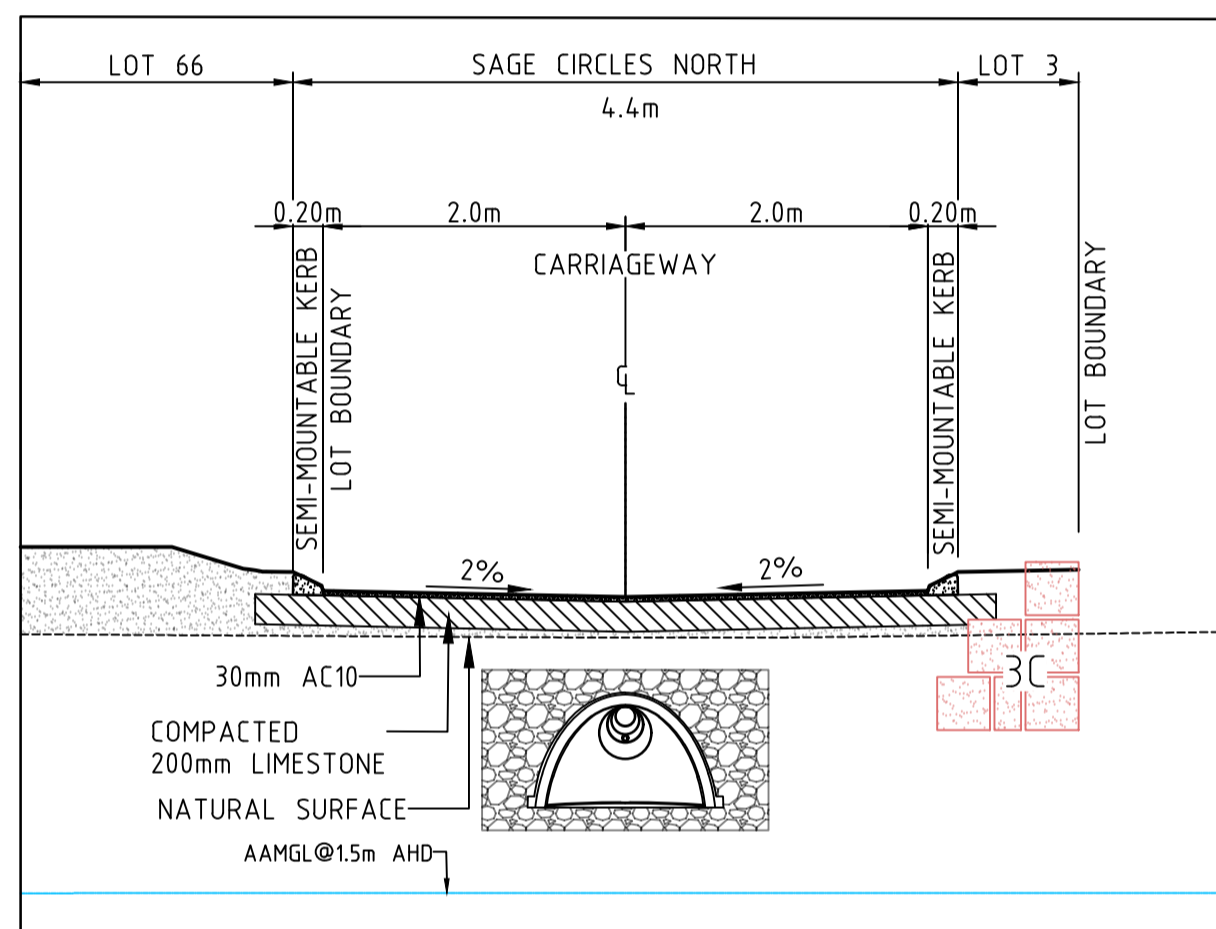
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HORIZONTAL SCALE 1:50
VERTICAL SCALE 1:50



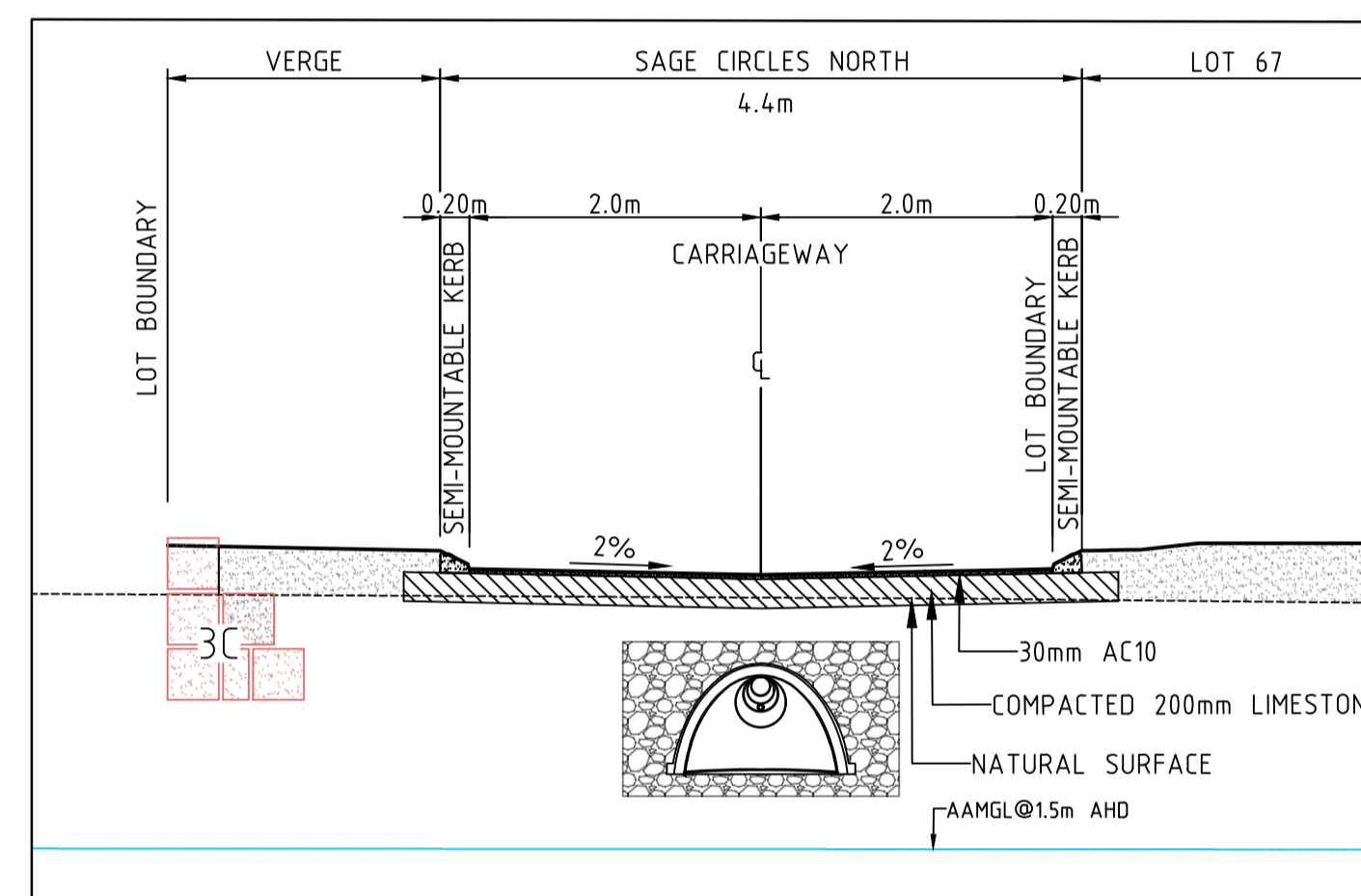
SECTION 5
HORIZONTAL SCALE 1:50
VERTICAL SCALE 1:50



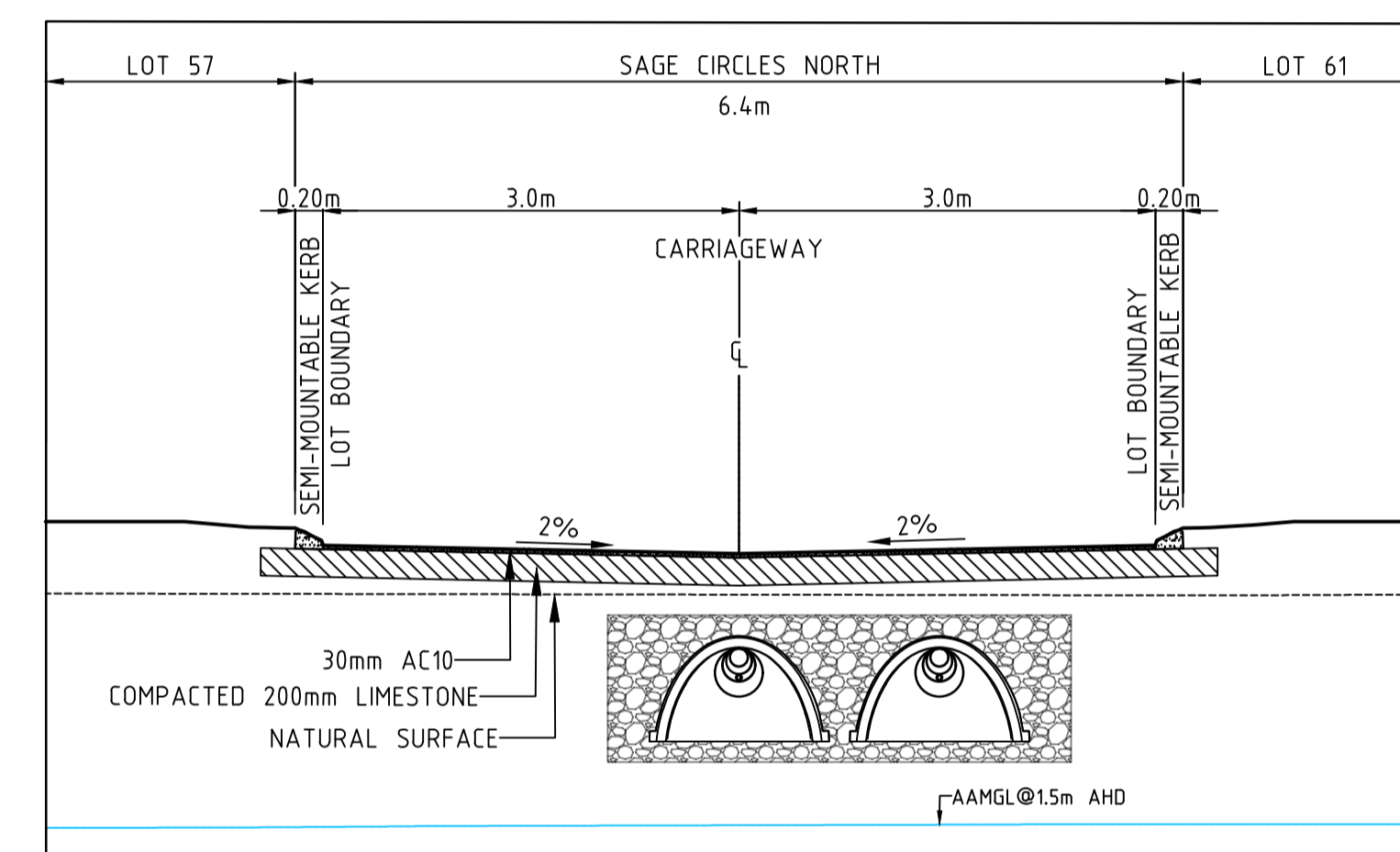
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HORIZONTAL SCALE 1:50
VERTICAL SCALE 1:50



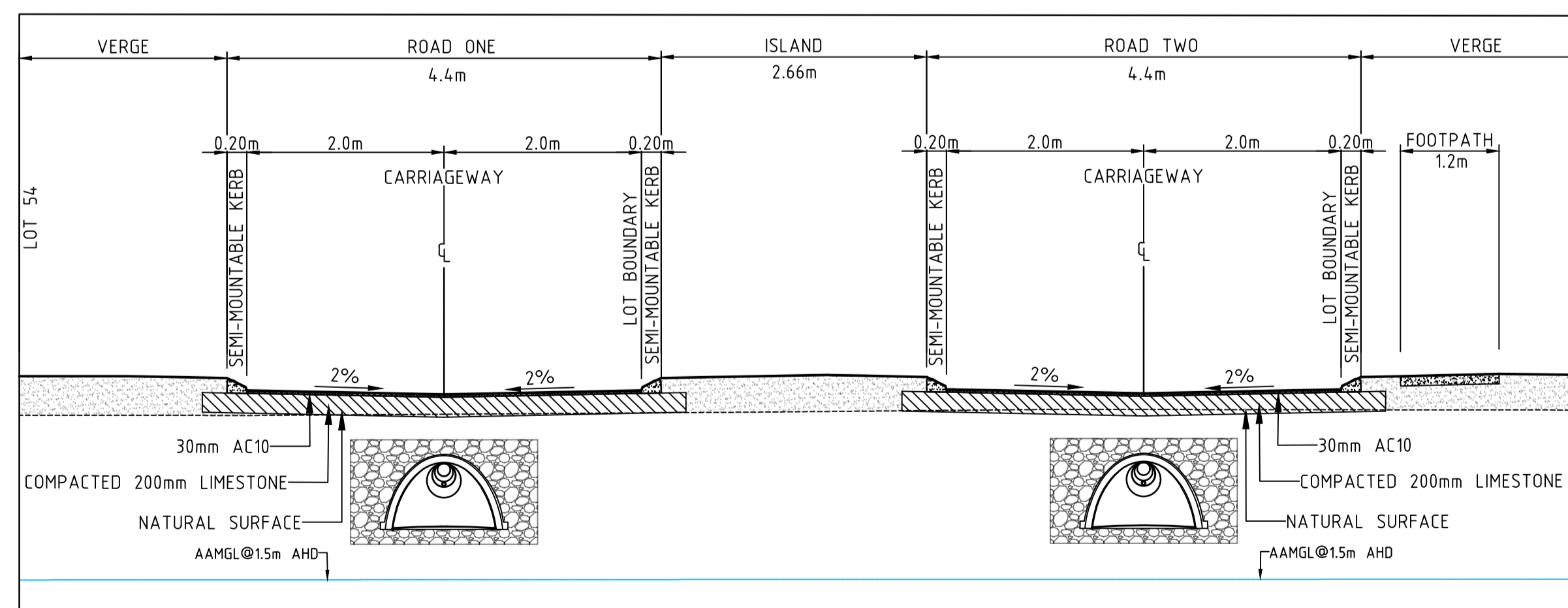
SECTION 7
HORIZONTAL SCALE 1:50
VERTICAL SCALE 1:50



SECTION 8
HORIZONTAL SCALE 1:50
VERTICAL SCALE 1:50



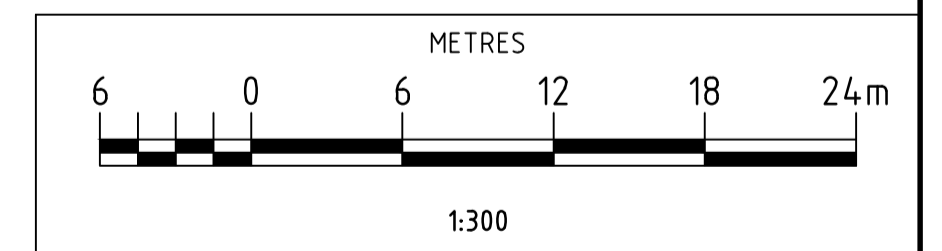
SECTION 9
HORIZONTAL SCALE 1:50
VERTICAL SCALE 1:50



SECTION 10
HORIZONTAL SCALE 1:50
VERTICAL SCALE 1:50

GENERAL NOTES

- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH DWG WE20/73-11.



WARNING!!
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TELSTRA/NBN CABLES, WATER,
SEWER, AND GAS IN THE
VICINITY

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No.	DATE	ISSUED FOR REVIEW	REVISION	J.C.	BY
A	16.02.21				J.C.

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CLIENT: **PROVIDENCE FURNISSDALE**

DRAWING: **LOT 156 (#607) PINJARRA ROAD FURNISSDALE CROSS SECTION PLAN 2**

SCALE AS SHOWN	DRAWING No.	REV. No.
DATE 15.02.21	WE20/73-12	A
DRAWN J.C.	SHEET 1 OF 1	IWAPC No. -
DESIGN M.M.	APPROVED FOR CONSTRUCTION	CAD FILE NO. WE20-73-10
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15 October 2020

Mr Martin Bowman
Managing Director
Bowman and Partners Environmental
PO Box 235
Subiaco WA 6904

Re: **Tree inspection – Lot 156 Pinjarra Road, Furnissdale**

Dear Martin

Terrestrial Ecosystems is pleased to provide the outcomes of a tree inspection completed at Lot 156 Pinjarra Road, Furnissdale. The lot is on the south-west corner of Pinjarra Rd and Riverside Road, Furnissdale ('project area').

On 15 October 2020, Dr Scott Thompson and Georgia Ford undertook an assessment of two trees to determine if they were being utilised by Black-Cockatoos. The assessment was undertaken from the ground. Binoculars were used to assess the opening of each hollow and a camera mounted on an extension pole was utilised to examine the entrance and inside of each potential hollow. The location of each tree is shown in Figure 1.

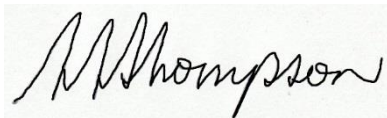
There were numerous small potential hollows in Tree 1 (Plate 1) and one larger hollow. The small hollows were either too small for Black-Cockatoos or contained a beehive (Plate 2). The slightly larger hollow entrance showed historical use by a Galah or Australian Ringneck Parrot (i.e. chewed entrance; Plate 3). The hollow is too small for Black Cockatoos, and there were no chicks or hollow utilisation at the time of the assessment.

Tree 2 (Plate 4) was dead and contained numerous hollows. The terminal stag on the main trunk showed evidence of parrot/cockatoo use (i.e. chewed entrance; Plate 5) and a hollow entrance, 2m below the terminal end had down feathers at the entrance (Plate 6). No chicks or nest were evident using the camera pole and no birds were flushed when the tree was scratched and rubbed. The terminal hollow is approximately 10m high. Based on the absence of a bird in the hollow incubating or tending to chicks and the presence of down feathers at the entrance it is likely that the breeding has occurred, and the chick(s) have fledged.

Terrestrial Ecosystems recommends that Tree 2 is reinspected immediately prior to clearing and that a zoologist is present when it is cleared to ensure that there is no late season nesting.

Please do not hesitate in contacting the undersigned (0407 385 239) or Graham (0438 491 227), if you require any further information regarding this report.

Yours sincerely



Dr Scott Thompson
Partner and Principal Zoologist



Plate 1. Tree 1



Plate 2. Small hollows with bees



Plate 3. Small hollow with evidence of historical bird use by parrots



Plate 4. Tree 2

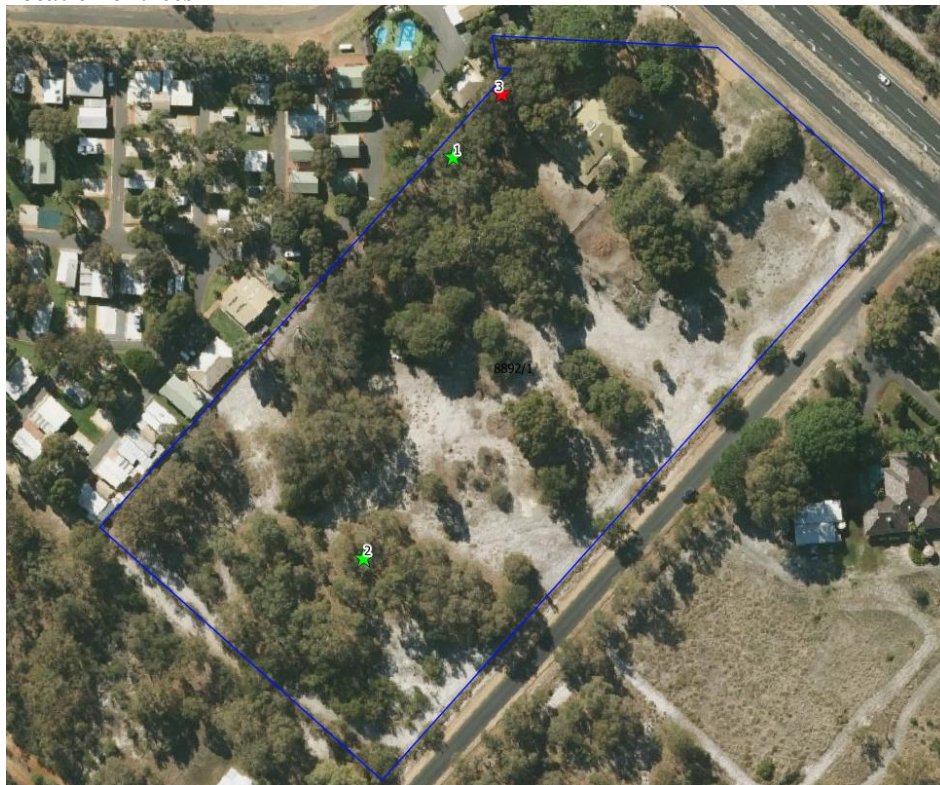


Plate 5. Terminal hollow



Plate 6. Hollow with down feathers

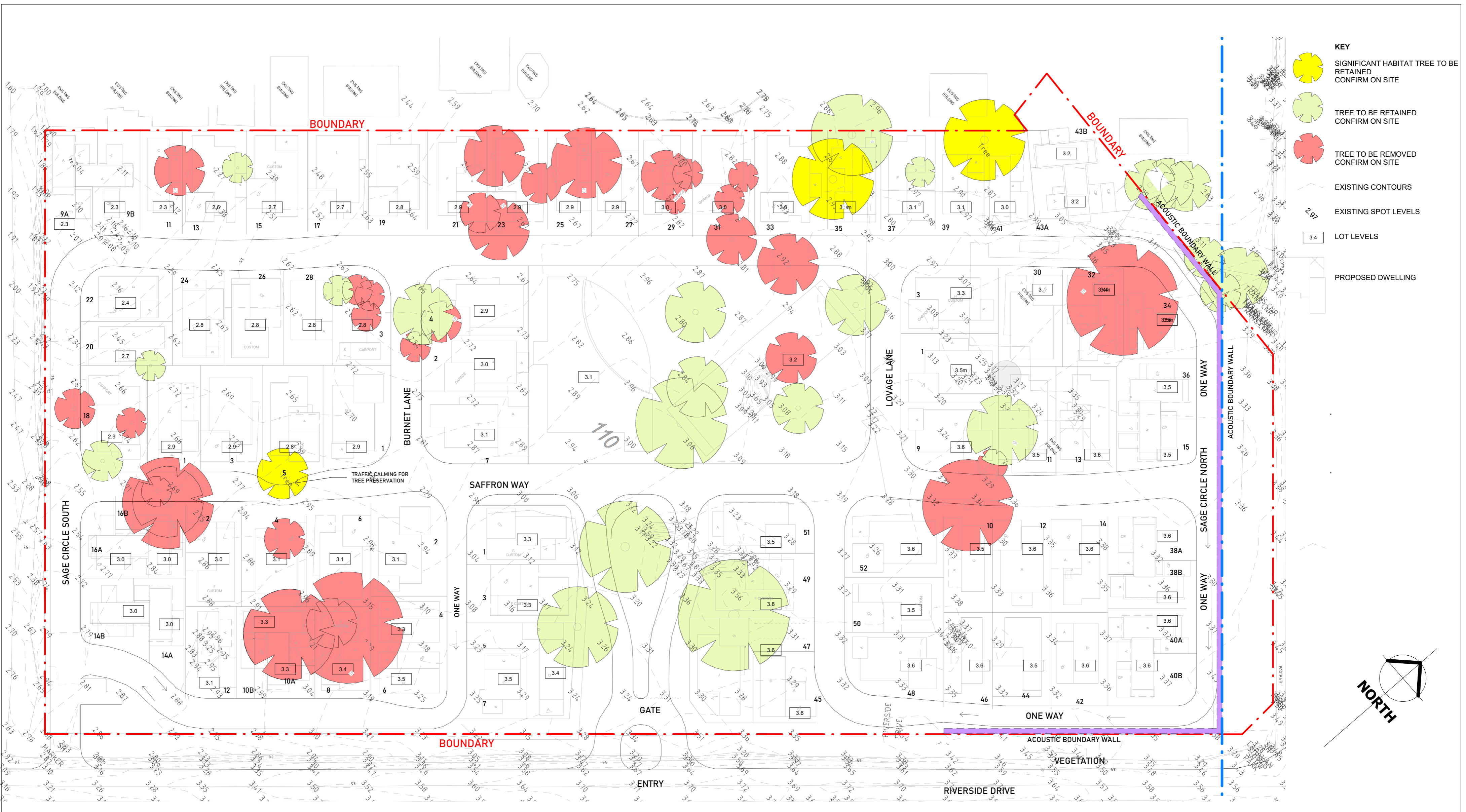
Figure 1. Location of trees



Disclaimer:

This document is prepared in accordance with and subject to an agreement between Terrestrial Ecosystems and the client, Bowman and Partners Environmental. It has been prepared and is restricted to those issues that have been raised by the client in its engagement of Terrestrial Ecosystems and prepared using the standard of skill and care ordinarily exercised by environmental scientists in the preparation of such reports.

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- KEY**
- SIGNIFICANT HABITAT TREE TO BE RETAINED
CONFIRM ON SITE
 - TREE TO BE RETAINED
CONFIRM ON SITE
 - TREE TO BE REMOVED
CONFIRM ON SITE
 - EXISTING CONTOURS
 - EXISTING SPOT LEVELS
 - LOT LEVELS
 - ▭ PROPOSED DWELLING



RICHARD HAMMOND ARCHITECT
16/342 SOUTH TERRACE, SOUTH FREMANTLE
0438 918 753 | richard@hrarchitects.com.au

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No.	Description	Date
12	Revision 10 - Site Feature Survey added to Masterplan	20.10.26

PROVIDENCE MANDURAH
607 PINJARRA RD
FURNISSDALE

TREE RETENTION		A2.03
Project number	-	
Date	20.10.26	
Drawn by	RHA	
Checked by	RHA	
Scale@A2		1 : 500



ROWE
GROUP

Job Ref: 5227
17 December 2020

Chief Executive Officer
Shire of Murray
Sent via email - mailbag@murray.wa.gov.au

Attn: Mr Rod Peake – Director of Planning and Sustainability

Dear Sir,

**RE: Submission on Proposed Grouped Dwelling Development
Lot 156 (No. 528) Pinjarra Road, Furnissdale**

We act on behalf of Mr Greg Kendall, being a Director of Loxleigh Pty Ltd which owns Lot 1186 (No.155) Ronlyn Road and Lot 1187 (No.167) Ronlyn Road in Furnissdale. We provide this correspondence as a submission on the above-mentioned proposed development.

We advise that our Client is generally supportive of the proposal but provides the following specific request with respect to ensuring that the Developer Contribution obligations are met by the developer of the land at the time that the proposal is implemented.

As you would be aware, our Client's landholdings, together with the landholding that is the subject of the Development Proposal, are all contained within the Furnissdale West Structure Plan. Additionally, all of the allotments are contained within a Development Contribution Plan area (DCA4), as listed in Schedule 13 of the Shire of Murray Local Planning Scheme No. 4. It is essential that the developer contribution payments are obtained by the Shire to ensure that an equitable cost sharing is achieved and that implementation of development across the whole structure plan area proceeds in an orderly fashion.

We note that the documentation submitted in support of the Development Application does not reference the fact that the land falls within the Developer Contribution Area. Notwithstanding this observation, we request that the Shire seeks a suitable Condition on the Development Approval requiring the satisfaction of the obligation for the payment of funds in relation to the Developer Contributions. We acknowledge that there may be a requirement for

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Western Australia

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f: 08 9221 1919
info@rowegroup.com.au
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the Developer to enter into a suitable agreement with the Shire necessitating the payment of Developer Contribution Funds at an appropriate future date.

We trust that the abovementioned request in relation to the Developer Contributions is accommodated and is pursued by the Shire.

Should you have any queries, or should you require any clarification in relation to this matter, do not hesitate to contact the undersigned.

Yours faithfully,

George Hajigabriel
Rowe Group

CC : Loxleigh Pty Ltd



ROWE
GROUP

Job Ref: 5227
17 December 2020

Chief Executive Officer
Shire of Murray
Sent via email - mailbag@murray.wa.gov.au

Attn: Mr Rod Peake – Director of Planning and Sustainability

Dear Sir,

**RE: Submission on Proposed Grouped Dwelling Development
Lot 156 (No. 528) Pinjarra Road, Furnissdale**

We act on behalf of Mr Keith Gears, being a Director of Coode Pty Ltd which owns Lot 183 (No.123) Ronlyn Road, Lot 185 (No.137) Ronlyn Road, Lot 198 (No.155) Ronlyn Road, and lot 180 (No.182) Riverside Road in Furnissdale. We provide this correspondence as a submission on the above-mentioned proposed development.

We advise that our Client is generally supportive of the proposal but provides the following specific request with respect to ensuring that the Developer Contribution obligations are met by the developer of the land at the time that the proposal is implemented.

As you would be aware, our Client's landholdings, together with the landholding that is the subject of the Development Proposal, are all contained within the Furnissdale West Structure Plan. Additionally, all of the allotments are contained within a Development Contribution Plan area (DCA4), as listed in Schedule 13 of the Shire of Murray Local Planning Scheme No. 4. It is essential that the developer contribution payments are obtained by the Shire to ensure that an equitable cost sharing is achieved and that implementation of development across the whole structure plan area proceeds in an orderly fashion.

We note that the documentation submitted in support of the Development Application does not reference the fact that the land falls within the Developer Contribution Area. Notwithstanding this observation, we request that the Shire seeks a suitable Condition on the Development Approval requiring the satisfaction of the obligation for the payment of funds in relation to the Developer Contributions. We acknowledge that there may be a requirement for

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the Developer to enter into a suitable agreement with the Shire necessitating the payment of Developer Contribution Funds at an appropriate future date.

We trust that the abovementioned request in relation to the Developer Contributions is accommodated and is pursued by the Shire.

Should you have any queries, or should you require any clarification in relation to this matter, do not hesitate to contact the undersigned.

Yours faithfully,

George Hajigabriel

Rowe Group

CC : Coode Pty Ltd



Wed 6/01/2021 9:45 AM

Mark Blazey <smudgie61@yahoo.com.au>

Proposed dwelling development 528 Pinjarra Road, Barragup

To  Shire of Murray

Hello,

I am providing you with my input with regards to this proposal.

My husband and I have lived here for nearly 30 years and have seen many changes. We appreciate that there needs to be homes for the growing population, but feel this is not the area for it.

With the river so close by, it is a fragile area and the extra traffic will not do it any favours. At present with the holidays, the boat traffic has increased and the wash of the boats is doing more damage. The rubbish left behind at the small reserve under the Serpentine bridge always increases and more people are sleeping there overnight or quite a few nights.

Even this morning I have picked up plastic bags from the river, whilst paddling and this is why I have responded.

There is an increase in traffic due to the population already and with the Spud shed in this area, it has increased it more. Adding more dwellings obviously will again increase the traffic. Another traffic issue at present is the increasing unlicensed motor bikes in the area and again bringing in more people, who view this as a semi-rural area, may increase this problem.

Barragup already has an issue with crime and again bringing in extra people, with not much to do, could increase issues in this area.

Thank you for considering my request.

Lynne Blazey
53 Husband Road
Barragup

Sent from my iPad



TO: Chief Executive Officer
Post to: PO Box 21, Pinjarra WA 6208
Email to: mailbag@murray.wa.gov.au
Reference:

Submission

Proposed Group Dwelling Development – Lot 156 No. 528 Pinjarra Road, Furnissdale

Submissions required by 15th January 2021.

Before completing this form, please refer to privacy statement at bottom of page

Name: KAREN DRAPER Email: beachhouseart@bigpond.com
Postal Address: 30A PANAMUNA DRIVE, FALCON 6210 Phone: 0400207268

Subject of Submission (State how your interests are affected, whether as a private citizen, on behalf of a company or other organisation, or as an owner or occupier of property)

PART OWNER OF PROPERTY

Address of Property Affected: (Include lot number and nearest street intersection)

LOT 156 #528 PINJARRA RD CNR RIVERSIDE DRIVE FURNISSDALE

Submission: (Give in full your comments and any arguments supporting your comments - continue on additional sheets if necessary)

THE PROPOSED DEVELOPMENT WILL BE VERY GOOD FOR THIS CURRENTLY DEPRESSED AREA. THE FLOW ON TO OTHER BUSINESSES IN THE AREA & FURTHER DEVELOPMENT WILL BRING INCREASED EMPLOYMENT & GROWTH. THE PROPOSED DEVELOPMENT WILL PROVIDE MUCH NEEDED AFFORDABLE HOUSING FOR OVER 55'S IN A PLEASANT WOODLAND SETTING CLOSE TO ALL DESIRED AMENITIES & WILL BE AN ASSET TO THE SHIRE OF MURRAY COMMUNITY.

Signature: Karen Draper Date: 12/1/21

PRIVACY STATEMENT

Please note: The Shire of Murray is subject to the Freedom of Information Act 1992 and as such, submissions may be subject to applications for access under the Act. Copies of your submission, including name and address may be made public and included in the minutes of Committee/Council meetings unless otherwise requested that this not occur.

Your Ref: PI03/156 A3465
Our Ref: 107036469 - DEV372160
Enquiries: Kevin Purcher
Direct Tel: 9420 2385
Email: land.planning@watercorporation.com.au

07 January 2021

Chief Executive Officer
Shire of Murray
PO BOX 21
PINJARRA WA 6208

Attention of: Rod Peake

**Re: Proposed Group Dwelling Development - Lot 156 No 528 Pinjarra Road
Furnissdale**

Thank you for your letter dated 30 November 2020. We offer the following comments regarding this proposal.

It should be noted that the Final DA Report attached to the proposal is **not** correct and should **not** be accepted in its current state. The statements made under section - 6.0 Existing and Proposed Infrastructure Servicing – 6.2 Sewer Connection - does not represent the servicing situation and should be changed. The following should be considered in formulating a new statement.

Wastewater

There is no permanent pump station for the catchment the subject area falls within. To be serviced the development should have headworks infrastructure constructed in the form of the Barragup WWPS 'C'. This headworks infrastructure is planned to be constructed in the 2023/2024 financial year on land to the south east of the subject land. The headworks infrastructure may be required to be constructed as part of the development process of this or other proposed developments in the surrounding area. Consideration must be made to the location of this proposed pump station.

Any alternative wastewater servicing proposal has not been fully investigated and there is no in principle agreement as stated in the report.

Water

Reticulated water is currently available to the subject area. All water main extensions, if required for the development site, must be laid within the existing and proposed road reserves, on the correct alignment and in accordance with the Utility Providers Code of Practice.

The proposed water servicing strategy outlined in the report will need to be further refined by the developer's consultant engineers at the development stage in consultation with our Land Servicing Section.

General Comments

This proposal will require approval by our Building Services section prior to commencement of works. Infrastructure contributions and fees may be required to be paid prior to approval being issued.

For further information about building applications, please use the following link:
<https://www.watercorporation.com.au/Developing-and-building/Building/Lodging-a-building-application>

The developer is expected to provide all water and sewerage reticulation if required. A contribution for water and sewerage headworks may also be required. In addition, the developer may be required to fund new works or the upgrading of existing works and protection of all works.

The information provided above is subject to review and may change. If the proposal has not proceeded within the next 6 months, please contact us to confirm that this information is still valid.

Please provide the above comments to the landowner, developer and/or their representative.

Should you have any queries or require further clarification on any of the above issues, please do not hesitate to contact the Enquiries Officer.



Kevin Purcher
Senior Planner
Development Services

From: [Zia, Sabreen](#)
To: [Shire of Murray](#)
Subject: PI03/156 A3465 Proposed Group Dwelling Development - Lot 156 No. 528 Pinjarra Road, Furnissdale
Date: Thursday, 10 December 2020 10:40:20 AM
Attachments: [image003.jpg](#)

Dear Shire of Murray,

Thank for your referring the development application for Lot 156 Pinjarra Road to the Public Transport Authority (PTA) for review and comment. The PTA confirms the bus route 600 is within the walkable catchment from the subject site. The PTA supports increasing residential densities and developing mixed land-use in the vicinity of existing transport nodes, as this helps to increase patronage on the Transperth network.

The PTA noted that under section 6.7 of the Development Application, there is a reference to 'extending bus services following residential subdivision on land to the South'. To clarify, the bus route 600 will not be extended further south. This route is currently operating on the alignment in line with long-term plans to expand the bus network. However, Transperth does have preliminary plans to introduce new routes to service Furnissdale should further land-use intensification be realised in the area. Introducing new bus routes in Furnissdale is a long-term eventuality, and will be subject to funding and resource allocation, residential densities in the area and a suitable road network.

Please feel free to contact me if you have any questions in relation to the above comments.

Kind regards,
Sabreen

Sabreen Zia
Service Planner | Transperth Service Development
Level 1, Public Transport Centre, West Parade, Perth 6000
Tel: (08) 9326 3674 Email: sabreen.zia@pta.wa.gov.au | Web:
www.transperth.wa.gov.au



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Government of Western Australia
Department of Health

Your Ref: PI03/156 A3465
Our Ref: F-AA-01672 D-AA-20/209101
Contact: Vic Andrich 9222 2000

Mr Dean Unsworth
Chief Executive Officer
Shire of Murray
PO Box 21
PINJARRA WA 6849

Via email to: mailbag@murray.wa.gov.au

Dear Mr Unsworth

PROPOSED GROUP DWELLING DEVELOPMENT – LOT 156 (#528) PINJARRA ROAD, FURNISSDALE

Thank you for your letter of 30 November 2020 requesting comments from the Department of Health (DOH) on the above proposal. The DOH provides the following comments:

The development is required to connect to scheme water and reticulated sewerage and be in accordance with *the Government Sewerage Policy 2019*.

DOH has a document on '*Evidence supporting the creation of environments that encourage healthy active living*' which may assist you with planning elements related to this development. A copy is attached or may be downloaded from:
https://ww2.health.wa.gov.au/Articles/F_I/Health-risk-assessment

The proposal is located in an area that may be prone to mosquitoes as wetlands are in the vicinity. Stormwater management infrastructure to be in accordance with the Department of Water publication *Stormwater Management Manual for Western Australia*, to your satisfaction:

http://www.water.wa.gov.au/data/assets/pdf_file/0020/4772/44217.pdf

Additional information on mosquito management may be downloaded from:
http://ww2.health.wa.gov.au/Articles/J_M/Mosquito-management

Should you have any queries or require further information please contact Vic Andrich on 9222 2000 or ehinfo@health.wa.gov.au

Yours sincerely



Dr Michael Lindsay
EXECUTIVE DIRECTOR
ENVIRONMENTAL HEALTH DIRECTORATE

17 December 2020

Att: Evidence supporting the creation of environments that encourage healthy active living



Evidence supporting the creation of environments that encourage healthy active living

This evidence brief summarises the literature supporting the creation of environments that encourage healthy active living. It is designed to be used by State and Local Governments and developers, seeking to create new or redevelop existing neighbourhoods. It is structured according to six key components of urban development, and includes a rationale for action and a summary of the key design elements that have demonstrated effectiveness in increasing healthy active living.

The way in which our neighbourhoods and cities are designed can have a profound impact on the degree to which people can live healthy lifestyles (particularly in relation to active living and access to fresh and healthy food). Creating supportive built environments is well recognised as a means of improving health and wellbeing, whilst also contributing to a reduction in traffic congestion and parking problems, and improved social and environmental outcomes.

The Department of Health supports the incorporation of healthy design elements into urban development that encourage healthy active living. Design elements that are supported by current evidence are described below. Further information on each design element and the evidence base supporting these can be found at www.healthyactivebydesign.com.au

Mixed Land Use

The location of different land uses and destinations relative to each other has a large impact on how accessible they are and how people travel to and between different places¹. A good land use mix enables residents to fulfil a variety of daily activities where they live, work and play (e.g. shopping precincts, schools, employment, community spaces, recreation facilities and open spaces). The more of these land uses and destinations that exist within walking distance, the more likely residents are to walk, cycle or use public transport to get to those places^{2,3}.

Convenient access to fresh and healthy food can improve healthy eating⁴⁻⁶. Land use planning can impact on all parts of the 'paddock to plate' food chain (growing/producing, processing, transporting, distributing and selling food) which in turn affects the supply, access and cost of fresh and healthy food for the community⁷⁻⁹.

Design Elements

- Developments should have a compact mix of land uses and groupings of destinations within walking distance of most residents^{3, 10-15}. Key destinations include retail, fresh and healthy food outlets, public open space, services, sport and recreation, local employment, schools, and community facilities.
- To ensure the availability and accessibility of fresh and nutritious food, arable land needs to be protected and appropriate land should be available for the production, storage, distribution and transportation of food^{11, 16}. On a smaller scale, vacant public land, parks and streetscapes can be used to provide local opportunities to produce locally grown fruit and vegetables.

Activity Centres

Developing activity centres and main streets with a mix of land uses and destinations within walking distance of most residential dwellings can support active transport^{3, 10-15, 17}. The co-location and grouping of destinations within the centre allows for multiple activities to be undertaken which is more conducive for active transport (walking, cycling and public transport). With growth and higher residential density increasingly occurring around the network of activity centres, it is even more critical that access via active transport modes is prioritised.

The provision of fresh and healthy food stores within the mix of destinations in a centre is important to provide access to fresh and healthy food and encourage its consumption^{10-12, 15, 17}. This could be through large supermarkets, grocery stores, smaller fruit and vegetable retailers and farmers markets.

Design elements

- Developments should create activity centres with a mix of land uses and destinations that meet daily living needs within walking distance of most residential dwellings^{3, 11-14} and near public transport.
- Centres should be surrounded by walking, cycling and public transport routes that are put in place early to enable access to key services and destinations from the outset¹⁸.
- Centres should provide a high quality, attractive and safe public realm, and be structured in main street formats that are not dominated by car parking.
- Centres should provide a variety of fresh and nutritious food outlets (supermarkets, grocery stores, farmers markets)^{10-12, 15, 17}.

Movement Network

Active transport is well recognised as a means of improving health and wellbeing, whilst also contributing to a reduction in traffic congestion and parking problems and improved environmental and social outcomes^{19, 20}.

Car-centric infrastructure and urban planning has seen an increasing reliance on the car, associated traffic congestion, less walking and cycling for short trips and increased sedentary behaviour. Creating environments that support replacing short car trips with walking, cycling or public transport (which usually involves a walking or cycling trip to the stops and between destinations) and recreational walking and cycling can reduce overweight and obesity and improve overall health¹⁹.

Local access to a variety of good quality, affordable fresh and healthy food is reliant on the food transport system. As well as costing more, the range and quality of foods available decrease with increasing distance from Perth. A movement network that provides an effective food transport system locally and across the state can help to overcome this.

Design elements

- Developments should provide an accessible, connected movement network integrating walking, cycling and public transport in which neighbourhoods, centres and destinations are connected to each other¹¹⁻¹⁵. Walking and cycling routes should be continuous, connected²¹⁻²⁸, convenient, direct and legible with paths located on at least one, but ideally both sides of the street^{3, 11-13, 21-23, 29-31}.
- Development should provide a safe, functional and attractive environment to support walking, cycling and public transport and maximise pedestrian safety by heightening visibility³², providing safe places to cross streets^{22, 33}, minimising the potential for conflicts with motorists and providing amenities that enhance functionality and comfort^{34, 35}.
- Public transport should be available and accessible and be a viable and attractive alternative transport option. Transit stops should be located within walkable catchments of all residents, workplaces and key destinations along well connected streets and in safe locations^{2, 36, 37}.
- The movement network should integrate appropriate infrastructure for the efficient and timely transport of fresh and healthy food around the state to ensure access by all.

Public Open Space

The provision of high quality attractive parks and public open spaces helps to create an enjoyable and attractive neighbourhood environment in which to walk or cycle^{28, 38}. Parks provide opportunities to be active within them and those living closer to a park or having more parks are more likely to be active^{24, 39-44} and have a healthier weight⁴⁴. Having more parks and a greater public open space area⁴⁵ can also increase physical activity. The inclusion of footpaths, trails, natural play spaces, sport facilities/courts, equipment and playgrounds has been shown to encourage park use and physical activity within parks⁴⁵⁻⁴⁸. This is becoming increasingly important for those living in higher density housing without a private backyard⁴⁹.

Parks can provide opportunities to grow and provide local access to fresh and healthy foods. Community gardens can positively influence a healthy diet, provide greater access to fruit and vegetables^{50, 51}, enable residents to consume more fruit and vegetables⁵² and provide opportunities to be active^{51, 52}. Parks and community gardens also improve social activity and social connections with neighbours^{50, 53} and offer improved mental health outcomes^{51, 52}.

Design elements

- Developments should provide a range of quality public open spaces to contribute towards the recreation, physical activity, health and social needs of the community.
- Parks and open spaces should be located within walking distance of most residents^{3, 11-13}, along connected routes^{3, 12, 13} and be co-located with other community facilities to encourage access by walking or cycling.
- The design of parks and open space and the infrastructure provided within them should cater for a variety of users to undertake a mix of activities that increase physical activity, provide access to healthy nutritious foods (through community gardens) and prevent injury.

Housing Diversity

A combination of higher residential density and mixed land use can increase walking among adults, particularly walking for transport^{24, 41, 49, 54-57}. Higher densities and smaller lot sizes generally result in the creation of more compact uses of land decreasing the distances between destinations. This increases the likelihood that people will walk and cycle for transport,⁵⁸⁻⁶¹ and also provides increased patronage to support local businesses, services and facilities^{3, 62}.

Design elements

- Developments should provide a range of residential lot sizes and choice of housing types within walking distance of key destinations¹⁴.
- Residential densities should be increased in areas within close proximity to mixed use centres, local employment, community facilities and public transport^{3, 14, 29}.
- Lot layouts could be oriented to maximise opportunities for residents to grow fruit and vegetables, especially in areas with limited access to fresh and healthy food.
- *Crime Prevention Through Environmental Design* features should be incorporated to lessen the opportunity for crime and enhance personal safety, traffic safety, property safety and security. This will contribute to streetscape amenity which in turn encourages walking, cycling and use of public spaces^{32, 36}.

Schools

Environments that support children and their parents to walk, cycle or use public transport to get to school increases their physical activity and reduces traffic in the local community⁶³. Living in close proximity to school is one of the most consistent predictors of walking or cycling to school^{33, 64-68}. Infrastructure that maximises connectivity and safety is also critical so the environment surrounding the school must also incorporate connected pathways, traffic management and safe crossings⁶⁹.

Schools grounds are an ideal location for students to achieve part of their daily physical activity needs. The provision of playspaces, sports facilities, line markings for games and grassed areas increases the likelihood that students will be active during recess and lunch⁷⁰⁻⁷³. Enabling community use of these facilities outside of school hours has also been shown to increase the community's physical activity^{74, 75}.

Growing fresh and healthy food through school kitchen gardens can increase children's exposure to fruit and vegetables⁷⁶ and can encourage healthier diets and fruit and vegetable consumption⁷⁶. Extending the school garden to be accessible to the wider community outside of school hours can facilitate shared maintenance and shared benefits.

The food environment and presence of food stores around schools also plays an important role in children's daily exposure of healthy or unhealthy foods, which can influence healthy eating behaviours. Emerging evidence is showing that the closer someone is to fresh and healthy food outlets the more likely they are to consume healthy products⁷⁷.

Design elements

- Developments should locate schools within 800m walkable catchments of most residents that are integrated with connected walking and cycling networks and serviced by public transport routes (where appropriate) to enable students to conveniently and safely access the school via means other than the car³.
- School grounds and facilities should be designed to encourage active and unstructured play during school hours. Site design should enable shared use by the general public outside of school hours.
- End of trip facilities should be provided within schools to encourage walking and cycling to school (e.g. bike racks).
- School grounds could be utilised to grow fresh and healthy food³.
- School car parks and ovals could be designed to host farmers markets to enable fresh and healthy food to be sold locally, particularly in areas underserved by fresh and healthy food stores.
- Consider limiting the location of fast food outlets in close proximity of schools⁷⁸.

References

1. National Heart Forum. Building health: creating and enhancing places for healthy active lives. 2007.
2. McCormack G, Giles-Cortie B, Bulsara M. The relationship between destination proximity, destination mix and physical activity behaviours. *Preventive Medicine*. 2008;46:33-40.
3. Heart Foundation (WA Division). Western Australia's Healthy Active by Design. Heart Foundation; 2013.
4. Morland K, Wing S, Diez Roux A. The contextual effect of the local food environment on resident's diets: the atherosclerosis risk in communities study. *American Journal of Public Health*. 2002;91:1761-8.
5. Powell LM, Han E. The costs of food at home and away from home and consumption patterns among US adolescents. *Journal of Adolescent Health*. 2011;48(1):20-6.
6. Wrigley N, Warm D, Margetts B. Deprivation, diet and food-retail access: findings from the Leeds food deserts' study. *Journal of Epidemiology Community Health* 2003;59:1035-40.
7. Swinburn B, Vandevijere S, Kraak V, G S, Snowdon W, Hawkes C, et al. Monitoring and benchmarking government policies and action to improve the healthiness of food environments: a proposed Government Health Food Environment Policy Index. *Obesity Reviews*. 2013;14(1):24-37.
8. Glanz K, Sallis JF, Saelens B, Frank L. Healthy Nutrition Environments: Concepts and measures. *American Journal of Health Promotion*. 2005;19(5):330-3.
9. Mhurchi C, Vandevijvere S, Waterlander W, Thornton L, Kelly B, Cameron A, et al. Monitoring the availability of health and unhealthy foods and non-alcoholic beverages in community and consumer retail food environments globally. *Obesity Reviews*. 2013;14 Supplement 1:108-19.
10. Department of Infrastructure and Transport. Our cities our future: A national urban policy for a productive sustainable and liveable future. Canberra: Australian Government; 2011.
11. Kent J, Thompson S, Jalaludin B. Healthy Built Environments: A review of the literature. Sydney: Healthy Built Environments Program University of NSW; 2011.
12. Heart Foundation of Australia. Healthy by Design: A guide to planning and designing environments for active living in Tasmania. Tasmania2009.
13. Heart Foundation of Australia. Healthy by Design: A planner's guide to environments for active living. Victoria2004.
14. Planning Institute of Australia. Healthy Spaces and Places. www.healthyplaces.org.au2009.
15. City of New York. Active Design Guidelines. New York2010.
16. Heart Foundation. Food sensitive planning and urban design. 2011.
17. Centre for Built Environment and Health. Healthy Active by Design food environment literature review. 2012.
18. Falconer R, Newman P, Giles-Corti B. Is practice aligned with the principles? Implementing new urbanism in Perth Western Australia. *Transport Policy*. 2010;17(5):287-94.
19. Giles-Corti B, Foster S, Shilton T, R F. The co-benefits of health investing in active transportation. *NSW Public Health Bulletin*. 2010;21(5-6):122-27.
20. Department of Infrastructure and Transport. Walking riding and access to public transport: Draft report for discussion October 2012. Canberra: Australian Government; 2012.
21. Hess P, Moudon A, Snyder M. Site design and pedestrian travel. *Transportational Research Record*. 2001;1674:9-19.
22. Rosenberg D, Ding D, Sallis JF, Ker J, Norman GJ, Durant N. Neighbourhood environment walkability scale for youth. Reliability and relationship with physical activity. *Preventive Medicine*. 2009;49(2-3):213-8.
23. Kerr J, Rosenberg D, Sallis JF, Saelens BE, Frank LD, Conway TL. Active commuting to school: Associations with environmental and parental concerns. *Medicine and Science in Sports and Exercise*. 2006;38(4):787-93.
24. Shigematsu R, Sallis J, Conway TL, Saelens BE, Frank LD, Cain KL. Age differences in the relation of perceived neighbourhood environment to walking. *Medicine and Science in Sports and Exercise*. 2009;41(2):314-21.
25. De Bourdeaudhuji I, Sallis JF, Saelens BE. Environmental correlates of physical activity in a sample of Belgian adults. *American Journal of Health Promotion*. 2003;18(1):83-92.
26. Sallis JF, Bowles HR, Bauman A, Ainsworth BW, Bull FC, Craig CL. Neighbourhood environments and physical activity among adults in 11 countries. *American Journal of Preventive Medicine*. 2009;28(2):105-16.
27. McCormack GR, Shiell A, Giles-Corti B, Begg S, Veerman JL, Geelhoed E. The association between sidewalk length and walking for different purposes in established neighbourhoods. *International Journal of Behavioural Nutrition and Physical Activity*. 2012;9(92).

28. Pikora T, Giles-Corti B, Knuiman M, Bull F, Jamrozik K, Donovan R. Neighbourhood environmental factors correlated with walking near home: Using SPACES. *Medicine and Science in Sports and Exercise*. 2006;38(4):708-14.
29. Premier's Council for Active Living. Development and active living: designing projects for active living: developers checklist with case studies. New South Wales Government.
30. Norman G, Nutter S, Ryan S, Sallis J, Calfas KJ, Patrick K. Community design and access to recreational facilities as correlates of adolescent physical activity and body mass index. *Journal of Physical Activity and Health*. 2006;3(S1):S118-28.
31. Baran P, Rodriguez D, Khattak A. Space Syntax and walking in a new urbanist and suburban neighbourhood. *Journal of Urban Design*. 2008;13(1):5-28.
32. Foster S, Giles-Corti B. The built environment, neighbourhood crime and constrained physical activity: an exploration of inconsistent findings. *Preventive Medicine*. 2008;47(3):241-51.
33. Salmon J, Salmon L, Crawford DA, Hume C, Timperio A. Associations among individual social and environmental barriers and children's walking or cycling to school. *American Journal of Health Promotion*. 2007;21(4):312-659.
34. Giles-Corti B, Donovan R. Relative influences of individual social environmental and physical environmental correlates of walking. *American Journal of Public Health*. 2003;93:1583-9.
35. Humpel N, Owen N, Leslie E. Environmental factors associated with adults participation in physical activity. *American Journal of Preventive Medicine*. 2002;22(3):188-99.
36. Foster S, Giles-Corti B, Knuiman M. Does fear of crime discourage walkers? A social ecological exploration of fear as a deterrent to walking in new suburbs. *Social Science and Medicine*. (under review).
37. Moudon A, Et Al. Operational definitions of walkable neighbourhood: theoretical and empirical insights. *Journal of Physical Activity and health*. 2006;3(1):99-117.
38. Giles-Corti B, Bull F, Knuiman M, McCormack G, Van Neil K, Timperio A, et al. The influence of urban design on neighbourhood walking following residential relocation: longitudinal results from the RESIDE study. *Social Science and Medicine*. 2013;77:20-30.
39. Giles-Corti B, Et Al. Increasing walking: how important is distance to attractiveness and size of public open space? *American Journal of Preventive Medicine*. 2005;28(2S2):169-76.
40. Frank LD, Kerr J, Chapman J, Sallis J. Urban form relationships with walk trip frequency and distance among youth. *American Journal of Health Promotion*. 2007;21(4):305-11.
41. Nagel CL, Carlson NE, Bosworth M, Michael YL. The relationship between neighbourhood built environment and walking among older adults. *American Journal of Epidemiology*. 2008.
42. Hoehner CM, Ramirez LKB, Elliot MB, Handy SL, Brownson RC. Perceived and objective environmental measures and physical activity among urban adults. *American Journal of Preventive Medicine*. 2005;28(2):105-16.
43. Veitch J, Salmon J, Ball K. Individual social and physical environmental correlates of children's active free-play: a cross sectional study. *International Journal of Behavioural Nutrition and Physical Activity*. 2010;7.
44. Sallis J, Glanz K. Physical activity and food environments: solutions to the obesity epidemic. *Milbank Quarterly*. 2009;87(1):123-54.
45. Mowen A. A research synthesis: parks, playgrounds and active living. 2010.
46. McCormack GR, Rock M, Toohy AM, Hignell D. Characteristics of urban parks associated with park use and physical activity: a review of qualitative research. *Health and Place*. 2010;16(4):712-26.
47. Epstein LH, Raja S, Gold SS, Paluch RA, Park Y, Roemmich JN. The relationship between park area and the physical activity of youth. *Psychology Science*. 2006;17(8):654-9.
48. Kaczynski A, L P, Saelens B. Association of park size, distance and features with physical activity in neighbourhood parks. *American Journal of Public Health*. 2008;97(493-499).
49. Giles-Corti B, Ryan K, Foster S. Increasing density in Australia: Maximising the health benefits and minimising harm. Melbourne: Report to the National Heart Foundation of Australia; 2012.
50. Centres for Disease Control and Prevention. Community Gardens. 2010.
51. Somerset S, Ball R, Flett M, Geissman R. School-based community gardens: re-establishing healthy relationships with food. *Journal of the HEIA*. 2005;12(2):25-33.
52. Blair D, Giesecke CC, Sherman S. A dietary, social and economic evaluation of the Philadelphia urban gardening project. *Journal of Nutrition Education*. 1991;23(4):161-7.
53. Armstrong D. A survey of community gardens in upstate New York: implication for health promotion and community development. *Health Place*. 2001;6(4):319-27.
54. Riva M, Gauvin L, Apparicio P, Brodeur JM. Disentangling the relative influence of built and socioeconomic environments on walking: the contribution of areas homogenous along exposures of interest. *Social Science and Medicine*. 2009;69(9):1296-305.
55. Cervero R DM. Walking bicycling and urban landscapes: evidence from the San Francisco Bay area. *American Journal of Public Health*. 2003;93(9):1478-83.

56. Lee C, Moudon AV. The 3Ds + R: quantifying land use and urban form correlates of walking. *Transportation Research Part D: Transport and Environment*. 2006;11(3):204-15.
57. Li F, Harmer PA, Cardinal BJ, Bosworth M, Acock A, Johnson-Shelton D. Built environment adiposity and physical activity in adults aged 50-75. *American Journal of Preventive Medicine*. 2008;35(1):38-46.
58. Transportation Research Board Institute of Medicine. Does the built environment influence physical activity? Examining the evidence. Washington D.C.: Committee on Physical Activity Health Transportation and Landuse; 2005.
59. Owen N, Humpel N, Leslie E, Bauman A, Sallis J. Understanding environmental influences on walking: review and research agenda. *American Journal of Preventive Medicine*. 2004;27(1):67-76.
60. Saelens B, Handy S. Built environment correlates of walking: a review *Medicine and Science in Sports and Exercise*. 2008;40(7S):S550-66.
61. Saelene BE, Sallis JF, Frank LD. Environmental correlates of walking and cycling: findings from the transportation, urban design and planning literature. *Annals of Behavioural Medicine*. 2003;25(2):80-91.
62. Tolly R. Good for Business: the benefits of making streets more walking and cycling friendly discussion paper. South Australia: Heart Foundation; 2011.
63. Panter JR, Jones AP, Van Sluijs EM. Environmental determinants of active travel in youthL A review and framework for future research. *International Journal of Behavioural Nutrition and Physical Activity*. 2008;5:34-48.
64. Larsen K, Gilliland J, Hess P, Tucker P, Irwin J, et al. The influence of the physical environment and sociodemographic characteristics in children's mode of travel to and from school. *American Journal of Public Health*. 2009;99(3):520-6.
65. McDonald N. Children's mode choice for the school trip: the role of distance and school location in walking to school. *Transportation*. 2008(35):23-35.
66. Ewing R, Schroeer W, Greene W. School location and student travel: analysis of factors affecting mode choice. *Transportation Planning and Analysis*. 2004;1985:55-63.
67. McMillan TE. The relative influence of urban form on a child's travel mode to school. *Transportation Research*. 2007;Part A(41):69-79.
68. Merom D, Tudor-Locke C, Bauman A, Rissel C. Active comuniting to school amongst NSW primary school children: implications for public health. *Health and Place*. 2006;12(4):678-87.
69. Giles-Corti B, Wood G, Pikora T, Learnihan V, Bulsara M, Van Niel K, et al. School site and the potential to walk to school: the impact of street connectivity and traffic exposure in school neighbourhoods. *Health and AMP*. 2011;17(2):545-50.
70. Active Living Research. Research brief: increasing physical activity through recess. San Diego2012.
71. Martin K. The active schools project. Perth: University of Western Australia; 2009.
72. Stratton G, Mullan E. The effect of multicolour playground markings on children's physical activity level during recess. *Preventive Medicine*. 2005;41(5-6):828-33.
73. Ridgers ND, Stratton G, Fairclough SJ, Twisk JW. Long-term effects of a playground markings and physical structures on children's recess physical activity levels. *Preventive Medicine*. 2007;44(5):393-7.
74. Farley T, et al. Safe play spaces to promote physical activity in inner-city children: results from a pilot study of an environmental intervention. *American Journal of Public Health*. 2007;97(9):1625-31.
75. Active Living Research. Promotion physical activity through shared use of school and community recreation resources. San Diego: Active Living Research; 2012.
76. Somerset S, Ball R, Flett M, Geissman R. School based community gardens: re-establishing healthy relationships with food. *Journal of the HEIA*. 2005;12(2):25-33.
77. David B, Carpenter C. Proximity of fast-food restaurants to schools and adolescent obesity. *American Journal of Public Health*. 2009;99(3):505-10.
78. Greater London Authority. Takeaways Toolkit: tools interventiopns and case studies to help local authorities develop a response to the health impacts of fast food takeaways. London2012.

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Your ref: P103/156 A3465
Our ref: RF9822, PA 038770
Enquiries: Jane Sturgess, Ph 9550 4228

Shire of Murray
PO Box 21
Pinjarra WA 6208

Attention: Rod Peake

Dear Rod

***PROPOSED GROUP DWELLING DEVELOPMENT – LOT 156 NO 528
PINJARRA ROAD, FURNISSDALE***

Thank you for providing the development application received with correspondence dated 30 November 2020 for the Department of Water and Environmental Regulation (Department) to consider.

The Department has identified that the proposed group dwelling development has the potential for impact on environment and water resource values and/or management. In principle the Department does not object to the proposal however key issues, recommendations and advice are provided below and these matters should be addressed.

Issue

Native Vegetation Protection

Advice

Under section 51C of the *Environmental Protection Act 1986* (EP Act), clearing of native vegetation is an offence unless undertaken under the authority of a clearing permit, or the clearing is subject to an exemption. Exemptions for clearing that are a requirement of written law, or authorised under certain statutory processes, are contained in Schedule 6 of the EP Act. Exemptions for low impact routine land management practices outside of environmentally sensitive areas (ESAs) are contained in the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* (the Clearing Regulations).

The Department received a Clearing Permit application (CPS 8892/1) on 24 April 2020, to clear 1.47 hectares of native vegetation at this location for the purposes of constructing a group housing facility. The extent of clearing specified in the clearing permit application appears to be consistent with the clearing proposed in the Development Application.

It is acknowledged that portions of the proposed clearing may have been exempt under Regulation 5, Item 1 of the Clearing Regulations (clearing for a building or structure) once Development Approval was issued, however the applicant has requested to proceed with the clearing permit application for assurance.

The Department will await the outcome of the Development Application prior to issuing a clearing permit.

For additional advice relating to the assessment of this application please contact Caitlin Conway on 6364 7304.

Issue

Acid Sulfate Soils

Advice

Acid sulfate soils (ASS) risk mapping indicates that the site is located within an area identified as representing a moderate to high risk of ASS occurring within 3 metres of the natural soil surface. DWER advises that a model ASS related condition is deemed necessary in this instance, the following condition and advice is recommended to be applied to the relevant approval.

Condition:

An acid sulphate soils self-assessment form and, if required as a result of the self-assessment, an acid sulphate soils report and an acid sulphate soils management plan shall be submitted to and approved by the Department of Water and Environmental Regulation before any subdivision works or development are commenced. Where an acid sulphate soils management plan is required to be submitted, all subdivision works or development shall be carried out in accordance with the approved management plan. (Department of Water and Environmental Regulation).

Advice:

The condition makes reference to an “acid sulphate soils-self assessment form”. This form can be downloaded from the Western Australian Planning Commission’s website at: www.dplh.wa.gov.au.

The “acid sulphate soils self-assessment form” makes reference to the Department of Water and Environmental Regulation’s “Identification and Investigation of Acid Sulphate Soils” guideline. This guideline can be obtained from the Department of Water and Environmental Regulation’s website at: <https://www.der.wa.gov.au/your-environment/acid-sulfate-soils/69-acidsulfatesoils-guidelines>.

Issue

Urban Water Management

Recommendation

It is recommended that a drainage management plan is prepared to the satisfaction of the Department and the Shire of Murray. The drainage system is to be designed, constructed and managed as per [Stormwater Management Manual for Western Australia \(DWER, 2004\)](#) and [Decision process for stormwater in Western Australia \(DWER, 2017\)](#). The plan is to describe and demonstrate the management of drainage for minor, small and major events taking into consideration the drainage strategy outlined in the previously approved *Various Landholdings Furnissdale Local Water Management Strategy* (Hyd2o, October 2015) including this site’s connection and/or discharge to external drainage catchments.

Where the Department has a statutory role, planning applications should be considered prior to the Department issuing any relevant permits, licenses and/or approvals.

In the event there are modifications to the proposal that may have implications on aspects of environment and/or water management, the Department should be notified to enable the implications to be assessed.

Should you require any further information on the comments please contact Jane Sturgess on 9550 4228.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Brett Dunn', enclosed within a large, horizontal, oval-shaped scribble.

Brett Dunn
Program Manager – Planning Advice
Kwinana Peel Region

22 / 12 / 2020



Our Ref: D19140
Your Ref: PI03/156 A3465

Rod Peake
Shire of Murray
mailbag@murray.wa.gov.au

Dear Mr Peake

RE: VULNERABLE LAND USE - LOT 156 (NO. 528) PINJARRA ROAD, FURNISSDALE - LIFESTYLE VILLAGE - DEVELOPMENT APPLICATION

I refer to your email dated 30 November 2020 regarding the submission of a Bushfire Management Plan (BMP) (Version 2), prepared by Allerding and Associates and dated 30 September 2020, for the above development application.

This advice relates only to State Planning Policy 3.7 Planning in Bushfire Prone Areas (SPP 3.7) and the Guidelines for Planning in Bushfire Prone Areas (Guidelines). It is the responsibility of the proponent to ensure the proposal complies with relevant planning policies and building regulations where necessary. This advice does not exempt the applicant/proponent from obtaining approvals that apply to the proposal including planning, building, health or any other approvals required by a relevant authority under written laws.

1. Policy Measure 6.5 a) (ii) Preparation of a BAL contour map

Issue	Assessment	Action
Vegetation classification – plot 7	<p>Vegetation plot 7 cannot be substantiated as Class D Scrub with the limited information and photographic evidence available. The BMP acknowledges that vegetation within this plot currently exceeds 6 m in height which AS 3959 references as the maximum height for this vegetation type.</p> <p>A desktop assessment of aerial imagery indicates disturbance of this plot and this plot being at an early successional stage as indicated by the presence of Spearwood and immature Eucalypts. Given the potential for further regeneration we consider this plot to be Low Open Forest with the potential to become Open Forest.</p> <p>The BMP should detail specifically how the classification was derived particularly the potential for revegetation (i.e. Forest as opposed to Scrub).</p>	Modification to the BMP is required.

2. Policy Measure 6.5 c) Compliance with the Bushfire Protection Criteria

Element	Assessment	Action
Location, and Siting & Design	<p>A1.1 & A2.1 – not demonstrated</p> <p>The BAL ratings cannot be validated for the reason(s) outlined in the above table.</p> <p>There are areas of the site exposed to BAL-40/BAL-FZ which represents an extreme risk which does not comply with A1.1.</p>	Modification to the BMP is required.

3. Policy Measure 6.6.2 Vulnerable land uses in areas where BAL-40 or BAL-FZ applies

Issue	Assessment	Action
Extreme bushfire hazard and/or BAL-40/ BAL-FZ applies	<p>Subdivision and development applications for vulnerable or high-risk land uses in areas of BAL-40/BAL-FZ will not be supported unless they comply with policy measure Clause 6.7.2 of SPP 3.7.</p> <p>DFES concurs with the Shire of Murray (Shire) assessment that the development does not meet the definition of 'unavoidable development', nor does the work constitute 'minor development'.</p>	Comment only.
Bushfire Emergency Evacuation Plan (EEP)	The referral has not included an EEP for the purposes of addressing the policy requirements. Consideration should be given to the Guidelines Section 5.5.2 'Developing a Bushfire Emergency Evacuation Plan'. This contains detail regarding what should be included in an EEP and will ensure the appropriate content is detailed when finalising the EEP to the satisfaction of the Shire of Murray.	Comment only.

Recommendation – not supported modifications required

It is critical that the bushfire management measures within the BMP are refined, to ensure they are accurate and can be implemented to reduce the vulnerability of the development to bushfire. The proposed development is not supported as the development design has not demonstrated compliance to:

- Element 1: Location, and
- Element 2: Siting and Design.

As this planning decision is to be made by a Joint Development Assessment Panel please forward notification of the decision to DFES for our records. If you require further information, please contact Joel Gajic, Senior Land Use Planning Officer on telephone number 9395 9739.

Yours sincerely



Ron De Blank
DIRECTOR LAND USE PLANNING

11 January 2020

CC Rodp@murray.wa.gov.au

From: [NAUDE Daniel \(RCPM\)](#)
To: [Rod Peake](#); [Andrea Lawson](#)
Cc: [DAVIES Paul \(Con\)](#); [BATT Tim \(RMC\)](#)
Subject: FW: Reply: Development Application Referral: Lot 156 Pinjarra Road, Furnissdale
Date: Tuesday, 19 January 2021 5:48:47 PM
Attachments: [image001.png](#)
[image013.png](#)
[image014.png](#)
[image015.png](#)
[image016.png](#)
[image017.png](#)
[image003.jpg](#)
[riverside-dr-int-v2-A1 1-500.pdf](#)
[41459_LVP_All Day_Y16_Pinjarra Rd_Furnissdale.pdf](#)
[41459_Validation_Pinjarra Rd_Furnissdale.pdf](#)
[41151_LVP_ROM24_Base_NetDev_V4.40_v31_MLUFS_V14_Pinjarra Area study.pdf](#)
[41459_LVP_All Day_Y41_Pinjarra Rd_Furnissdale.pdf](#)

Dear Andrea and Rod

I refer to the Development Application referral for the above and advise that Main Roads has concerns with the proposal in its current form, as outlined below.

TIA/Traffic Report

Main Roads notes from the application forms associated with the Development Application that 'Grouped Housing Development'/'Grouped Dwelling Development' is the nominated land use/Use Class for the proposed development is. The planning report submitted in support of the development, however, describes the development as a Lifestyle Village for "Over 50's". The accompanying traffic analysis was undertaken on the basis of an assumed reduced trip generation rate of 3 vehicle trips 'per dwelling', given the proposed use, as opposed to the typical 8 vehicle trips per dwelling assigned for conventional residential development/Grouped Dwelling development for traffic analysis purposes.

Main Roads is prepared to accept the adopted trip generation rate given the proximity of the development to public transport/bus routes and walkable catchment to the Activity Centre Plan Area to the east.

The method used in the analysis for of estimating future traffic on Pinjarra Road is, however, not accepted by Main Roads in this instance. GTA consultants have used recent count data and then applied a very low/conservative growth rate of 0.5. Main Roads' available longer term modelling (ROM) data should have been used. The traffic report has also not considered additional traffic volumes/demands on Pinjarra Road which will be generated by the approved 'Barragup-Furnissdale Activity Centre Policy' area (Activity Centre) and the recently approved commercial development to the east on the corner of the nearby Pinjarra Road / Ronlyn Road intersection. Attached are 2031 and 2041 ROM24 link volume plots plus ROM24 2016 validation plot for Pinjarra Road in the vicinity of the Pinjarra Road / Riverside Drive intersection which should be used in the traffic assessment.

The method of estimating future traffic on Pinjarra Road also has implications for traffic volumes referenced in the noise modelling discussed further below.

Turn movements at the intersection of Pinjarra Road and Riverside Drive have been largely based on existing movement at the intersection. This may change significantly with future development but it appears that no sensitivity analysis was done on this aspect, particularly if the percentage turning right out of the side road was ultimately much higher than the 5% used.

With respect to this development, it is agreed that the traffic volumes (250 vpd) generated by the development are low and that they do not warrant any upgrading of the Pinjarra Road / Riverside Drive intersection at this stage, noting that existing traffic is about 500vpd and ultimate volumes are in the order of 5000vpd (GTA predict 5600vpd – a previous traffic report prepared by Porters predicted 4775vpd).

The report has also not addressed the longer term layout for the intersection, but does acknowledge requirements outlined in the Furnissdale West Structure Plan for widening the Riverside Drive road reserve to 24.4m (from current 20m) and upgrading this road to an urban standard with provision for a median and on-road cyclists.

The above may become relevant as the development is situated in a 'Development Contribution Plans' Area which, under Schedule 13 (see 'Roads' provision 1.2) appears to require developers to contribute 100% towards various infrastructure in the precinct, including upgrading of the Pinjarra Road / Riverside Drive intersection. Typically, contributions towards intersection upgrades are determined on a pro-rata/proportional traffic volumes being contributed to an intersection.

Provision of a footpath along the western side of the development to link up with the path along Pinjarra Road has been recommended and is supported.

Road Requirements:

The site plan depicts a 10 meter road widening for Pinjarra Road in accordance with the Peel Region Scheme, which is supported. The site plan does not, however, depict a corner truncation following the proposed road widening, which should be provided, having regard to the ultimate road reserve requirements for the intersection. It is Main Roads' expectation that the road widening and truncation will be ceded free of cost to the Crown.

Main Roads has investigated the longer term requirements for the upgrade of the Riverside Drive / Pinjarra Road intersection to determine if any road widening is required. Attached is a preliminary layout that Main Roads have prepared showing the likely future layout and road reserve widening required to accommodate future traffic demands at the intersection. As can be seen from the plan, some additional road widening over and above the 24.4m previously identified/suggested by the Structure Plan is required. Note that no work has been done to determine if there are any additional requirements for drainage (drainage basins etc). It is therefore recommended that more detailed engineering investigations be undertaken to confirm the road widening requirements that will impact the subject land.

In order to fit in with the longer term planning objectives for Riverside Drive, the development should, as a minimum, upgrade the road to an urban standard; including kerbing and draining the western side of the road (taking into consideration the ultimate requirements for this road) for the full length of the frontage. This will enable the development driveways to properly set up for the future and facilitate the construction of the footpath required.

These works and the ceding of the road reserve widening could, from a Main Roads perspective, be accepted as sufficient to cover this development's contribution(s) required for road upgrades associated with the overall structure area.

Road Traffic Noise/Acoustic Assessment

Main Roads does not support the 2041 forecast volumes (21,146 vpd) used in the noise modelling, which is considered to be very conservative. Current daily traffic volumes are between 15,000 and 16,000 vpd and the planning precinct in question is identified for significant future urban growth in strategic planning documents (i.e. the 'Barragup-Furnissdale Activity Centre Policy' area and Furnissdale West Structure Plan). It is considered that a 4% to 5% growth rate should be used in line with the 2041 ROM data.

Pinjarra Road currently has a chip seal formation/pavement. At this stage it is unlikely that the road surface would be upgraded to 'dense-graded asphalt' and the assessment should be reviewed, using 'micro-surfacing' for noise modelling purposes.

There is potential for the recommended 'Quiet House' design packages to change as a result of the updated study which may also require changes to the proposed draft Local Development Plan.

Noise Bund/Landscape Buffer

Main Road has a number of concerns regarding the proposed noise bund design, location and the landscape approach.

The proposed noise attenuation barrier comprises a bund/berm with a 0.5m high fence on top. The bund is also proposed to be retained to restrict the area footprint of the structure. Main Roads' principle concern relates to the proposed zero meter setback from the Pinjarra Road road-widening boundary, which is not supported by Main Roads.

Main Roads typically supports a minimum 1m setback where a 1:3 batter is proposed, subject to appropriate landscaping to stabilise the bund. Maintenance of the noise band, as proposed, will require ongoing access from the Pinjarra Road reserve which is not supported. The proposed bund design features a 1:1 batter/slope which is very steep and unlikely to be successfully landscaped in the short term and thereafter maintained, as typically required for noise bunds. The proposed design also includes 'rock pitching' assumed to be required as a result of the proposed steep batters, which may impact landscaping but also create additional drainage run-off from the development into the Pinjarra Road reserve, which is not supported in principle as the site currently drains away from Pinjarra Road.

The development proposes landscaping/screening to be undertaken in the Primary Region Road reserve/10 meter road widening area. No landscaping detail has been provided for review.

The Shire has approached Main Roads to enter into a landscape management/maintenance agreement for Pinjarra Road, however, this agreement has not been finalised. Main Roads wish to advise, should the agreement be executed, that there is no certainty at this stage that the agreement would be an ongoing long-term arrangement and there is potential for management and care of the road reserve to revert back to Main Roads, in which case Main Roads cannot provide any commitment regarding ongoing maintenance or replacement of any landscaping standards/initiatives which may be supported by the Shire for the development at this point in time. Highway road verges are generally maintained to a minimum standard according to policy and allocated budgets, which varies over time.

Pinjarra Road is also identified for upgrading to a 3rd lane in each direction in the longer term and landscaping which still exists at the time is likely to be impacted when the upgrading occurs. It is therefore recommended that should there be a particular requirement/local planning objective to screen the development and/or proposed noise attenuation measures in the longer term, that the landscaping approach be reconsidered to rather provide landscaping/screening within the development site.

It is recommended that the above matters be addressed prior to the application being determined.

Please do not hesitate to contact me on the number below should you require any further assistance.

Regards,

Daniel Naude

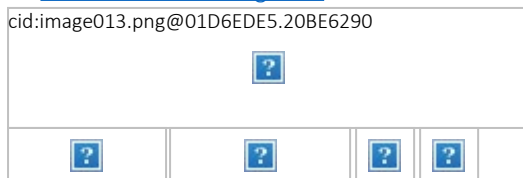
ROAD CORRIDOR PLANNING MANAGER

Metropolitan and Southern Regions / South West

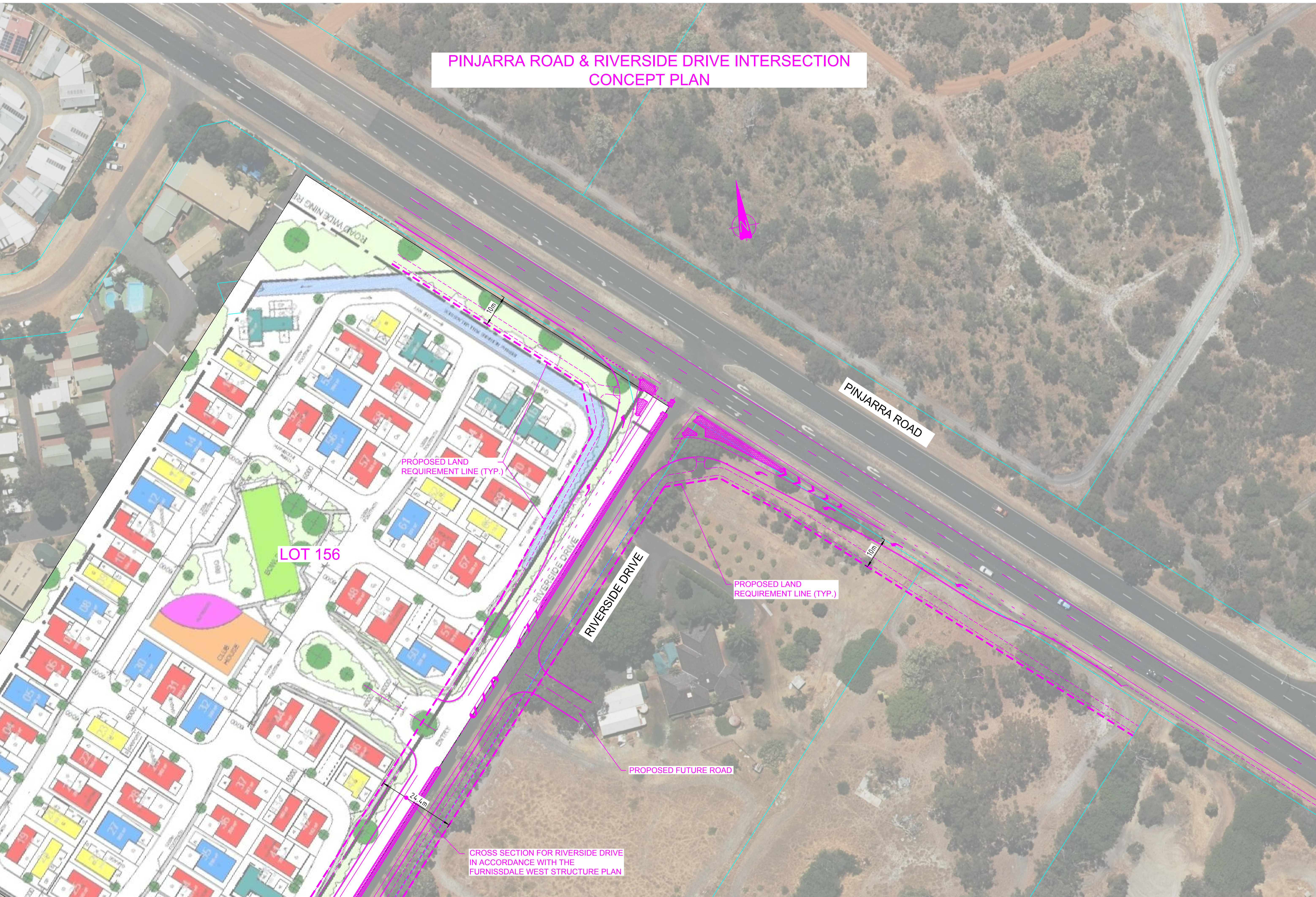
p: +61 9724 5724 | **m:** +61 4189 31078

w: www.mainroads.wa.gov.au

cid:image013.png@01D6EDE5.20BE6290



PINJARRA ROAD & RIVERSIDE DRIVE INTERSECTION CONCEPT PLAN



LOT 156

PROPOSED LAND REQUIREMENT LINE (TYP.)

RIVERSIDE DRIVE

PINJARRA ROAD

PROPOSED LAND REQUIREMENT LINE (TYP.)

PROPOSED FUTURE ROAD

CROSS SECTION FOR RIVERSIDE DRIVE IN ACCORDANCE WITH THE FURNISSDALE WEST STRUCTURE PLAN

2016 ROM24 Base Scenario - Link Volume Plot for for Pinjarra Rd, Furnissdale All Day

MODEL ASSUMPTIONS

LANDUSE: 2016 MLUFS Land Use (Version 1.4 - August 2018)
NETWORK: 2016 ROM24 Network (20-Year Network Development Plan)
Reference #41283

ROM24 Multi-Modal Model V4.40 24-Hour Traffic Volumes (Factor X 100)

Terms & Conditions :
MRWA Traffic Modelling Data as supplied to approved clients is confidential and is not to be made available to unauthorised persons or organisations. This data should not be used for any purpose other than the stated purpose for which it was requested from MRWA. The MRWA ROM is for estimating regional traffic volumes on regional and major local roads, and it should not be used for estimating local traffic on local roads. The MRWA ROM includes local roads but this is to provide connectivity in the model. MRWA Traffic Modelling Data should be interpreted by an experienced/qualified person. This data should not be used in making decisions relating to commercial or residential developments.



Transport Modelling Section
Enquiries Thomas Ng 9323 6366
MRWA Reference Job #41459
Thu 09 Apr 2020
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2016 ROM24 Base Scenario - Validation Plot for Pinjarra Rd, Furnissdale All Day

MODEL ASSUMPTIONS

LANDUSE: 2016 ROM24 MLUFS Land Use
NETWORK: 2016 ROM24 Network (20-Year Network Development Plan)
Reference #41283

ROM24 Multi-Modal Model V4.40 24-Hour Traffic Volumes & Observed Volumes

Terms & Conditions :
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- 1 Lane Each Direction
- 2 Lanes Each Direction
- 3 Lanes Each Direction
- ≥ 4 Lanes Each Direction
- 2016 Modelled
- 2016 Observed



Transport Modelling Section
Enquiries Thomas Ng 9323 6366
MRWA Reference Job #41459
Thu 09 Apr 2020
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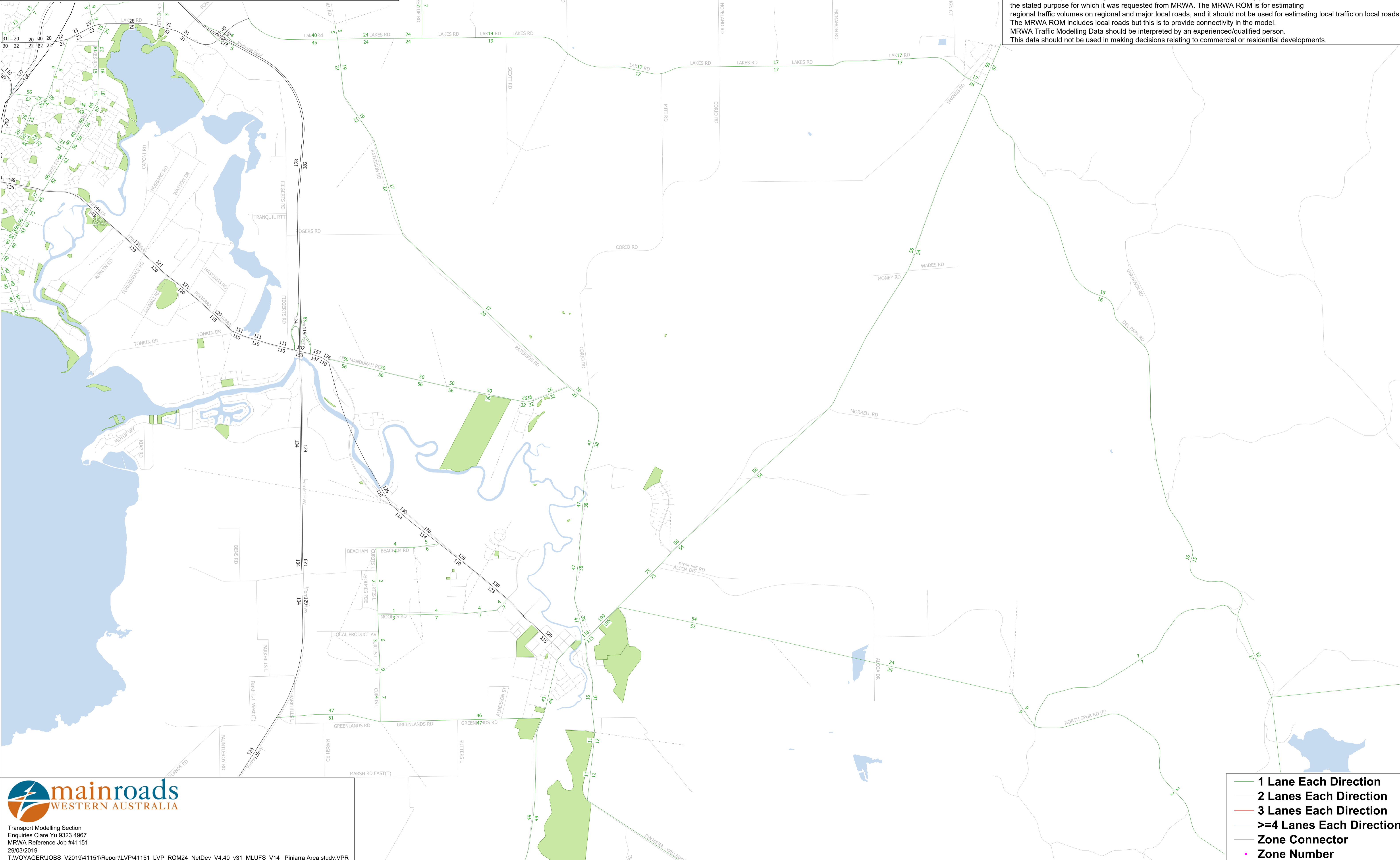
2031 ROM24 MLUFS Scenario - Link Volume Plot

All Day

Pinjarra Area study

MODEL ASSUMPTIONS
NETWORK: 2031 ROM24 Base Network (20 Year Development Plan)
LAND USE: 2031 ROM24 Base Land Use. (MLUFS Version 1.4 - August 2018)
Reference #41035

ROM24 Multi-Modal Model V4.40
24-Hour Traffic Volumes (Factor X 100)
 Terms & Conditions :
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- 1 Lane Each Direction
- 2 Lanes Each Direction
- 3 Lanes Each Direction
- >=4 Lanes Each Direction
- Zone Connector
- Zone Number

2041 ROM24 Base Scenario - Link Volume Plot for for Pinjarra Rd, Furnissdale All Day

MODEL ASSUMPTIONS

LANDUSE: 2041 MLUFS Land Use (Version 1.4 - August 2018)
NETWORK: 2041 ROM24 Network (20-Year Network Development Plan)
Reference #41283

ROM24 Multi-Modal Model V4.40 24-Hour Traffic Volumes (Factor X 100)

Terms & Conditions :
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Transport Modelling Section
Enquiries Thomas Ng 9323 6366
MRWA Reference Job #41459
Thu 09 Apr 2020
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From: [Jan Dvorak](#)
To: [Tom Hockley](#)
Cc: "[Richard Hammond](#)"; "[John Wood](#)"; "[Brenton Downing](#)"; "[Justin Hatch](#)"
Subject: RE: Riverglades Lifestyle Village, Furnissdale and Providence Lifestyle Village - Private Pump Station
Date: Friday, 19 March 2021 10:59:56 AM
Attachments: [image007.png](#)
[image008.png](#)
[image009.png](#)
[image016.png](#)
[image017.png](#)
[image018.png](#)
[image019.png](#)
[image020.png](#)

Hi Tom,

I believe that the Water Corporation will only approve formally the pressure main and the p/stn after the drawings are lodged with the WC and are designed to their satisfaction.

Not a problem with forwarding the WC email to Rod.

There are no buffers required for private pump stations, most of the time, they are constructed right next to the housing.

Kind Regards

Jan Dvorak

Westcoast Engineering (WA) P/L
Po Box 945, Balcatta 6914
U7/110 Erindale Road Balcatta 6021
Mob 0404038717 Ph 92406560

From: Tom Hockley [mailto:tom@allerdingassoc.com]
Sent: Friday, 19 March 2021 10:49 AM
To: 'Jan Dvorak'
Cc: 'Richard Hammond'; John Wood; Brenton Downing; Mike Enslin; Justin Hatch
Subject: RE: Riverglades Lifestyle Village, Furnissdale and Providence Lifestyle Village - Private Pump Station

Hi Jan,

I spoke to Rod last night and he was asking about the sewer connection and advice from Water Corp. I explained to him that we had received the advice below and that you were currently finalising the plan for the pump station and holding tank which we could provide to him early next week.

I assume there wouldn't be an issue with me forwarding the email chain below to Rod together with the plans once received?

Also, can you please confirm whether there are any requirements for a buffer around the pump station and holding tank?

Regards,

Tom Hockley | Associate

letter logo no text 80



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From: Jan Dvorak <jan@westcoastengineering.com.au>

Sent: Monday, 8 March 2021 6:15 AM

To: John Wood <JohnW@nlv.com.au>; 'Brenton Downing' <brenton@celsius.com.au>

Cc: 'Richard Hammond' <Richard@hrarchitects.com.au>

Subject: FW: Riverglades Lifestyle Village, Furnissdale and Providence Lifestyle Village - Private Pump Station

Hi Gentlemen / Good morning,

We have received the below email on Friday, confirming that the Water Corporation has spare capacity in their system.

However, the below email also confirms what the Water Corporation's development officer has been discussing with us previously, the WC does not want to have more than 10l/s pumped into their system in Wanjeep Street and therefore we will be required to restrict the flow from Providence housing development to 3.0 l/s.

That brings up an issue that will be required to be solved within a week or so by calculations of additional storage (also known as holding tanks) located next to the private pump station that will be installed somewhere in a location next to Pinjarra Road.

We believe that inevitably a loss of one lot may occur even though that we will try to minimize the land requirements by providing much larger pump well that is normally required.

Kind Regards

Jan Dvorak

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From: Graham Hayward [<mailto:Graham.Hayward@watercorporation.com.au>]

Sent: Friday, 5 March 2021 3:37 PM

To: Jan Dvorak

Subject: RE: Riverglades Lifestyle Village, Furnissdale and Providence Lifestyle Village

Hi Jan, yes, just got the advice below from our planners:

Hi Graham,

Lot 528, Pinjarra Rd, Furnissdale is located in Barragup Sewer District (SD 191) and according to the long-term sewer servicing plan, this lot is within the proposed Barragup pump station 'C' (which is planned to be constructed by 2025) catchment.

The developer's proposal is to install a private sewer pump station (SPS) in Lot 528 and share the existing DN80 private pressure main (PM) of the adjacent Caravan park which discharges flow to the access chamber (AC) 1983A in Mandurah Sewer District (SD 155).

*Based on the review of the existing Water Corporation sewer system, capacity of the sewers and the wastewater pump station downstream of AC 1983A are adequate to cater for additional flow from a **private pump station having a pump rate not more than 3L/s**. However, it is recommended that the Caravan Park private SPS existing pump rate of 7L/s be reduced if possible. This is due to the current arrangement where the existing DN300 inlet pipe to Wanjeep Rd Nth pump station is surcharged from other larger upstream pumping stations and gravity sewers. It would be ideal to help cut down further surcharging before this pump station is upgraded around 2039.*

Please note that the impact on the Caravan Park private SPS and the private PM was not assessed in this review, as that is not Water Corporations' responsibility.

Kind Regards,

Ella Hernich
Grad – Civil Engineering

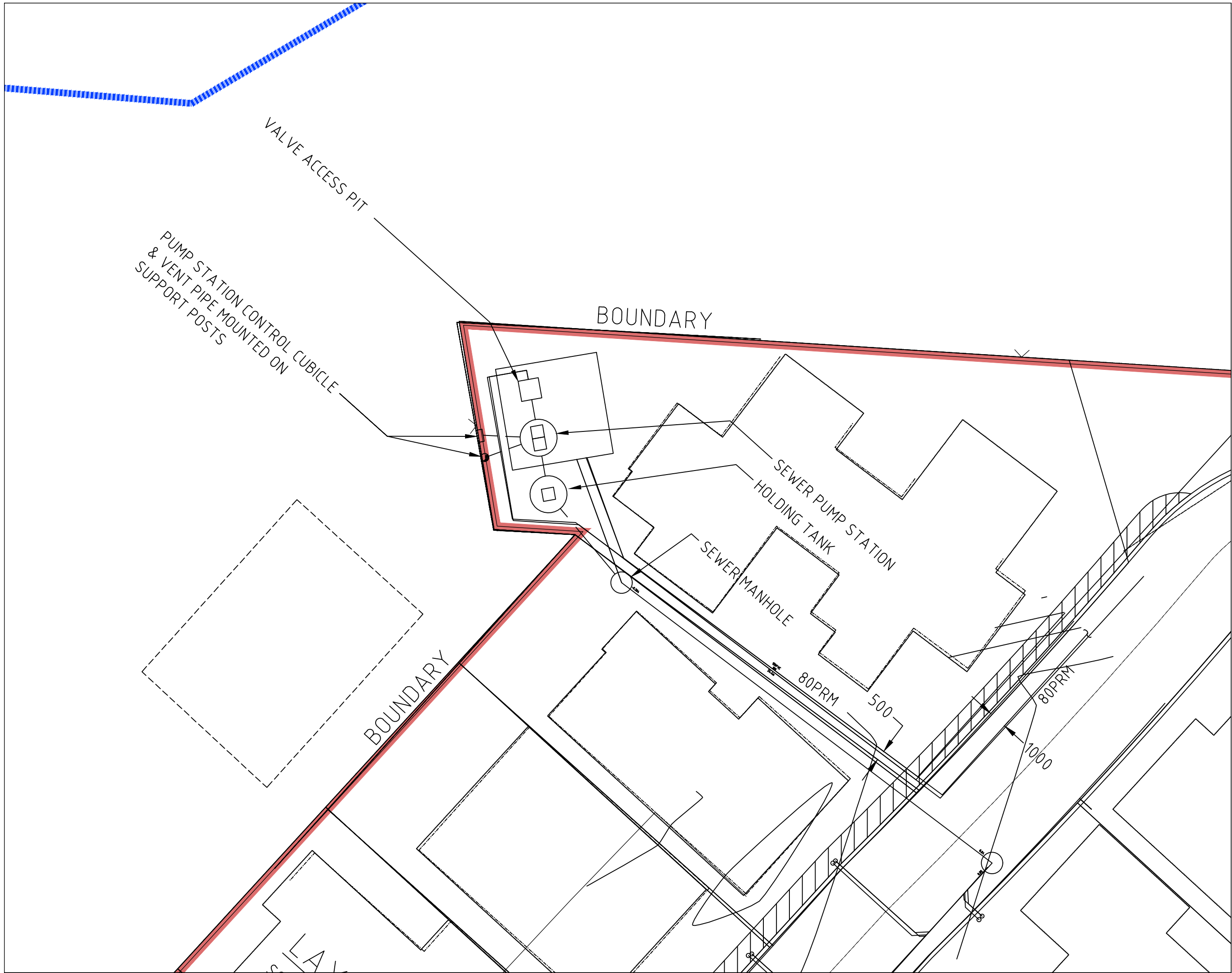
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Lifestyle Village

528 (Lot 156) Pinjarra Road, Furnissdale
Transport Impact Statement



Prepared by: GTA Consultants (WA) Pty Ltd for Celsius Land on behalf of Ecofit Homes

on 15/02/2021

Reference: W202190

Issue #: B-Final



GTA consultants

Lifestyle Village

528 (Lot 156) Pinjarra Road, Furnissdale
Transport Impact Statement


Client: Celsius Land on behalf of Ecofit Homes

on 15/02/2021

Reference: W202190

Issue #: B-Final

Quality Record

Issue	Date	Description	Prepared By	Checked By	Approved By	Signed
A-Dr	17/11/2020	Draft	Gary Soo Rodney Ding	Rodney Ding Tanya Moran		
A-Final	19/11/2020	Final – addressing client comments	GS/TM	RD/TM	TM	TM
B-Final	16/02/21	Final – addressing SoM & MRWA comments	RD	RD	TM	

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1. INTRODUCTION

1.1. Background

A Development Application has been sought for a proposed Lifestyle Village development on land located at 528 (Lot 156) Pinjarra Road, Furnissdale which is part of the *Furnissdale West Structure Plan* approved on 22nd August 2018. The proposed development incorporates 79 home dwellings (with various supporting facilities such as a club house, barbeque and lawn bowls area) on a 29,512m² lot.

GTA Consultants was commissioned by Celsius Land on behalf of Ecofit Homes to undertake a Transport Impact Assessment of the proposed development.

1.2. Purpose of this Report

Western Australian Planning Commission Transport Assessment Guidelines (WAPC Guidelines) provide direction on the level of assessment which is necessary to be carried out with respect to the likely traffic impact of a development proposal. Typically, any development which is expected to have a 'high' traffic impact, that is, generating more than 100 trips in the peak hour is satisfied by a Traffic Impact Assessment (TIA). Any development which is expected to generate less than 100 trips in the peak hour requires a Transport Impact Statement (TIS) to be undertaken. Both types of assessment consider the operation and layout of the site, but they differ in their assessment of external traffic impact.

In the context of this proposal, it is estimated there will be less than 100 trips generated in a given peak hour if applying 'typical' traffic generation rates. In this case a **TIS** is appropriate. This TIS briefly outlines the transport aspects surrounding the proposed development application. The intent of a TIS, as per the WAPC Guidelines, is to provide the approving authority with sufficient transport information to confirm that the Applicant has adequately considered the transport aspects of the development application and that it would not have an adverse transport impact on the surrounding area.

In accordance with the WAPC Guidelines, this TIS outlines:

- Existing transport conditions proximate to the site
- Suitability of the proposed parking provision within the site
- The adequacy of the proposed site layout
- The traffic generating characteristics of the proposed development
- The anticipated impact of the proposed development on the surrounding road network.

1.3. References

In preparing this report, reference has been made to the following:

- Shire of Murray Town Planning Scheme No. 4
- Furnissdale West Structure Plan approved on 19th October 2016 and as amended 22nd October 2018.
- Liveable Neighbourhoods Guidelines
- WAPC Transport Assessment Guidelines for Individual Developments

INTRODUCTION

- Australian Standard/ New Zealand Standard, Parking Facilities, Part 1: Off-Street Car Parking AS/NZS 2890.1:2004
- Guide to Traffic Management Part 6 – Intersections, Interchanges and Crossings, Austroads
- Plans for the proposed development prepared by Richard Hammond Architect dated 14th July 2020
- various technical data as referenced in this report
- an inspection of the site and its surrounds
- other documents as nominated.

2. EXISTING CONDITIONS

2.1. Subject Site and Surrounding Context

The subject site is located at 528 (Lot 156) Pinjarra Road, Furnissdale. The site of 29,512m² has a frontage of 75m to Pinjarra Road to the north/east and 240m to Riverside Drive to the south/east.

The site is located within a Residential Development Zone (Based on *Shire of Murray Town Planning Scheme No. 4*) with mostly rural zoning and some residential zoning nearby.

Figure 2.1: Subject Site and its Environs

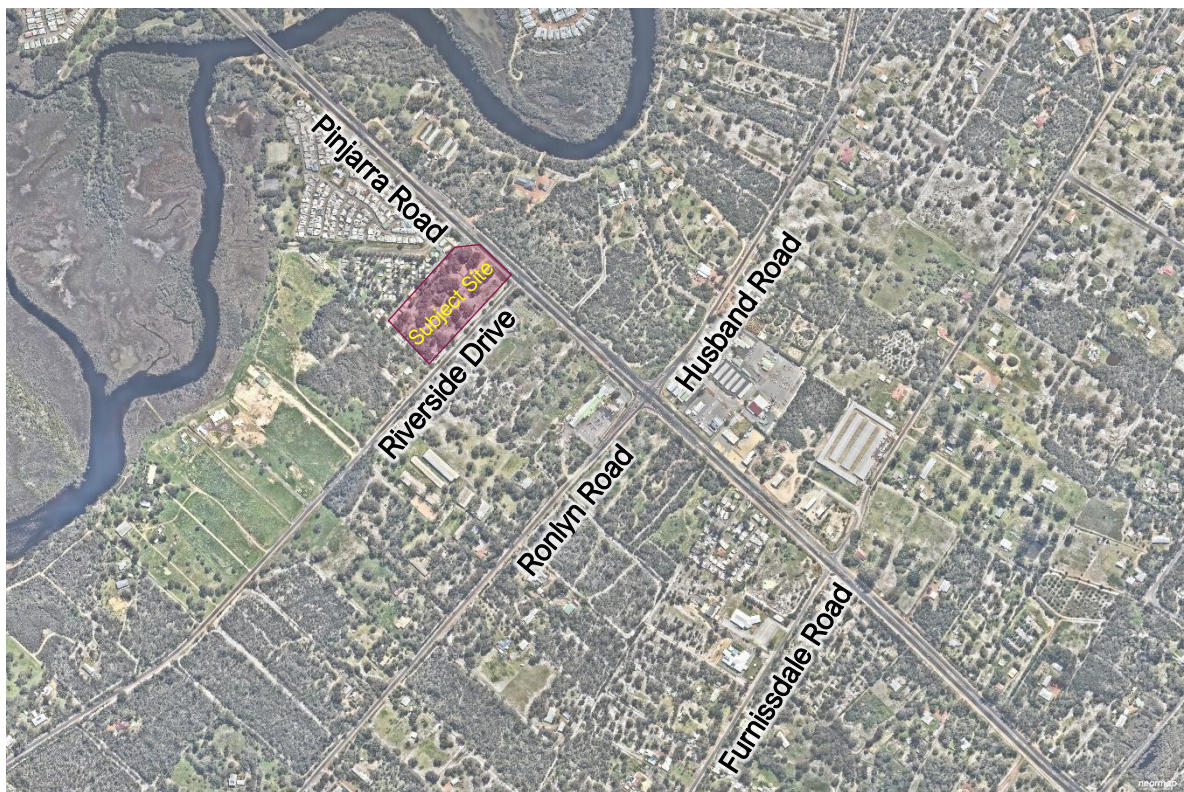
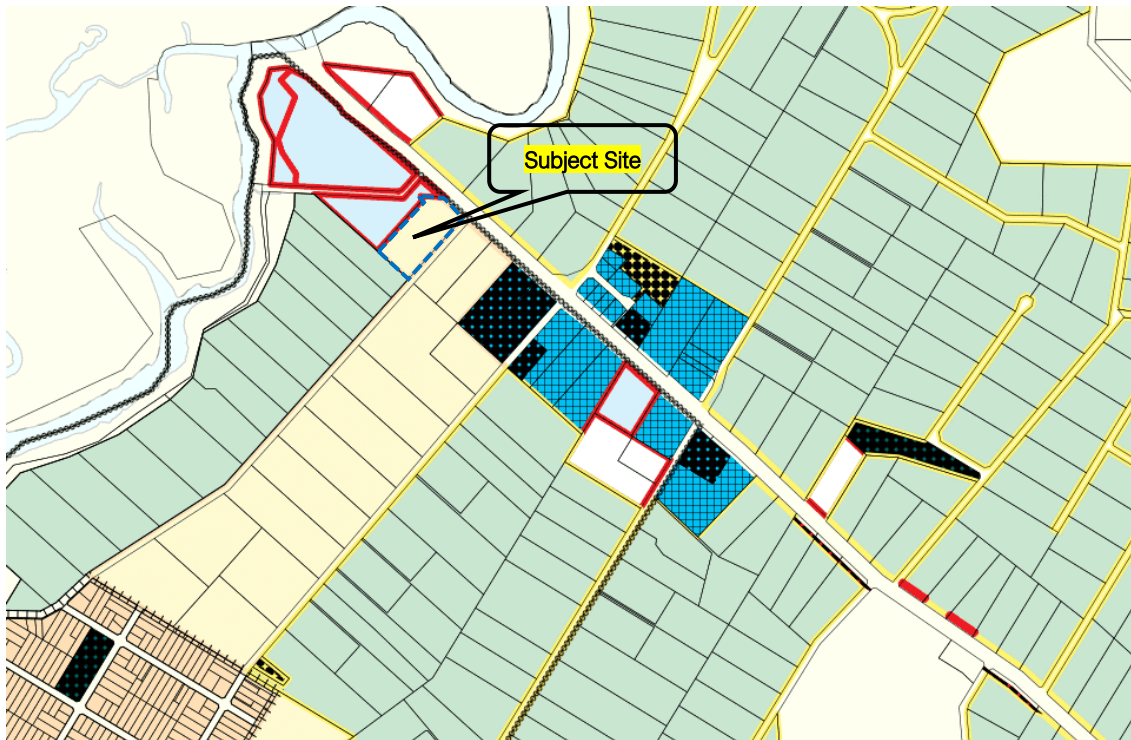


Photo Map courtesy of NearMap Pty Ltd

Figure 2.2: Land Zoning Map (Shire of Murray Town Planning Scheme No. 6)



(Reproduced from City of Gosnells Online Mapping Site)

- | | |
|---|----------------------------------|
| CANAL DEVELOPMENT | PRIVATE CLUBS AND INSTITUTIONS |
| CARAVAN / CHALET PARK | PUBLIC PURPOSES |
| CIVIC / CULTURAL | PUBLIC RECREATION / CONSERVATION |
| CLUSTER FARM | RAILWAY |
| COMMERCIAL | RESIDENTIAL |
| FARMLET | RESIDENTIAL DEVELOPMENT |
| HILLS LANDSCAPE PROTECTION | ROAD TO BE CLOSED |
| HOTEL / MOTEL | RURAL |
| INDUSTRIAL DEVELOPMENT | SERVICE COMMERCIAL |
| INDUSTRY | SPECIAL DEVELOPMENT |
| MAJOR HIGHWAY | SPECIAL RESIDENTIAL |
| PRIMARY REGIONAL ROADS (PEEL REGIONAL SCHEME) | SPECIAL RURAL |
| PRIMARY REGIONAL ROAD | SPECIAL USE |
| PRIVATE RECREATION | |

2.2. Road Network

Pinjarra Road

Pinjarra Road is a State Road under the care and control of Main Roads WA and is classified as a Primary Distributor under Main Roads WA Functional Road Hierarchy. The road consists of two 7.4m wide carriageways with a 6.5m wide median, within a 40m wide road reserve. Pinjarra Road is also presently on the RAV Network 4 with no conditions prohibiting movements which allows large combination vehicles up to 27.5m in length.

On the south side of Pinjarra Road, an approx. 2m wide footpath is situated close to the edge of the site boundary, although this width path has not been maintained in some areas due to overgrowth, with no footpath provided on the north side of the road. Pinjarra Road has a posted speed limit of 80km/h and is reduced to 60km/h to the west after Serpentine River towards Greenfield.

Pinjarra Road is currently carrying approximately 14,200¹ to 16,000² vehicles per day (vpd) in 2020.

There is a proposed 10m widening of the current road reserve to the ultimate MRS reservation.

Riverside Drive

Riverside Drive is under the care and control of the Shire of Murray and is classified as a Local Distributor under Main Roads WA Functional Road Hierarchy. The road consists of an approximately 6m wide two-way rural carriageway within a 20m wide road reserve with no footpath on either side of the road. The road also has 2-2.5m wide unsealed gravel shoulders either side of the main sealed roadway. Riverside Drive is not speed zoned and thus vehicle speeds can be up to 110km/h as it is subject to the Open Road speed limit. Riverside Drive is the main access road abutting the subject site. It is also one of two main access roads to the *Furnissdale West Structure Plan*, with Ronlyn Road as the alternative access road.

Riverside Drive is currently carrying 500 vehicles per day (vpd)¹ in 2020.

2.3. Existing and Proposed Land Uses

There is a single residential dwelling currently on the subject site.

The development application proposes 79 new home dwellings with various of supporting facilities such as a club house, barbeque and lawn bowls area on a 29,512 m² lot.

2.4. Transport Network

The development site is located within walkable distance (400m) to public transport. Bus Routes 600, 604 and 605 run along Pinjarra Road, with a bus stop in close proximity to the site in both directions. The train station is located 4km from the site and it can be accessed by the above bus routes running past the subject site.

The site has a Transit Score of 26/100 due to limited frequency, with only one of the above bus routes running along Pinjarra Road toward Mandurah Station during non-peaks. With reference to WAPC's *State Planning Policy 7.3 – Residential Design Codes Volume 1*, Pinjarra Road is a low frequency³ bus route with buses running at least every 30 minutes during week day peak period.

Refer to Table 2.1 on the following page summarising the above.

¹ Based on video survey undertaken by Matrix Traffic and Transport Data on 3rd November 2020 (Tuesday). Daily volumes are assumed to be 10 times the average of AM and PM peaks hourly volumes (rounded to the nearest 50).

² Based on Main Roads WA Trafficmap Data for count site 19127 in 2019/2020.

³ Residential Design Codes Volume 1, High frequency route – a public transport route with timed service running at least every 15 minutes during weekday peak periods (7am – 9am, 5pm – 7pm)

Table 2.1: Public Transport provision

Service	Route	Route Description	Distance to Nearest Stop (m)	Frequency On/Off Peak
Bus	600	Mandurah Station to Pinjarra	350m	30 min on / 60 min off
Bus	604	Mandurah Station to South Yunderup	350m	One trip per direction per day
Bus	605	Mandurah Station to Pinjarra (Murray River Estate)	350m	One trip per direction per day
Train	Mandurah Line	Perth Station – Mandurah Station	4km	15 min

2.5. Safety Assessment

Intersection of Pinjarra Road and Riverside Drive

In the five-year period up to 31/12/2019 there has been three (3) recorded crashes at this intersection. Two of these crashes were Rear End crashes and the other was a Right-Turn Through crash. One of the Rear End crashes was a KSI (Hospitalisation) crash and the two other crashes were Property Damage (major).

The KSI crash involved a vehicle travelling west to east through the intersection crashing into the rear of another vehicle travelling in the same direction. This does not appear to be related to the right turn movement from Pinjarra Road into Riverside Drive.

Riverside Drive

In the five-year period up to 31/12/2019 there had been no recorded crashes on Riverside Drive.

For the length of Riverside Drive from Pinjarra Road to just north of Paull Street in Furnissdale there have also been no recorded crashes in the five-year period up to 31/12/2019.

3. VEHICULAR ACCESS AND PARKING

3.1. Access and Parking Arrangements

Every home dwelling proposed in the development has its own private car parking space(s) and there are also visitor bays provided around the central community hub at the entrance of the development as follows:

- 38 dwellings with single carports / garage
- 41 dwellings with double carports / garage
- 21 visitor bays
- 2 bays for Persons with a Disability (PwD).

Due to the nature of the development, there is no set-down / drop-off bays and loading bays within the development, nor is there a strict need.

Access to/from the development is via Riverside Drive then to Pinjarra Road with the intersection of Pinjarra Road / Riverside Drive operating as a full movement T-junction intersection (as per existing).

The proposed two-way circulating roads within the development are 6.0m wide while the one-way circulating roads are 4.0m wide.

A copy of the development plan provided by Richard Hammond Architect is shown in Figure 3.1 and at Appendix A.

Figure 3.1: Development Plan



4. SERVICE VEHICLES

Waste management will be undertaken by Lifestyle Village management via vehicle and trailer collection system. General waste, bulk bin recycling, and composting green waste will be stored in a storage located near the village workshop proposed to be located in the southeast of the development. Cleanaway contractors will be appointed for bulk general and waste removal.

Rubbish collection vehicles and emergency service vehicles will utilise the same crossover abutting Riverside Drive to access the development.

Service vehicles will be able to also use the internal roadway to access the homes as needed, with swept paths to be assessed at further stages of design post development application.

5. TRAFFIC AND PARKING ASSESSMENT

5.1. Background

The *Furnissdale West Structure Plan* area is to be developed in the coming years, which the proposed development forms part of.

The following traffic and parking assessment has examined the effects of the proposed development proceeding on its own in the first instance to determine its effect on the road network and then has been assessed based on its incremental effect as part of the wider *Furnissdale West Structure Plan* when that is fully developed.

This was done to quantify the effect of the development in the short term without any other development and then look at its contribution to the ultimate effects of the overall *Furnissdale West Structure Plan* area.

5.2. Traffic Volumes Assessment

5.2.1. Current Traffic Flow

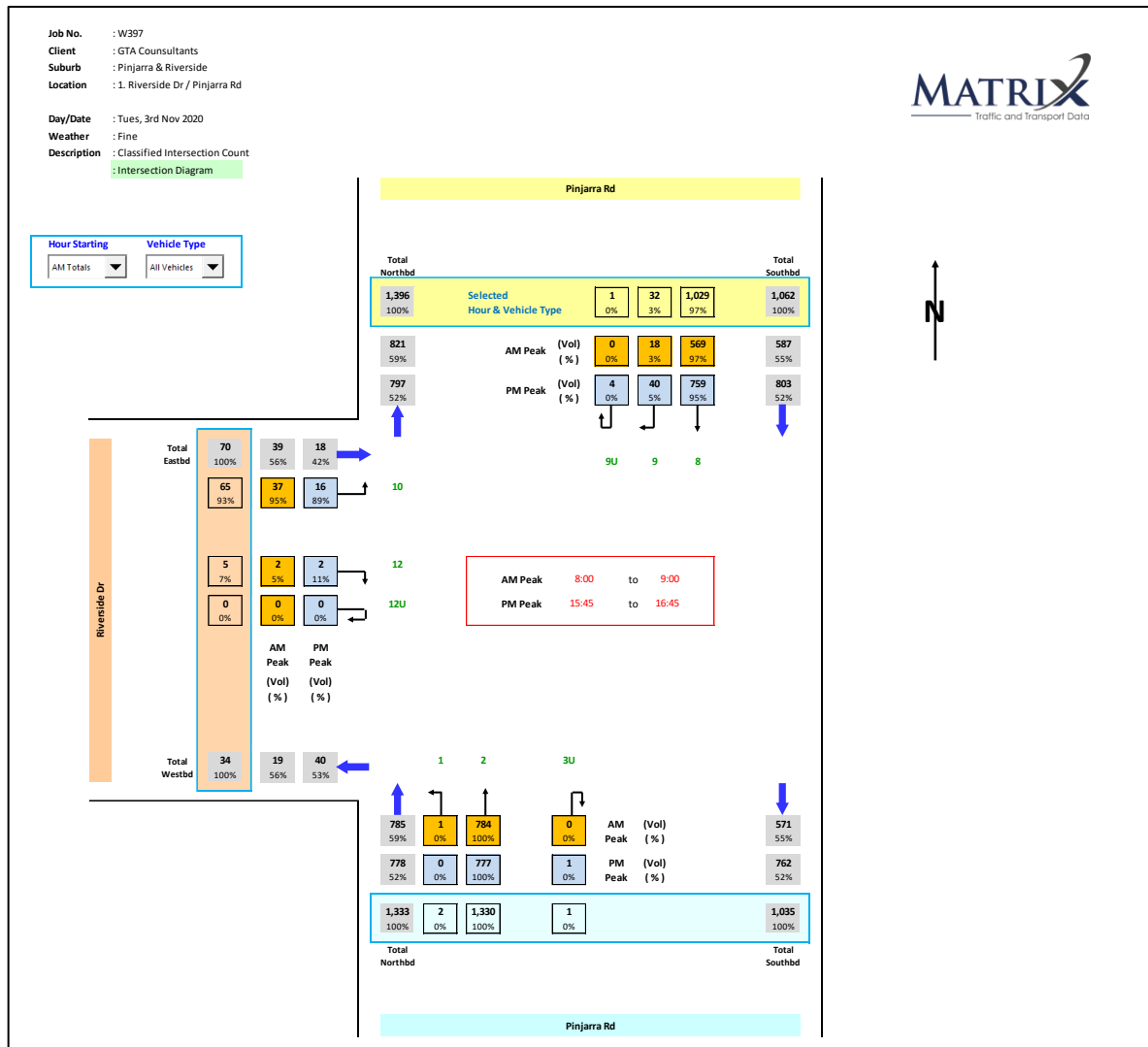
Matrix Traffic & Transport Data, on behalf of GTA Consultants, undertook traffic movement counts at the intersection of Pinjarra Road and Riverside Drive on Tuesday 3rd November 2020 during the following periods:

- AM: 7:00am – 9:00am
- PM: 3:00pm – 5:00pm

The peak hour within that period are found to be 7:45am – 8:45am (AM peak) and 3:00pm – 4:00pm (PM peak). Current peak hour traffic volumes and turn counts are shown in Figure 5.1.

TRAFFIC AND PARKING ASSESSMENT

Figure 5.1: Current Peak Hour Turn Counts at Pinjarra Road / Riverside Drive



5.2.2. Expected Traffic Flows

Expected traffic growth rate on Pinjarra Road has been assessed based on Main Roads WA ROM Data provided on 19/01/2021 to the Shire of Murray. These are job references 41283 (for 2016 and the 2016 validation plot) and 41035 (for 2031).

As such, traffic is expected to increase from a validated 15,200vpd (between Ronlyn Road and Furnissdale Road) in 2016 to approximately 24,600 in 2031. Based on this the growth rate is expected to be approximately 3.2% per annum on a compounding basis or approximately 625vpd on a linear basis.

This final 2031 traffic flow was used for the assessment of the intersection in 2030.

As for Riverside Drive, no traffic growth is expected on it other than the traffic generated from *Furnissdale West Structure Plan*.

5.2.3. Traffic Generation

Reference is made to the *Institute of Transportation Engineers (ITE) Trip Generation Manual (9th Edition)* for the trip generation rate for Lifestyle Village and WAPC Guideline for residential dwellings in the *Furnissdale West Structure Plan*. Based on the recorded trip generation rate for Recreational Home 260 which has similar land use to this proposed development, the generation rates adopted in the assessment are as follows.

The Lifestyle Rate below was applied to this proposed development, whilst the Residential Rate was applied to the wider *Furnissdale West Structure Plan* area.

Table 5.1: Adopted Trip Generation Rate

Land Use	Units	Daily Trip	AM Trip	AM In	AM Out	PM Rate	PM In	PM Out	Source
Lifestyle Home	Dwelling	3.16	0.16	67%	33%	0.26	41%	59%	ITE Trip Generation Manual
Residential	Dwelling	8	0.8	25%	75%	0.88	67%	33%	WAPC Guideline

The proposed development is expected to approximately generate:

- 250 vehicles per day
- 12 vehicles per hour (8 in and 4 out) in the AM peak
- 20 vehicles per hour (8 in and 12 out) in the PM peak.

The *Furnissdale West Structure Plan* is expected to house 700 dwellings which is expected to generate:

- 5,600 vehicles per day
- 560 vehicles per hour (140 in and 420 out) in the AM peak
- 560 vehicles per hour (375 in and 185 out) in the PM peak.

5.2.4. Trip Distribution

The directional distribution and assignment of traffic generated by the proposed development will be influenced by a number of factors but was largely estimated on the current traffic flow patterns recorded for the residential developments abutting Riverside Drive.

Having consideration to the above, for the purposes of estimating vehicle movements, the following directional distributions have been assumed as per Table 5.2. It has also been assumed that the distribution split of *Furnissdale West Structure Plan* on Riverside Drive and Ronlyn Road will be 50% / 50%.

Table 5.2: Directional Distributions

Direction	AM Peak	PM Peak	Direction	AM Peak	PM Peak
Inbound			Outbound		
Pinjarra Road (W)	95%	100%	Pinjarra Road (W)	95%	89%
Pinjarra Road (E)	5%	-	Pinjarra Road (E)	5%	11%

5.2.5. Vehicle Types

The types of vehicles accessing the site will be typically private motor vehicles, except for service vehicles such as delivery vans and rigid delivery trucks. These vehicles will access the site via the same roads as private motor vehicles.

5.3. Level of Service Concepts

The Level of Service (LoS) concept describes the quality of traffic service in terms of six levels, designated A to F, with LoS A representing the best operating condition (i.e. at or close to free flow), and LoS F being the poorest (i.e. forced flow). More specifically:

- *LoS A*: Primarily free flow operations at average travel speeds, usually about 90% of the FFS (Free Flow Speed) for the given street class. Vehicles are completely unimpeded in their ability to manoeuvre within the traffic stream. Control delay at signalised intersections is less than 10 seconds. At non-signalised movements at intersections, the average control delay is less than 10 seconds.
- *LoS B*: Reasonably unimpeded operations at average travel speeds, usually about 70% of the FFS for the street class. The ability to manoeuvre within the traffic stream is only slightly restricted, and control delays at signalised intersections are between 10 and 20 seconds. At non-signalised movements at intersections the average control delay is between 10 and 15 seconds.
- *LoS C*: Stable operations; however, ability to manoeuvre and change lanes in mid-block locations may be more restricted than at LoS B, and longer queues, adverse signal coordination, or both may contribute to lower average travel speeds of about 50% of the FFS for the street class. Signalised intersection delays are between 20 and 35 seconds. At non-signalised movements at intersections the average control delay is between 15 and 25 seconds.
- *LoS D*: A range in which small increases in flow may cause substantial increases in delay and decreases in travel speed. LoS D may be due to adverse signal progression, inappropriate signal timing, high volumes, or a combination of these factors. Average travel speeds are about 40% of FFS. Signalised intersection delays are between 35 and 55 seconds. At non-signalised movements at intersections the average control delay is between 25 and 35 seconds.
- *LoS E*: Characterised by significant delays and average travel speeds of 33% of the FFS or less. Such operations are caused by a combination of adverse progression, high signal density, high volumes, extensive delays at critical intersections (between 55 and 80 seconds), and inappropriate signal timing. At non-signalised movements at intersections the average control delay is between 35 and 50 seconds.
- *LoS F*: Characterised by urban street flow at extremely low speeds, typically 25% to 33% of the FFS. Intersection congestion is likely at critical signalised locations, with high delays (in excess of 80 seconds), high volumes, and extensive queuing. At non-signalised movements at intersections the average control delay is greater than 50 seconds.

In addition to the above:

- Average Delay: is the average of all travel time delays for vehicles through the intersection
- Queue: is the queue length below which 95% of all observed queue lengths fall
- Degree of Saturation (DoS): Ratio of the traffic flow to the capacity for that particular lane/movement.

This is summarised below:

LoS		Intersection Degree of Saturation (DoS, X)	
		Unsignalised Intersection	Signalised Intersection
A	Excellent	≤ 0.50	≤ 0.60
B	Very Good	0.50-0.70	0.60-0.75
C	Good	0.70-0.80	0.75-0.90
D	Acceptable	0.80-0.90	0.90-0.95
E	Poor	0.90-1.00	0.95-1.00
F	Very Poor	≥ 1.0	≥ 1.0

5.4. Assessment Scenarios

The performances of the following intersections have been assessed by utilising *Sidra Intersection 8*:

- Intersection of Pinjarra Road and Riverside Drive
- Crossover on Riverside Drive to subject site.

The assessment for the intersection of Pinjarra Road and Riverside Drive was based on five scenarios:

- Base case existing situation (2020)
- Base case 10-years (2030) in the future without the development
- With development and 10-years in the future.
- 10-years (2030) in the future with *Furnissdale West Structure Plan* but without the development
- 10-years (2030) in the future with *Furnissdale West Structure Plan* and the development.

The assessment for the crossover on Riverside Drive to the subject site was based on one scenario:

- 10-years (2030) in the future with *Furnissdale West Structure Plan* and the development.

The “base case 10-years” was based on the current traffic flows with the compound growth rate applied with no development traffic from the subject site (i.e. background growth only). The “with development” or “with Structure Plan” cases were based on the background growth plus the addition of the traffic due to the development or the *Furnissdale West Structure Plan*.

5.5. Intersection of Pinjarra Road and Riverside Drive Performance

The intersection was assessed based on the existing geometric layout to determine the impact of the development on the existing road network.

Table 5.3 to Table 5.7 (excerpts from the *SIDRA Intersection 8* output table for Movements) show the expected performance of the intersection under the above-mentioned scenarios.

5.5.1. Pinjarra Road / Riverside Drive – Base Case 2020 & 2030

Table 5.3: Pinjarra Road / Riverside Drive – Base Case 2020 Operating Conditions

		Critical Turning Movements			
Peak	Movements (Short Lane Length)	DOS	LOS	Average Delay (sec)	95th Percentile Queue (m/veh)
AM	Riverside Drive (S)	0.05	A	8s	2m
	Pinjarra Rd (E)	0.22 [#]	-	0s	0m
	Pinjarra Rd (W)	0.17	-	0s	1m
	Intersection	0.22	-	0s	2m
PM	Riverside Drive (S)	0.03	A	8s	1m
	Pinjarra Rd (E)	0.21	-	0s	0m
	Pinjarra Rd (W)	0.21 [#]	-	1s	3m
	Intersection	0.21	-	0s	3m

DOS – Degree of saturation, LOS – Level of Service, # - Intersection DOS

Table 5.4: Pinjarra Road / Riverside Drive – Future Base Case 2030 Operating Conditions

		Critical Turning Movements			
Peak	Movements (Short Lane Length)	DOS	LOS	Average Delay (sec)	95th Percentile Queue (m/veh)
AM	Riverside Drive (S)	0.05	A	8s	2m
	Pinjarra Rd (E)	0.22 [#]	-	0s	0m
	Pinjarra Rd (W)	0.20	-	0s	1m
	Intersection	0.22	-	0s	2m
PM	Riverside Drive (S)	0.03	B	10s	1m
	Pinjarra Rd (E)	0.30 [#]	-	0s	0m
	Pinjarra Rd (W)	0.21	-	1s	3m
	Intersection	0.30	-	0s	3m

DOS – Degree of saturation, LOS – Level of Service, # - Intersection DOS

Overall, the intersections are expected to operate well in the AM and PM peaks to 2030 based on background traffic growth only. There is expected to be no notable increases in the DoS for both the intersections.

5.5.2. Pinjarra Road / Riverside Drive – Future 2030 “with Development”

To assess the impacts of the additional traffic expected from the Lifestyle Village development, a “with development” assessment was undertaken. This assessment adopted the current intersection geometry with volumes for the above “future base case” assessments plus the addition of the expected traffic due to the development.

Table 5.5 below summarise the performance of the intersection of Pinjarra Road and Riverside Drive.

Table 5.5: Pinjarra Road / Riverside Drive – Future 2030 “with Development” Operating Conditions

		Critical Turning Movements			
Peak	Movements (Short Lane Length)	DOS	LOS	Average Delay (sec)	95th Percentile Queue (m/veh)
AM	Riverside Drive (S)	0.06	A	8s	2m
	Pinjarra Rd (E)	0.22 [#]	-	0s	0m
	Pinjarra Rd (W)	0.20	-	0s	2m
	Intersection	0.22	-	0s	2m
PM	Riverside Drive (S)	0.05	A	10s	2m
	Pinjarra Rd (E)	0.30 [#]	-	0s	0m
	Pinjarra Rd (W)	0.21	-	1s	4m
	Intersection	0.30	-	1s	4m

DOS – Degree of saturation, LOS – Level of Service, # - Intersection DOS

The above outputs indicate that there are expected to be no notable adverse traffic impacts to this intersection due to the addition of this proposed development.

5.5.3. Pinjarra Road / Riverside Drive – Future 2030 “with Structure Plan”

Table 5.6 below summarise the performance of the intersection of Pinjarra Road and Riverside Drive in 2030 with the expected growth on Pinjarra Road and the addition of full built out *Furnissdale West Structure Plan* traffic.

Table 5.6: Pinjarra Road / Riverside Drive – Future 2030 “with Structure Plan” Operating Conditions

		Critical Turning Movements			
Peak	Movements (Short Lane Length)	DOS	LOS	Average Delay (sec)	95th Percentile Queue (m/veh)
AM	Riverside Drive (S)	0.33 [#]	A	9s	12m
	Pinjarra Rd (E)	0.19	A	0s	0m
	Pinjarra Rd (W)	0.30	-	2s	11m
	Intersection	0.33	-	2s	12m
PM	Riverside Drive (S)	0.22	B	11s	6m
	Pinjarra Rd (E)	0.21	A	0s	0m
	Pinjarra Rd (W)	0.94 [#]	-	12s	91m
	Intersection	0.94	-	6s	91m

DOS – Degree of saturation, LOS – Level of Service, # - Intersection DOS

The above outputs indicate that the opening of *Furnissdale West Structure Plan* is expected to have an impact on the intersection of Pinjarra Road and Riverside Drive but only minor. The intersection is expected to still perform well with negligible delays and manageable (short) queues on Riverside Drive.

5.5.4. Pinjarra Road / Riverside Drive – Future 2030 “with Structure Plan and Development”

To assess the impacts of the additional traffic expected from the Lifestyle Village development with the opening of *Furnissdale West Structure Plan* by 2030, a “with structure plan and development” assessment was undertaken.

This assessment adopted the intersections with volumes for the above “future with structure plan” assessments with the addition of the expected traffic due to the development.

Table 5.7 below summarise the performance of the intersection of Pinjarra Road and Riverside Drive.

Table 5.7: Pinjarra Road / Riverside Drive – Future 2030 “with Development and Structure Plan” Operating Conditions

Peak	Movements (Short Lane Length)	Critical Turning Movements			
		DOS	LOS	Average Delay (sec)	95th Percentile Queue (m/veh)
AM	Riverside Drive (S)	0.33 [#]	A	9s	13m
	Pinjarra Rd (E)	0.19	A	0s	0m
	Pinjarra Rd (W)	0.33	-	2s	12m
	Intersection	0.33	-	2s	13m
PM	Riverside Drive (S)	0.24	B	11s	7m
	Pinjarra Rd (E)	0.21	A	0s	0m
	Pinjarra Rd (W)	0.97 [#]	-	15s	109m
	Intersection	0.97	-	8s	109m

DOS – Degree of saturation, LOS – Level of Service, # - Intersection DOS

The above outputs indicate that there are expected to be negligible impact in the addition of this proposed development when compared with the previous ‘2030 with Structure Plan’ scenario.

To allow for a sensitivity assessment of the expected traffic flows at this intersection, the observed right turn proportions in 2020 (5% in the AM peak and 11% in the PM peak) were doubled and the assessment was undertaken to examine the effects of this on the intersection performance. This result in shown below in Table 5.8.

Table 5.8: Pinjarra Road / Riverside Drive – Future 2030 “with Development and Structure Plan” Operating Conditions – Sensitivity Check with Double Right Turn Volumes

Peak	Movements (Short Lane Length)	Critical Turning Movements			
		DOS	LOS	Average Delay (sec)	95th Percentile Queue (m/veh)
AM	Riverside Drive (S)	0.40 [#]	B	10s	18m
	Pinjarra Rd (E)	0.19	A	0s	0m
	Pinjarra Rd (W)	0.33	-	2s	12m
	Intersection	0.40	-	2s	18m
PM	Riverside Drive (S)	0.35	C	15s	12m
	Pinjarra Rd (E)	0.21	A	0s	0m
	Pinjarra Rd (W)	0.98 [#]	-	15s	111m
	Intersection	0.98	-	8s	111m

From this sensitivity assessment, the key performance indicators of DoS being less than 1.0 is achieved for all Pinjarra Road movements, particularly the critical right turn from Pinjarra Road into Riverside Drive. Under this assessment, the queues of left and right turn traffic on Riverside Drive are not expected to block the adjacent right and left turn traffic movement. Refer to Section 7.3 for a further discussion.

5.5.5. Riverside Drive Crossover – Future 2030 “with Structure Plan and Development”

The crossover was assessed with Riverside Drive as two-way, two-lane median-divided road and the crossover likewise as a two-way road using *SIDRA Intersection 8* in 2030.

The operation of this crossover was assessed with the *Furnissdale West Structure Plan* traffic as the only expected growth on Riverside Drive, with the addition of the development traffic.

Table 5.9 below shows the expected intersection performance for the proposed crossover.

Table 5.9: Riverside Drive Crossover – Future 2030 “with Development and Structure Plan” Operating Conditions

Peak	Movements (Short Lane Length)	Critical Turning Movements			
		DOS	LOS	Average Delay (sec)	95th Percentile Queue (m/veh)
AM	Riverside Drive (S)	0.12 [#]	-	0s	0m
	Riverside Drive (N)	0.05	-	1s	0m
	Lifestyle Village (Site)	0.00	A	6s	0m
	Intersection	0.12	-	0s	0m
PM	Riverside Drive (S)	0.05	-	0s	0m
	Riverside Drive (N)	0.12 [#]	-	0s	0m
	Lifestyle Village (Site)	0.01	A	6s	0m
	Intersection	0.12	-	0s	0m

The above outputs indicate that the crossover is expected to operate very well 10 years into the future with this proposed development.

5.6. Traffic Impact

Based on the increase of 250 vehicles per day on the current traffic flow of 14,200 to 16,000 vehicles per day on Pinjarra Road and 500 vehicles per day on Riverside Drive, this is expected to be approximately less than 2% increase in traffic on Pinjarra Road and 50% increase in traffic on Riverside Drive. With traffic flows varying on arterial roads up to 5% from day-to-day, this increase in traffic flow on Pinjarra Road is not considered to be significant.

In addition to the above assessment, the increase in traffic flow on any single lane on Pinjarra Road is expected to be approximately 20 vehicles per hour. Under WAPC Guidelines, sections of road with an increase in traffic flow in excess of 100 vehicles per hour per lane should be assessed. The proposed development is expected to increase traffic flows by (at most) 20 vehicles per hour per lane and thus the impacts is expected to be minimal with no roads exceeding the threshold levels.

The increase in traffic flows due to the proposed development on Riverside Drive is expected to not exceed the overall capacity of Riverside Drive in its present format. The current road cross section can typically carry traffic flows of up to approximately 1,000vpd at midblock locations. The expected traffic flows of 750vpd with the proposed development is not expected to exceed this “capacity” and thus there is no requirement for Riverside Drive to be upgraded.

The current intersection format of Pinjarra Road and Riverside Drive is expected to operate satisfactorily in the future with the *Furnissdale West Structure Plan* traffic and the proposed development traffic added to the road network.

Based on the above analysis and well performing intersections, there is no requirement for this intersection to be upgraded as part of this development. Additionally, when compared to the overall Structure Plan impacts, this Development Application does not significantly contribute to the overall traffic impacts in the future.

5.7. Parking Impact

With reference to WAPC's *State Planning Policy 7.3 – Residential Design Codes Volume 1*, the minimum number of one (1) on-site car parking space and 0.25 visitors car parking space are to be provided for each aged persons' dwelling at location B (not within 250m of a high frequency bus route measured in a straight line). Besides that, 1 accessible car parking space is required for 100 car parking spaces for Class 3 building (accommodation for the aged, children or people with disabilities) as per Building Code of Australia (BCA) Table D3.5.

With the total number of 79 dwellings, a visitor parking provision of 20 bays are required. As discussed in Section 3.1, every dwelling has at least one (1) carport / garage and there are 21 proposed visitors car parking spaces. As such, 2 accessible (PwD) car parking spaces are required for the total of 141 car spaces provided in the development.

Thus, the proposed provision of car parking bay is considered acceptable.

6. ACTIVE TRANSPORT

6.1. Pedestrian Access/Facilities

6.1.1. Pedestrian facilities within the development

There are currently no pedestrian facilities within the development as it is a single residential dwelling on it.

Pedestrian footpaths have been proposed within the development from the entrance to every dwelling. Pedestrian footpaths are proposed on at least one side of the main circulating roads where all residents can reach their dwellings via footpaths.

6.1.2. Existing pedestrian facilities on surrounding roads

Access to the site is presently via an existing 2m wide footpath along south side of Pinjarra Road and the unsealed shoulder along Riverside Drive.

The site has a Walk Score⁴ of 22/100 which suggest that the site is car dependent.

6.1.3. Proposals to improve pedestrian access

There are no plans to improve the pedestrian access network as part of this development. However, it is **suggested that a footpath be provided from the crossover, along the western side of Riverside Drive** to the current footpath along Pinjarra Road.

6.2. Cycle Access/Facilities

6.2.1. Cycle Facilities Within the Development

There are no existing cycle facilities at the subject site, as it has not been developed.

6.2.2. Existing Cycle Facilities on Surrounding Roads

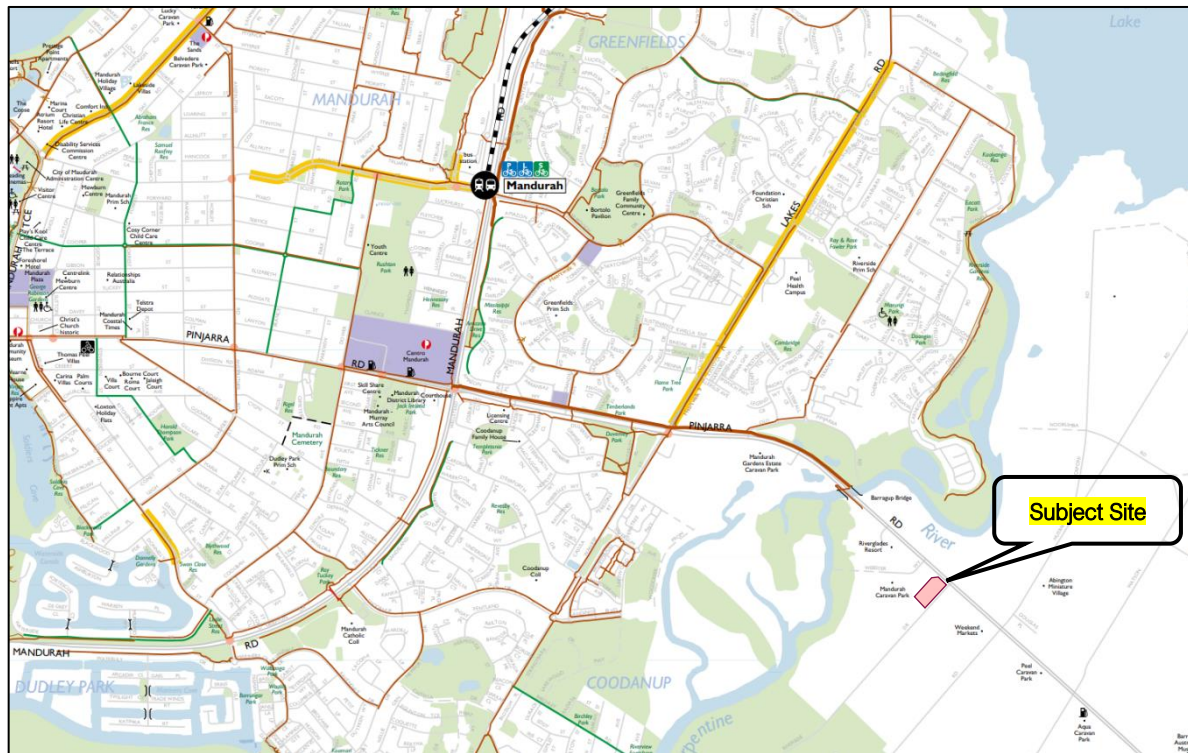
There are no dedicated bike lanes or cycling infrastructure along Pinjarra Road and Riverside Drive however cyclists are recommended to use the footpath along Pinjarra Road as this is a pedestrians & cyclists shared path as shown in Figure 6.1. The path network connects to some of the major attractions in Mandurah such as the Mandurah Forum and Mandurah Station.

6.2.3. Proposed Cycle Facilities on Surrounding Roads

No upgrades to the cycling facilities are required as part of this development. Figure 6.1 shows the current bike routes in close proximity to the development.

⁴ Walk Score and Transit Score are based on the scores recorded on Walkscore.com for the address at 528 Pinjarra Road, Furnissdale.

Figure 6.1: Current Bike Routes



- | | | | |
|--|--|--|--|
| | Principal Shared Path (PSP) | | Bike Pump Station |
| | High Quality Shared Path | | Road Bridge, Foot Bridge, Underpass |
| | Other Shared Path (Shared by Pedestrians & Cyclists) | | Railway |
| | Good Road Riding Environment | | Underground Railway |
| | Perth Bicycle Network (PBN) - Continuous Signed Routes | | Freight Railway, Railway Crossing |
| | Bicycle Boulevard | | Train Transfer, Train and Bus Transfer |
| | Gradient Arrow | | Train Station, Special Events Station |
| | Bicycle Lanes or Sealed Shoulder Either Side | | Bus Station, Ferry Terminus |
| | Contra Flow Bike Lane | | Petrol Station |
| | Traffic Direction, Traffic Light | | Public Toilets, Accessible Toilet |
| | Bike Shop | | Pleasant Rest Area, Post Office |
| | Bike Hire | | Walking Trail |
| | Bike Locker | | Shopping Area |
| | Bike Shelter | | Parks, Ovals and / or Bushland |
| | Bike Parking | | Industrial Area |
| | Bike Repair Station | | Point of Interest |

6.2.4. Proposals to improve cycle access

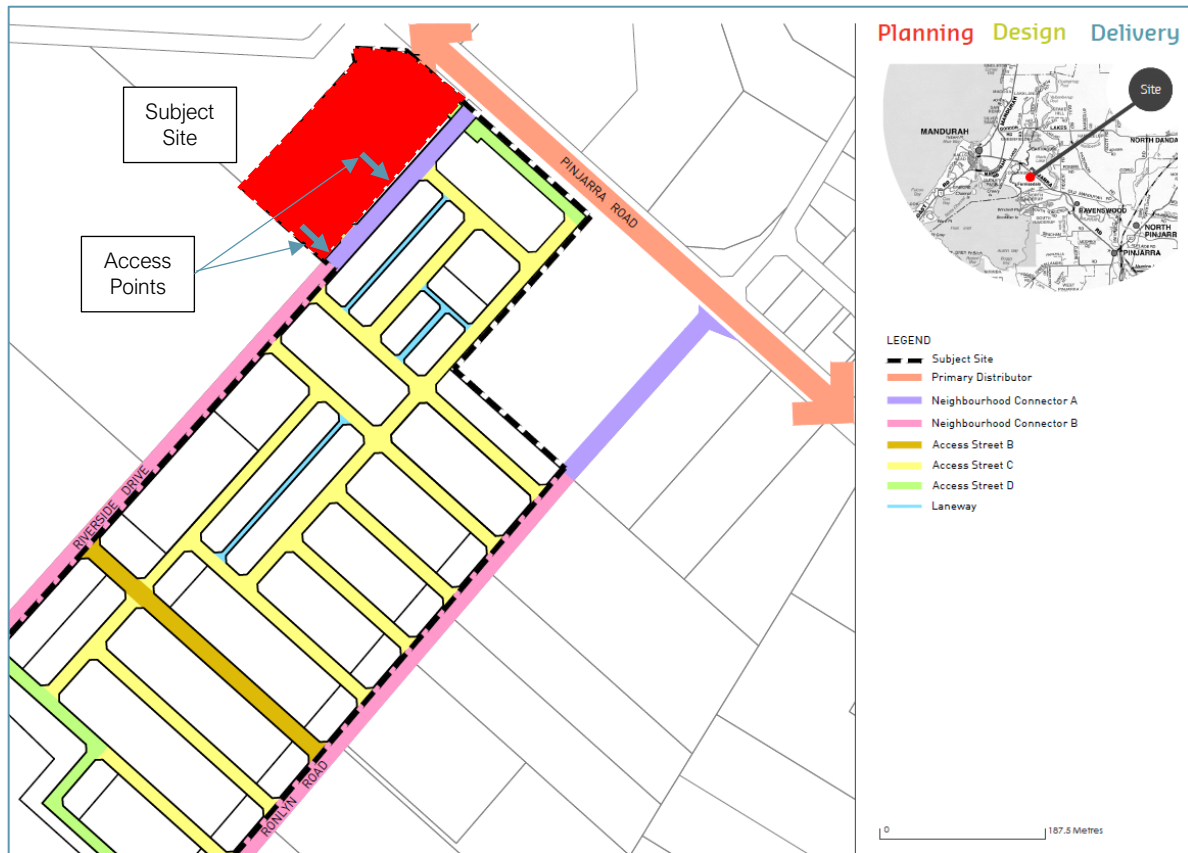
There are no plans as part of this application to improve cycle access.

7. SITE SPECIFIC ISSUES

7.1. Identified Site and Safety Issues

The proposed Furnissdale West Structure Plan has a proposed road network with a proposed intersection located on the eastern side of Riverside Drive, approximately 100m south of the current Give-Way holding line of the Pinjarra Road and Riverside Drive intersection. Refer to Figure 7.1 below.

Figure 7.1: Furnissdale West Structure Plan Movement Network



The proposed development has its proposed access point located approximately 130m from the same holding line.

Thus, the proposed main access for this development will be offset centre line to centreline of the future intersection by approximately 30m.

With the site having two access points, one being the main access and the second a minor access at the southern extremity of the development site, the main access will service no more than 100 parking spaces. Based on this and with Riverside Drive being an arterial road when the *Furnissdale West Structure Plan* is fully developed, the design of the accesses need only be provided as a driveway (rather than an intersection). This is in accordance with *AS/NZS 2890.1:2004*. Due to the overall low traffic generation expected to/from the site and with vehicles expected to use the main driveway in peak periods, the driveways are expected to operate well even during peak times.

The calculated queue lengths for each of these movements are expected to be:

- AM Peak
 - Left turn 1 to 2 vehicles (up to 10.3m)
 - Right turn 0 to 1 vehicles (3.1m)
- PM Peak
 - Left turn 0 to 1 vehicles (4.3m)
 - Right turn 0 to 1 vehicles (5.1m)

Based on this, there is no requirement to provide for a left turn pocket as shown by the Main Roads WA drawing in Appendix C and thus no requirement for additional road reserve widening of Riverside Drive near its intersection with Furnissdale as shown on the Main Roads drawing.

8. CONCLUSION

8.1. Conclusion

Based on the analysis and discussions presented within this Transport Impact Statement, the following conclusions are made:

1. The proposed development incorporates 79 home dwellings (with various supporting facilities such as a club house, barbeque and lawn bowls area) on a 29,512m² lot.
2. The proposed supply of 21 visitor spaces and 2 accessible (PwD) car parking spaces is appropriate given the anticipated demand of 79 dwellings within the development.
3. The site is expected to generate up to 20 vehicles in the busiest peak hour and 250 vehicle movements daily.
4. There is adequate capacity in the surrounding road network to cater for the traffic generated by the proposed development and with the expected *Furnissdale West Structure Plan* with minimal delays and the degrees of saturation well below the capacity of traffic lanes both at intersections and at midblock locations.
5. Provision is made for vehicular access arrangements to operate safely and efficiently into the future (at least 10 years after full development at approximately 2030).
6. The site has a Walk Score⁵ of 22/100 which suggest that the site is car-dependent.
7. There are no plans to improve the pedestrian access network as part of this development. However, it is suggested that a footpath be provided from the crossover, along the western side of Riverside Drive to the current footpath along Pinjarra Road.
8. The site has a Transit Score of 26/100 as there is only one bus route running along Pinjarra Road towards Mandurah Station during non-peak periods.
9. Based on both an operational analysis and a review of the intersection safety performance at Pinjarra Road, the section of Riverside Drive between the intersection of Pinjarra Road / Riverside Drive and the road fronting the subject does not need to be upgraded to accommodate the expected traffic flows due to the development.

The WAPC checklist is shown in **Appendix D**.

⁵ Walk Score and Transit Score are based on the scores recorded on Walkscore.com for the address at 528 Pinjarra Road, Furnissdale.

A.DEVELOPMENT PLANS



NOTES

- 79 DWELLINGS
 - 13 - LARGE - BLUE
 - 37 - MEDIUM - RED
 - 13 - SMALL - YELLOW
 - 08 - DUPLEX UNITS - TEAL (x2 DWELLINGS)
- TOTAL SITE AREA = 29512m²
 TOTAL LOT NO = 71
 SITE TO LOT AREA RATIO = 416m²
 AVERAGE LOT AREA = 243m²
 COMMUNAL SPACE AREA = 4607m²
 COMMUNAL SPACE LOT AREA RATIO = 16%

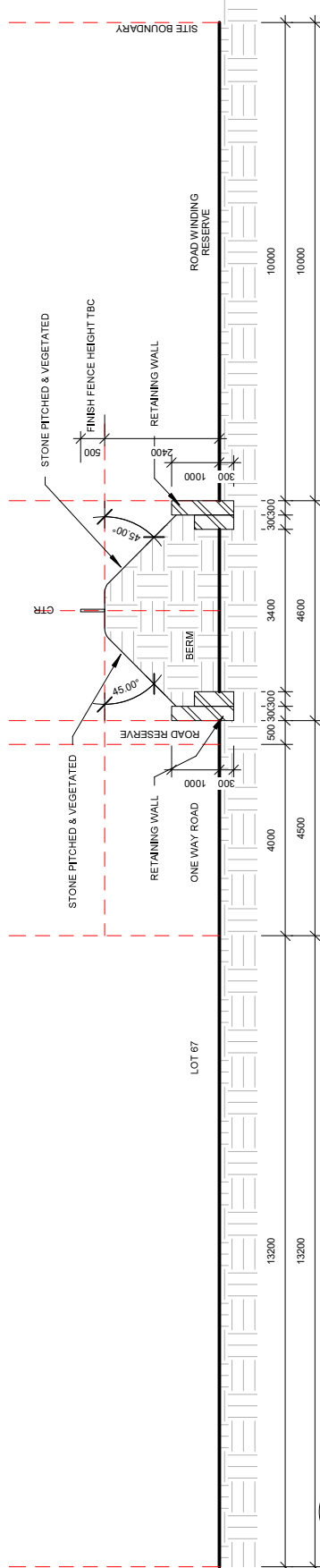
KEY

- TREE
- DRIVEWAY
- LANDSCAPING
- FOOTPATH

DWELLINGS

- 16x A - THE ARALIA
- 02x B - THE BAYBERRY - 8x6
- 11x C - THE CARAWAY - 1x1 - 19x10
- 09x D - THE FOXGLOVE - 2x1 - 19x10
- 0x E - THE GINGER
- 15x F - THE LAVENDER - 2x1 - 20x11.5
- 06x G - THE NETTLE - 2x2 - 20x12.5
- 07x H - THE PEPPERMINT - 2x1 - 20x11.5
- 10x I - THE ROSEMARY - 3x2 - 20x12.5
- 03x J - THE SANTOLINA - 3x1 - 20x12.5

*LOT BOUNDARIES DELINEATED BY 1800mm HIGH FENCING



Berm 45 Pitch

1 : 100

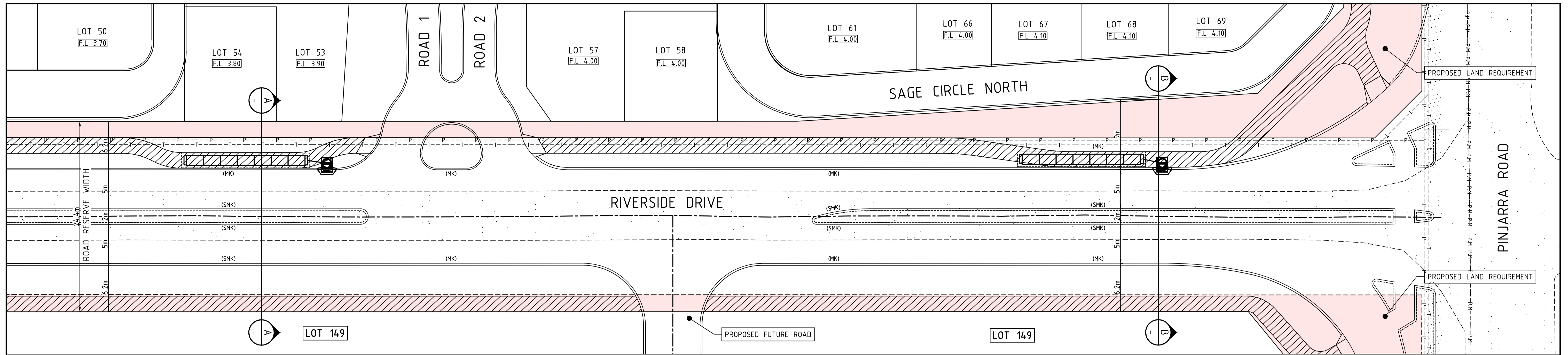


*CONFIRM ALL DIMENSIONS ON SITE

<p>RICHARD HAMMOND ARCHITECT 16/342 SOUTH TERRACE, SOUTH FREMANTLE 0438 918 753 RICHARD@HRARCHITECTS.COM.AU</p> <p>© 2019 Reproduction of the whole or part of this document constitutes an infringement of copyright. The information, ideas and concepts contained in this document are confidential. The recipient(s) of this document is/are prohibited from disclosing such information, ideas and concepts to any person without prior written consent of the copyright holder.</p>		<p>MASTERPLAN R10</p> <p>PROVIDENCE MANDURAH 607 PINJARRA RD FURNISSDALE</p>	<p>Project number - Date 20.08.14 Drawn by RHA Checked by RHA Scale @A3 As indicated</p>
<p>No.</p>	<p>Description</p>	<p>Date</p>	<p>8 Masterplan Revision 8 20.03.16</p> <p>9 Masterplan 8 with New House Letters 20.04.06</p> <p>10 Revision 9 - Acoustic Barriers 20.05.27</p> <p>11 R10 - Minor Site Revisions to satisfy R60 provisions 20.08.14</p>

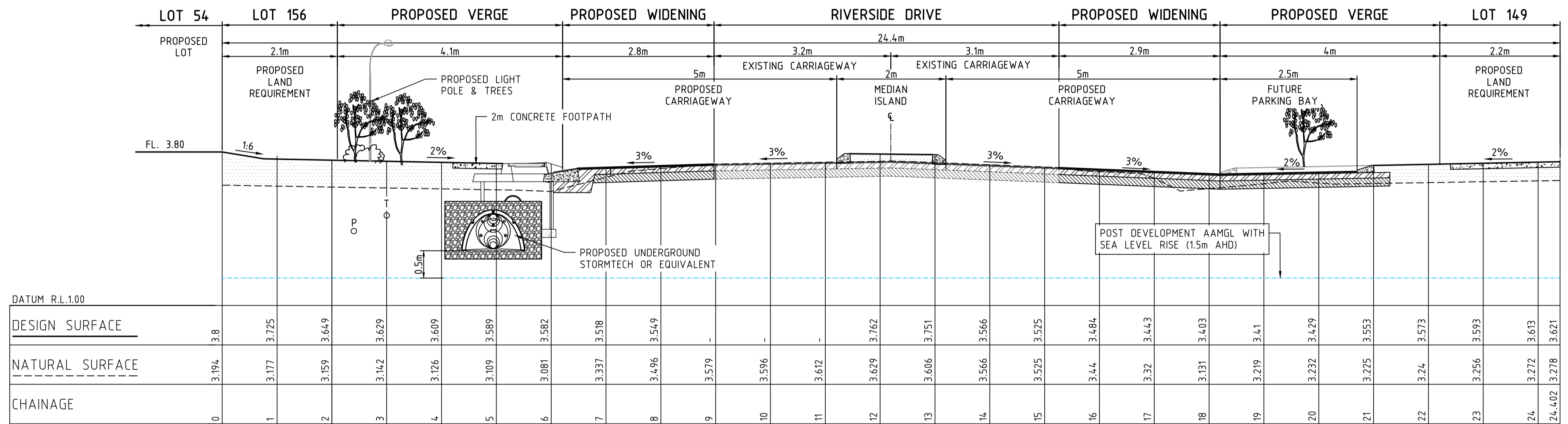


B. PROPOSED CROSS SECTION & INTERSECTION



LAYOUT PLAN

SCALE 1:500

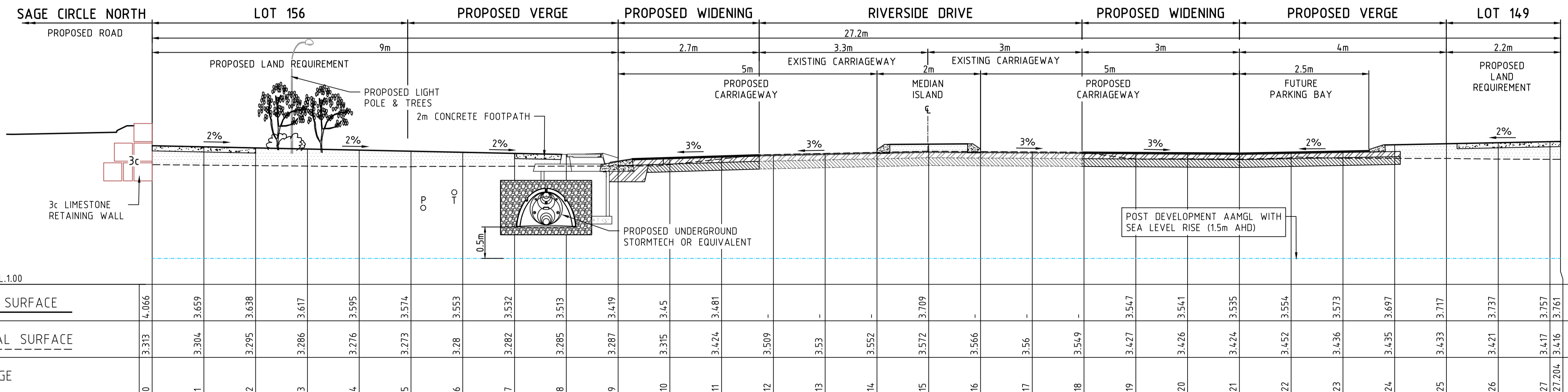


SECTION A-A

SCALE 1:50

LEGEND

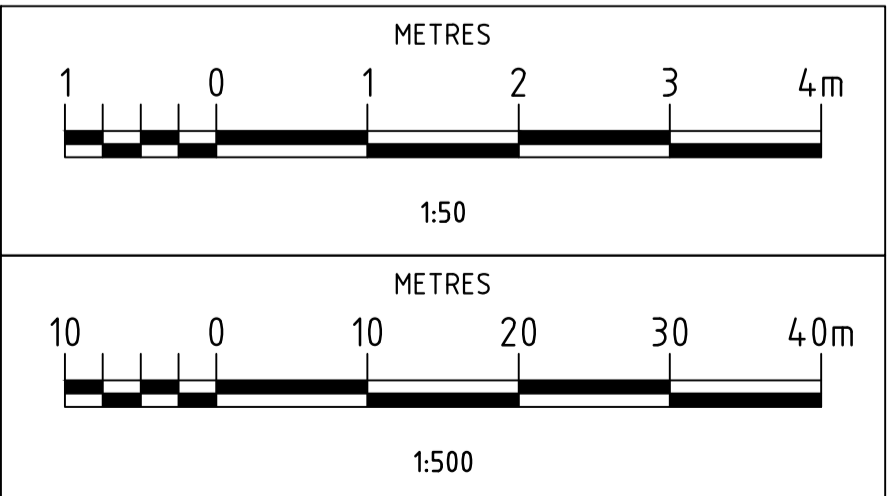
- EXISTING PAVEMENT
- EXISTING BITUMEN FOOTPATH
- EXISTING POWER
- EXISTING TELSTRA
- EXISTING POWER LIGHT POLE
- PROPOSED SEMI-MOUNTABLE KERB
- PROPOSED SEMI-MOUNTABLE KERB
- PROPOSED DRAINAGE
- PROPOSED FOOTPATH 2.0m WIDE
- PROPOSED LAND REQUIREMENTS



SECTION B-B

SCALE 1:50

PRELIMINARY ONLY



NOTES
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No.	DATE	REVISION	BY
B	12.02.21	ROAD & FOOTPATH ALIGNMENT AMENDED	M.M.
A	10.02.21	ISSUED FOR REVIEW	M.M.

WESTCOAST ENGINEERING (WA) CIVIL CONSULTING ENGINEERS
 7/110 ERINDALE ROAD BALCATTA 6021
 PO BOX 945 BALCATTA 6914
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 www.westcoastengineering.com.au
 ABN: 42 128 451 310

CLIENT: **PROVIDENCE FURNISSDALE**

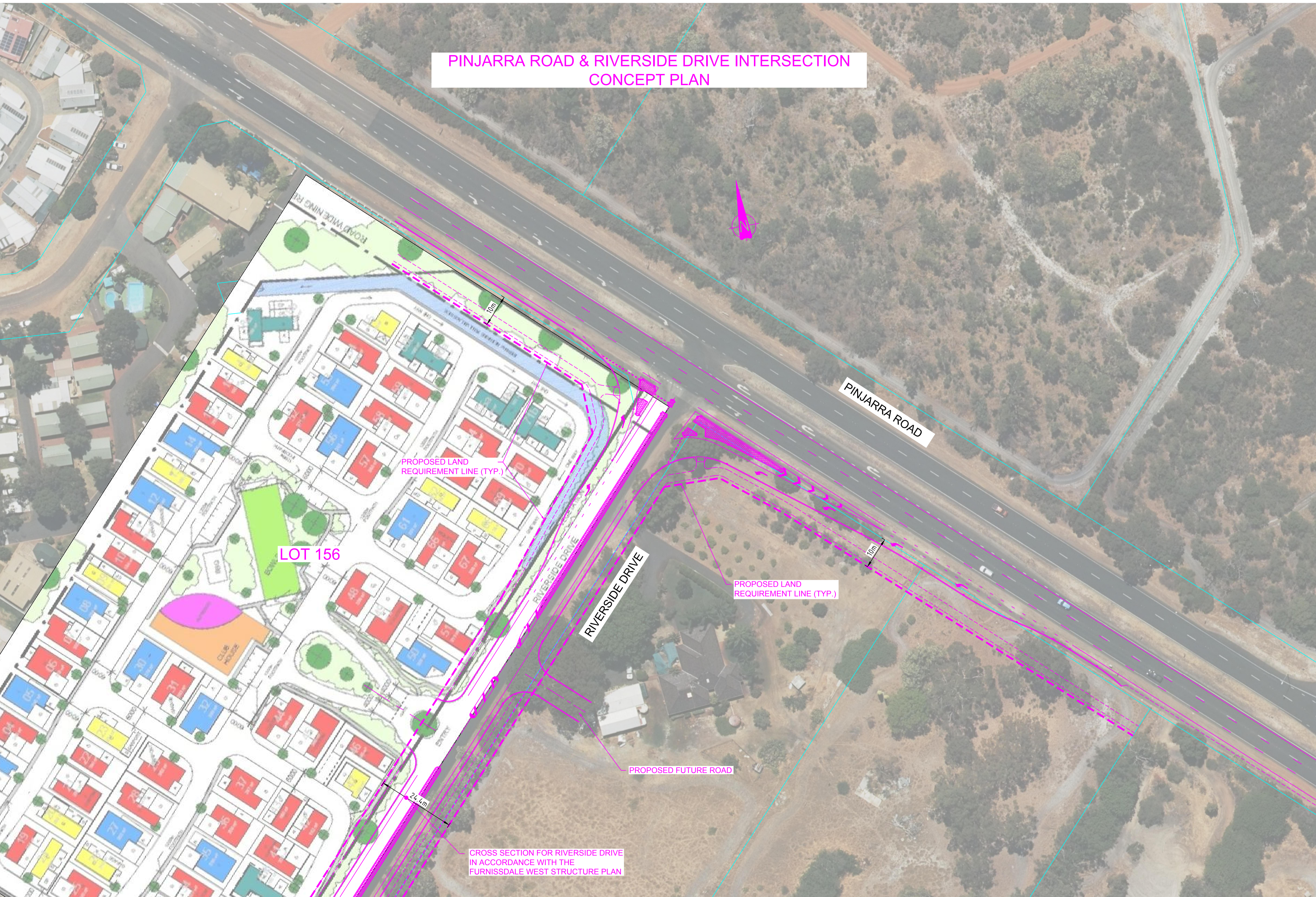
DRAWING: **LOT 156 (#807) PINJARRA ROAD FURNISSDALE RIVERSIDE DR CROSS SECTIONS**

SCALE AS SHOWN
 DATE 09.11.20
 DRAWN M.M.
 DESIGN M.M.
 CHECK J.D.

DRAWING No. **WE20/73-01**
 SHEET 1 OF 1 WAPC No. -
 APPROVED FOR CONSTRUCTION
 CAD FILE NO. WE20-73-01
 CAD DRAWING DO NOT MANUALLY ALTER

C. MAIN ROADS WA CONCEPT

PINJARRA ROAD & RIVERSIDE DRIVE INTERSECTION CONCEPT PLAN



LOT 156

PROPOSED LAND REQUIREMENT LINE (TYP.)

PROPOSED LAND REQUIREMENT LINE (TYP.)

PROPOSED FUTURE ROAD

CROSS SECTION FOR RIVERSIDE DRIVE IN ACCORDANCE WITH THE FURNISSDALE WEST STRUCTURE PLAN

D. WAPC GUIDELINES CHECKLIST

APPENDIX: WAPC GUIDELINES CHECKLIST

Item	Provided	Comments/Proposals
Proposed Development		
Existing Land Uses	Y	
Proposed Land Use	Y	
Context with Surrounds	Y	
Vehicular Access and Parking		
Access Arrangements	Y	
Public, Private, Disabled Parking Set Down/Pick Up	Y	
Service Vehicle (Non-Residential)		
Access Arrangements	NA	
On/Off-Site Loading Facilities	NA	
Service Vehicles (Residential)		
Rubbish Collection and Emergency Vehicle Access	Y	
Hours of Operation (Non-Residential Only)	NA	
Traffic Volumes		
Daily or Peak Hour Traffic Volumes	Y	
Type of Vehicles (E.G. Cars, Trucks)	Y	
Traffic Management on Frontage Streets	Y	
Public Transport Access		
Nearest Bus/Train Routes	Y	
Nearest Bus Stops/Train Stations	Y	
Pedestrian/Cycle Links to Bus Stops/Train Station	Y	
Pedestrian Access/Facilities		
Existing Pedestrian Facilities Within the Development (If Any)	Y	
Proposed Pedestrian Facilities Within Development	Y	
Existing Pedestrian Facilities on Surrounding Roads	Y	
Proposals to Improve Pedestrian Access	Y	
Cycle Access/Facilities		
Existing Cycle Facilities Within the Development (If Any)	Y	
Proposed Cycle Facilities Within Development	Y	
Existing Cycle Facilities on Surrounding Roads	Y	
Proposals to Improve Cycle Access	Y	
Site Specific Issues	Y	
Safety Issues		
Identify Issues	Y	
Remedial Measures	Y	

APPENDIX: WAPC GUIDELINES CHECKLIST

Proponent's Name: _____

Company: Ecofit Homes Date: 19/11/2020

Transport Assessor's Name: Rodney Ding

Company: GTA Consultants Date: 19/11/2020



**PROVIDENCE MANDURAH
607 PINJARRA ROAD
FURNISSDALE**

**STATE PLANNING POLICY 5.4
NOISE MANAGEMENT PLAN**

FEBRUARY 2021

OUR REFERENCE: 27222-2-20031-02



DOCUMENT CONTROL PAGE

SPP 5.4 NOISE MANAGEMEN PLAN
607 PINJARRA ROAD, FURNISSDALE

Job No: 20031-02

Document Reference: 27222-2-20031-02

FOR

ALLERDING & ASSOCIATES

DOCUMENT INFORMATION				
Author:	Tim Reynolds	Checked By:	Paul Daly	
Date of Issue:	10 February 2021			
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Revision	Description	Date	Author	Checked
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4.	NOISE MONITORING	5
5.	MODELLING	6
6.	RESULTS	7
7.	DISCUSSION / RECOMMENDATION	8

APPENDICIES

A	Subdivision Plan
B	Monitoring Noise Results
C	L _{Aeq (16hr)} Noise Contours for Pinjarra Road
D	Figure D1 – Lots Requiring “Quiet House” Design, Localised Screening and Notifications
E	Traffic Flow Data
F	Preliminary residential designs

1. INTRODUCTION

Herring Storer Acoustics was commissioned by Allerdig & Associates to undertake an acoustical assessment of noise received within the proposed Subdivision Plan of 607 Pinjarra Road, Furnissdale.

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

- Measure current noise levels within the proposed development from traffic movements on Pinjarra Road.
- Determine by noise modelling the noise levels that would be received at residences within the development from vehicles travelling on the future Pinjarra Road.
- Assess the predicted noise levels received at residence for compliance with the requirements of the WAPC State Planning Policy 5.4 "Road and Rail Noise" - 2019 (SPP 5.4).
- If exceedances are predicted, comment on possible noise amelioration options for compliance with the appropriate criteria.

For information, the concept subdivision plan is attached in Appendix A.

It needs to be noted that this development is for a Providence Lifestyle village that provides opportunities for residents to access affordable accommodation. As such the residence are leased and the entire development would be managed by Providence Lifestyle. This provides flexibility with regards to the occupation of the residences located adjacent to Pinjarra Road and would :

- Ensuring residents are aware of the traffic noise before they sign the lease agreement;
- Ensuring residents that lease homes within potential noise affected areas are educated about the potential noise; and
- Requiring tenants to sign a notification advising of the potential noise impact of Pinjarra Road.

2. SUMMARY

Under the WAPC State Planning Policy 5.4, for this development, as advised, Pinjarra Road in the future is to be upgraded and under such circumstances the infrastructure provider needs to comply with the following external criteria at noise sensitive premises :

External

Day	Maximum of 60 dB(A) L_{Aeq}
Night	Maximum of 55 dB(A) L_{Aeq}

The objective of the Policy also to achieve "a reasonable degree of acoustic amenity for outdoor living areas on each residential lot". Additionally, Section 6.1 of the Policy states :

It is recognised that in some instances, it may not be reasonable and/or practicable to meet the outdoor noise targets. Where transport noise is above the noise targets, measures are expected to be implemented that balance reasonable and practicable considerations with the need to achieve acceptable noise protection outcomes.

The Policy also states the following acceptable internal noise levels:

Internal

Living and Work Areas	$L_{Aeq(Day)}$ of 40 dB(A)
Bedrooms	$L_{Aeq(Night)}$ of 35 dB(A)

For this development it is understood that Shire of Murray would prefer an open frontage to Pinjarra Road. Given the existing and predicted noise levels along Pinjarra Road, this requirement is going to be difficult to achieve for either or both the developer or infrastructure provider. To achieve compliance would require the construction of a substantial barriers to Pinjarra Road. Thus, it is proposed to :

- Provide specific "Quiet House" design constructions for all those residences that received noise in excess of the noise Target, to ensure compliance with the required internal criteria; and
- Constructed localised barriers / screens to the alfresco areas of these residences to ensure they have a reasonable level of amenity within their outdoor living area.

Note : This development includes a "Club House" area that would comply with the requirements of SPP 5.4, thus providing all affected residences with an additional compliance outdoor area.

Thus, for those residences for which noise received from Pinjarra Road would exceed the acoustic criteria in the future, as shown on Figure D1 in Appendix D, as part of the design of those residence, an acoustic assessment would be carried out to determine the acoustic R_w ratings required to achieve compliance with the internal criteria. Additionally, the extent of the localised barriers / screens to alfresco areas, as shown on Figure D1 in Appendix D, would be reviewed to ensure that compliance with the external criteria is achieved.

Note : Where possible, the alfresco areas of the first row of residences have been located on the opposite side of the residence from Pinjarra Road. Thus, the residences provide a barrier to these areas.

Finally, it is noted that under the Policy, the internal criteria for bedrooms relates to night period noise level. For this section of Pinjarra Road, the noise period noise level is approximately 10 dB(A) less than for the day period, whereas the internal criteria within bedroom is only 5 dB(A) less than for living spaces. Thus, for this development, the acoustic R_w ratings for the façade elements to bedrooms would be 5 dB less than for living spaces.

Thus, the approach to noise mitigation outlined in this report would ensure that:

- Streetscape amenity and passive surveillance outcomes are improved;
- Future Pinjarra Road upgrades are acknowledged accounted for; and
- The requirements of State Planning Policy 5.4 are achieved.

It is noted that under the policy, that for those residences where noise would exceed the "Noise Target", notification of vehicle noise would need to be stated. These residences are also indicated on Figure D1, attached in Appendix D.

3. CRITERIA

The Western Australian Planning Commission (WAPC) released on 6th September 2019 State Planning Policy 5.4 “Road and Rail Noise”. The requirements of State Planning Policy 5.4 are outlined below.

POLICY APPLICATION (Section 4)

When and where it applies (Section 4.1)

SPP 5.4 applies to the preparation and assessment of planning instruments, including region and local planning schemes; planning strategies, structure plans; subdivision and development proposals in Western Australia, where there is proposed:

- a) *noise-sensitive land-use within the policy’s trigger distance of a transport corridor as specified in **Table 1**;*
- b) *New or major upgrades of roads as specified in **Table 1** and maps (**Schedule 1,2 and 3**); or*
- c) *New railways or major upgrades of railways as specified in maps (**Schedule 1, 2 and 3**); or any other works that increase capacity for rail vehicle storage or movement and will result in an increased level of noise.*

Policy trigger distances (Section 4.1.2)

Table 1 identifies the State’s transport corridors and the trigger distances to which the policy applies.

*The designation of land within the trigger distances outlined in **Table 1** should not be interpreted to imply that land is affected by noise and/or that areas outside the trigger distances are unaffected by noise.*

*Where any part of the lot is within the specified trigger distance, an assessment against the policy is required to determine the likely level of transport noise and management/ mitigation required. An initial screening assessment (**guidelines: Table 2: noise exposure forecast**) will determine if the lot is affected and to what extent.”*

TABLE 1: TRANSPORT CORRIDOR CLASSIFICATION AND TRIGGER DISTANCES

Transport corridor classification	Trigger distance	Distance measured from
Roads		
Strategic freight and major traffic routes <i>Roads as defined by Perth and Peel Planning Frameworks and/or roads with either 500 or more Class 7 to 12 Austroads vehicles per day, and/or 50,000 per day traffic volume</i>	300 metres	Road carriageway edge
Other significant freight/traffic routes <i>These are generally any State administered road and/or local government road identified as being a future State administered road (red road) and other roads that meet the criteria of either >=23,000 daily traffic count (averaged equivalent to 25,000 vehicles passenger car units under region schemes)</i>	200 metres	Road carriageway edge
Passenger railways		
	100 metres	Centreline of the closest track
Freight railways		
	200 metres	Centreline of the closest track

Proponents are advised to consult with the decision making authority as site specific conditions (significant differences in ground levels, extreme noise levels) may influence the noise mitigation measures required, that may extend beyond the trigger distance.

POLICY MEASURES (Section 6)

The policy applies a performance-based approach to the management and mitigation of transport noise. The policy measures and resultant noise mitigation will be influenced by the function of the transport corridor and the type and intensity of the land-use proposed. Where there is risk of future land-use conflict in close proximity to strategic freight routes, a precautionary approach should be applied. Planning should also consider other broader planning policies. This is to ensure a balanced approach takes into consideration reasonable and practical considerations.

Noise Targets (Section 6.1)

Table 2 sets out noise targets that are to be achieved by proposals under which the policy applies. Where exceeded, an assessment is required to determine the likely level of transport noise and management/mitigation required.

In the application of the noise targets the objective is to achieve:

- *indoor noise levels as specified in **Table 2** in noise sensitive areas (for example, bedrooms and living rooms of houses, and school classrooms); and*
- *a reasonable degree of acoustic amenity for outdoor living areas on each residential lot. For non-residential noise-sensitive developments, for example schools and child care centres the design of outdoor areas should take into consideration the noise target.*

It is recognised that in some instances, it may not be reasonable and/or practicable to meet the outdoor noise targets. Where transport noise is above the noise targets, measures are expected to be implemented that balance reasonable and practicable considerations with the need to achieve acceptable noise protection outcomes.

TABLE 2: NOISE TARGETS

Proposals	New/Upgrade	Noise Targets		
		Outdoor		Indoor
		Day ($L_{Aeq}(\text{Day})$ dB) (6 am-10 pm)	Night ($L_{Aeq}(\text{Night})$ dB) (10 pm-6 am)	(L_{Aeq} dB)
Noise-sensitive land-use and/or development	New noise sensitive land use and/or development within the trigger distance of an existing/proposed transport corridor	55	50	L_{Aeq} (Day) 40(Living and work areas) L_{Aeq} (Night) 35 (bedrooms)
Roads	New	55	50	N/A
	Upgrade	60	55	N/A
Railways	New	55	50	N/A
	Upgrade	60	55	N/A

Notes:

- *The noise target is to be measured at one metre from the most exposed, habitable façade of the proposed building, which has the greatest exposure to the noise-source. A habitable room has the same meaning as defined in State Planning Policy 3.1 Residential Design Codes.*

- For all noise-sensitive land-use and/or development, indoor noise targets for other room usages may be reasonably drawn from Table 1 of Australian Standard/New Zealand Standard AS/NZS 2107:2016 Acoustics – Recommended design sound levels and reverberation times for building interiors (as amended) for each relevant time period.
- The 5dB difference in the criteria between new and upgrade infrastructure proposals acknowledges the challenges in achieving noise level reduction where existing infrastructure is surrounded by existing noise-sensitive development.
- Outdoor targets are to be met at all outdoor areas as far as is reasonable and practical to do so using the various noise mitigation measures outlined in the guidelines. For example, it is likely unreasonable for a transport infrastructure provider to achieve the outdoor targets at more than 1 or 2 floors of an adjacent development with direct line of sight to the traffic.

Noise Exposure Forecast (Section 6.2)

When it is determined that SPP 5.4 applies to a planning proposal as outlined in Section 4, proponents and/or decision makers are required to undertake a preliminary assessment using **Table 2**: noise exposure forecast in the guidelines. This will provide an estimate of the potential noise impacts on noise-sensitive land-use and/ or development within the trigger distance of a specified transport corridor. The outcomes of the initial assessment will determine whether:

- no further measures is required;
- noise-sensitive land-use and/or development is acceptable subject to deemed-to- comply mitigation measures; or
- noise-sensitive land-use and/or development is not recommended. Any noise-sensitive land-use and/ or development is subject to mitigation measures outlined in a noise management plan.”

4. NOISE MONITORING

Noise logging was conducted at the proposed development site, approximately 16m from the edge of Pinjarra Road. This monitoring was conducted between Tuesday 3rd March and Saturday 7th March 2020 to determine the existing vehicle traffic noise levels received on site.

The results are summarised in Table 4.1. The results are also shown graphically on Figure B1, attached in Appendix B.

TABLE 4.1: SUMMARY OF MEASURED NOISE LEVELS FOR PINJARRA ROAD

Parameter	Measured Level dB(A)*	Difference between L _{10(18hour)} and L _{Aeq(parameter)} dB(A)
L _{A10} (18 hour)	74.5	N/A
L _{Aeq, day} (6am to 10pm)	70.8	= L _{A10} (18 hour) -3.7
L _{Aeq, night} (10pm to 6am)	60.7	= L _{A10(18 hour)} - 13.8

* It is normal practice to quote decibels to the nearest whole number. Fractions are retained here to minimise any cumulative rounding error.

Note: Based on the results of the noise monitoring the difference between the L_{Aeq} (Day) and L_{Aeq} (Night) is greater than 5 dB(A) (ie; 10.1 dB(A)). Hence, achieving compliance with the day period criteria would also result in compliance with the night period criteria and the day period has been used for the assessment.

5. MODELLING

The future road traffic volumes were based on information provided by the MRWA for Pinjarra Road. Information relevant to the calculations are shown below in Table 5.1.

TABLE 5.1 - NOISE MODELLING INPUT DATA

Parameter	Current 2019 (Time of Monitoring)	Future (2041)
Traffic flows (vpd)	16015	21,146 vpd
Heavy Vehicles (%)	12.1%	12.1%
Traffic Speed km/hr	70	70
Road Surface	Chip Seal*	
Façade Correction	+2.5	

* As part of the road widening, the road surface would be upgraded to Dense Graded Asphalt.

Other input data for the model included:

- Noise source heights for the three road source strings (Passenger Vehicles, Heavy Vehicles Engine and Heavy Vehicle Exhausts) are +0.5, +1.5 and +3.6m, with a noise correction of -0.8 and -8.0 applied to the heavy vehicle engines and exhaust noise sources.
- Traffic data for 2019 was obtained from the MRWA Traffic Map (<https://mrapps.mainroads.wa.gov.au/TrafficMap/>). For reference, the traffic flow data is attached in Appendix F.
- Future traffic flows were obtained from MRWA, as listed in Appendix F.
- Topographical data, with the ground level within the development based on natural ground levels as per Google Earth.
- A +2.5 dB adjustment to allow for façade reflection.
- Development receiver heights at 1.4m above ground level.
- Future buildings located on the Lots (assumed to be present for future road traffic volumes).

To determine the noise that would be received within the development from the surrounding road network, acoustic modelling was carried out using the computer program 'SoundPlan'. The noise model was calibrated for to the noise monitoring undertaken.

Noise modelling was undertaken for future traffic volumes, with dense graded asphalt and local barriers to alfresco areas, as detailed on Figure D1 in Appendix D.

6. RESULTS

The results of the noise modelling with local screening to the alfresco areas are attached in Appendix C.

The results show the noise received at the following residence would exceed the Policies acoustic criteria and would require "Quiet House" Design :

18A and B (Building type – The Aralia);
57 (Building type – The Lavender);
58A and 58B (Building type – The Aralia);
59 (Building type – The Bayberry);
60 (Building type – The Lavender);
65 (Building type – The Caraway);
66 (Building type – The Lavender);
67 (Building type – The Foxglove);
68A and 68B (Building type – The Aralia);
69A and 69B (Building type – The Aralia); and
70 (Building type – The Lavender).

Based on the building designs attached in Appendix F, the acoustic R_w rating for the above residences have been determined and the results show that in the worst cases the following R_w rating are required :

Walls	-	R_w of 48 dB.
Glazing	-	R_w of 35 dB.
Ceiling	-	R_w of 45 dB.

Notes :

- 1 For the first row of residences to Pinjarra Road, no windows are to be in the wall fronting Pinjarra Road.
- 2 The above rating for glazing is to achieve compliance with the internal criteria for a bedroom, based on the day period noise level.

Possible constructions to achieve the above acoustic rating are :

WALLS

Weatherboard on 15mm top hat to 16mm Fire rated plasterboard, 90mm stud and 16mm fire rated plasterboard on the internal face; and 90mm insulation in the cavity.

GLAZING

10.5 mm thick laminated glass.

ROOF / CEILING

Metal deck roof, with 13mm standard plasterboard and 60mm anticon and R2.5 batt over the ceiling.

The above are provided to indicate that compliance can be achieved. However, as part of the design, a full assessment of the proposed constructions of the residences listed in Section 6 – Results would be undertaken to ensure compliance is achieved with the internal criteria. With Providence Lifestyle developing and managing the development, they will be able to ensure that homes that would receive traffic noise in exceed of the Noise Targets are constructed to achieve compliance with the internal criteria and minimise the noise received within their alfresco areas.

7. DISCUSSION / RECOMMENDATION

From an email received from MRWA (dated : 19 January 2021), it is noted that Pinjarra Road would undergo an upgrade / widening in the future. Under the Policy, this would constitute as being a major upgrade. Thus, in this case the infrastructure provider would be required to achieve compliance with the following external criteria :

External

Day	Maximum of 60 dB(A) L_{Aeq}
Night	Maximum of 55 dB(A) L_{Aeq}

The objective of the Policy also to achieve “a reasonable degree of acoustic amenity for outdoor living areas on each residential lot”.

Additional to the above, it is understood that the Shire of Murray would not support a barrier to be constructed along the boundary to Pinjarra Road.

Given the results of the acoustic analysis, achieving compliance with the above acoustic criteria would not be possible without the inclusion of a barrier wall. However, the Policy also recognises that in some instances, it may not be possible to achieve compliance with the stated criteria. For reference, the policy states in Section 6.1 – Noise Targets :

It is recognised that in some instances, it may not be reasonable and/or practicable to meet the outdoor noise targets. Where transport noise is above the noise targets, measures are expected to be implemented that balance reasonable and practicable considerations with the need to achieve acceptable noise protection outcomes.

Thus, in this case with the co-operation of both the developer and Main Roads, we believe that reasonable and practicable mitigations could be implemented to achieve acceptable noise protection for the residences without the construction of a substantial barrier (ie in the order of 3 metres). These measure would be :

- When the road is upgraded, upgrade the road surface to Dense Graded Asphalt.
- Provide “Quiet House” design to achieve compliance with the Policies internal criteria.
- Provide localised screening / barriers to alfresco areas to achieve compliance with the above criteria. Localised barriers / fencing to be a minimum surface density of 15 kg/m².
- No glazing to bedroom in facades facing Pinjarra Road.

As part of the design of the residences, an assessment of the façade constructions would be undertaken to ensure compliance with the internal criteria for each of the residences listed in Section 6 - Results. With Providence Lifestyle developing and managing the development, they will be able to ensure that homes that would receive traffic noise in excess of the Noise Targets are constructed to achieve compliance with the internal criteria and minimise the noise received within their alfresco areas.

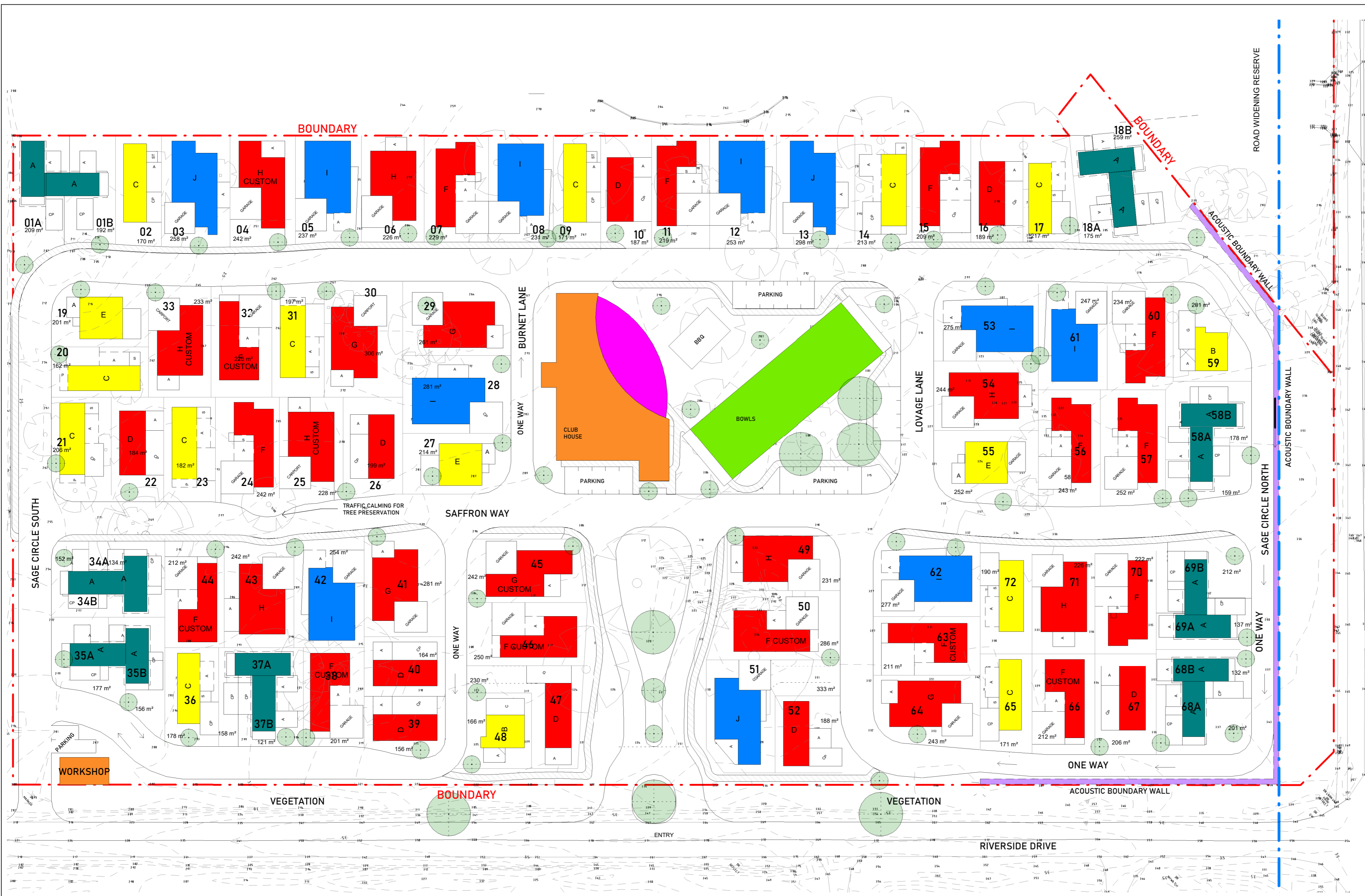
The above approach to noise mitigation would ensure that:

- Streetscape amenity and passive surveillance outcomes are improved;
- Future Pinjarra Road upgrades are acknowledged and accounted for; and
- The requirements of State Planning Policy 5.4 are achieved.

It is noted that under the policy, that for those residences where noise would exceed the “Noise Target”, notification of vehicle noise would need to be stated. These residences are also indicated on Figure D1, attached in Appendix D.

APPENDIX A

SUBDIVISION PLAN



NOTES

80 DWELLINGS
 11 - LARGE - BLUE
 37 - MEDIUM - RED
 16 - SMALL - YELLOW
 08 - DUPLEX UNITS - TEAL (x2 DWELLINGS)

TOTAL SITE AREA = 27979m²
 TOTAL LOT NO^s = 79
 AVERAGE LOT AREA = 215m²
 COMMUNAL SPACE AREA = 3000m²
 COMMUNAL SPACE LOT AREA RATIO = 10.7%

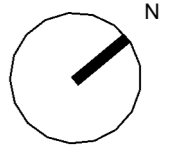
KEY

- FUTURE TREE TO BE PLANTED
- ACOUSTIC BOUNDARY WALL
- FOOTPATH

DWELLINGS

- 16x A - THE ARALIA - 1x1
- 02x B - THE BAYBERRY - 2x1
- 11x C - THE CARAWAY - 1x1
- 09x D - THE FOXGLOVE - 2x1
- 03x E - THE GINGER - 1x1
- 15x F - THE LAVENDER - 2x1
- 06x G - THE NETTLE - 2x2
- 07x H - THE PEPPERMINT - 2x1
- 08x I - THE ROSEMARY - 3x2
- 03x J - THE SANTOLINA - 3x1

*LOT BOUNDARIES DELINEATED BY 1800mm HIGH FENCING



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No.	Description	Date
12	Revision 10 - Site Feature Survey added to Masterplan	20.10.26
13	Revision 11 - Ginger's Added to Home Mix	20.11.09
14	Revision 12 - Minor Rev. Sites Renumbered	20.12.17

PROVIDENCE MANDURAH
 607 PINJARRA RD
 FURNISSDALE

MASTERPLAN

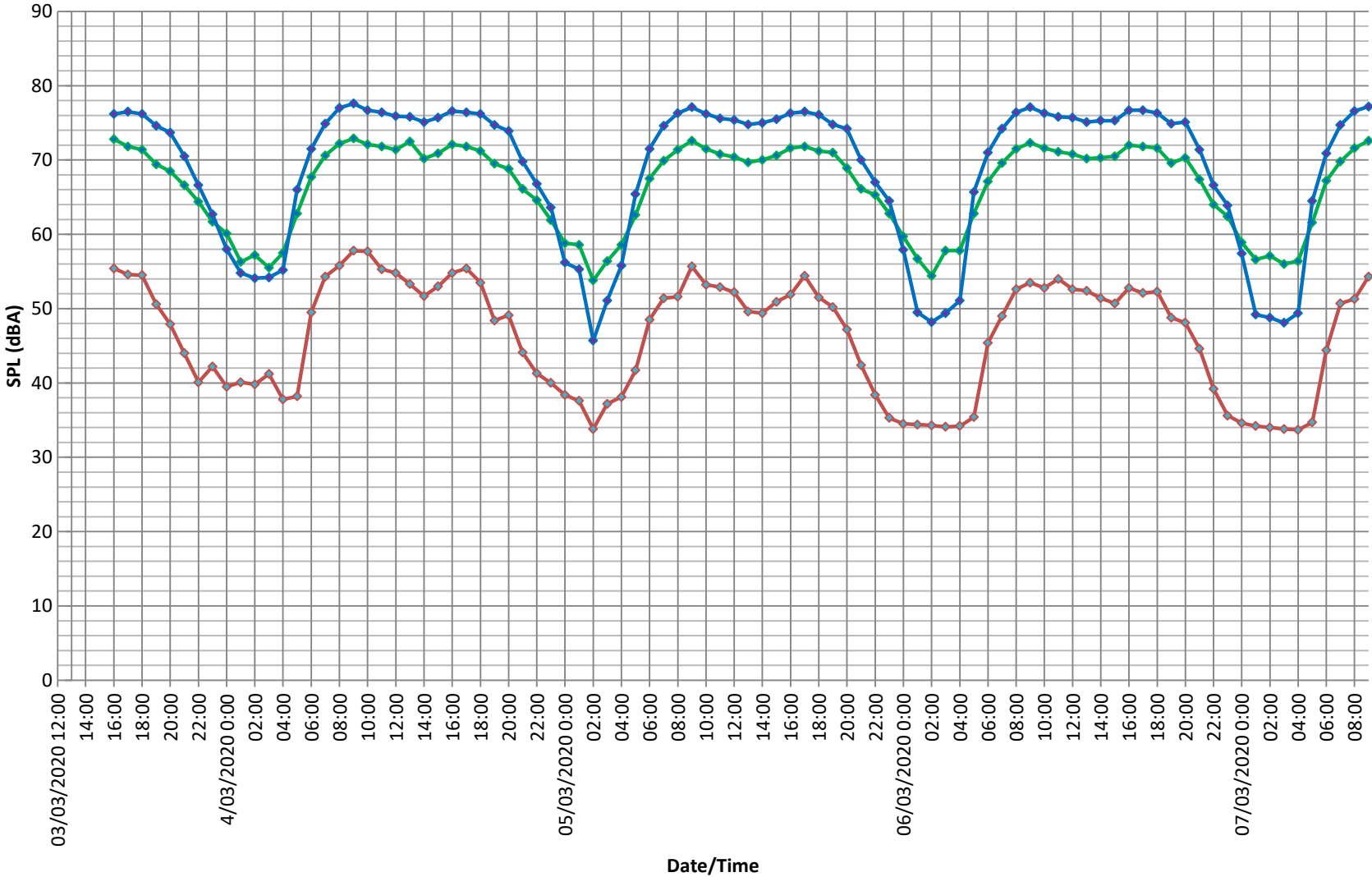
Project number	-	A2.01
Date	20.12.17	
Drawn by	RHA	
Checked by	RHA	
Scale@A2		1 : 500

APPENDIX B

FIGURE B1
NOISE MONITORING RESULTS

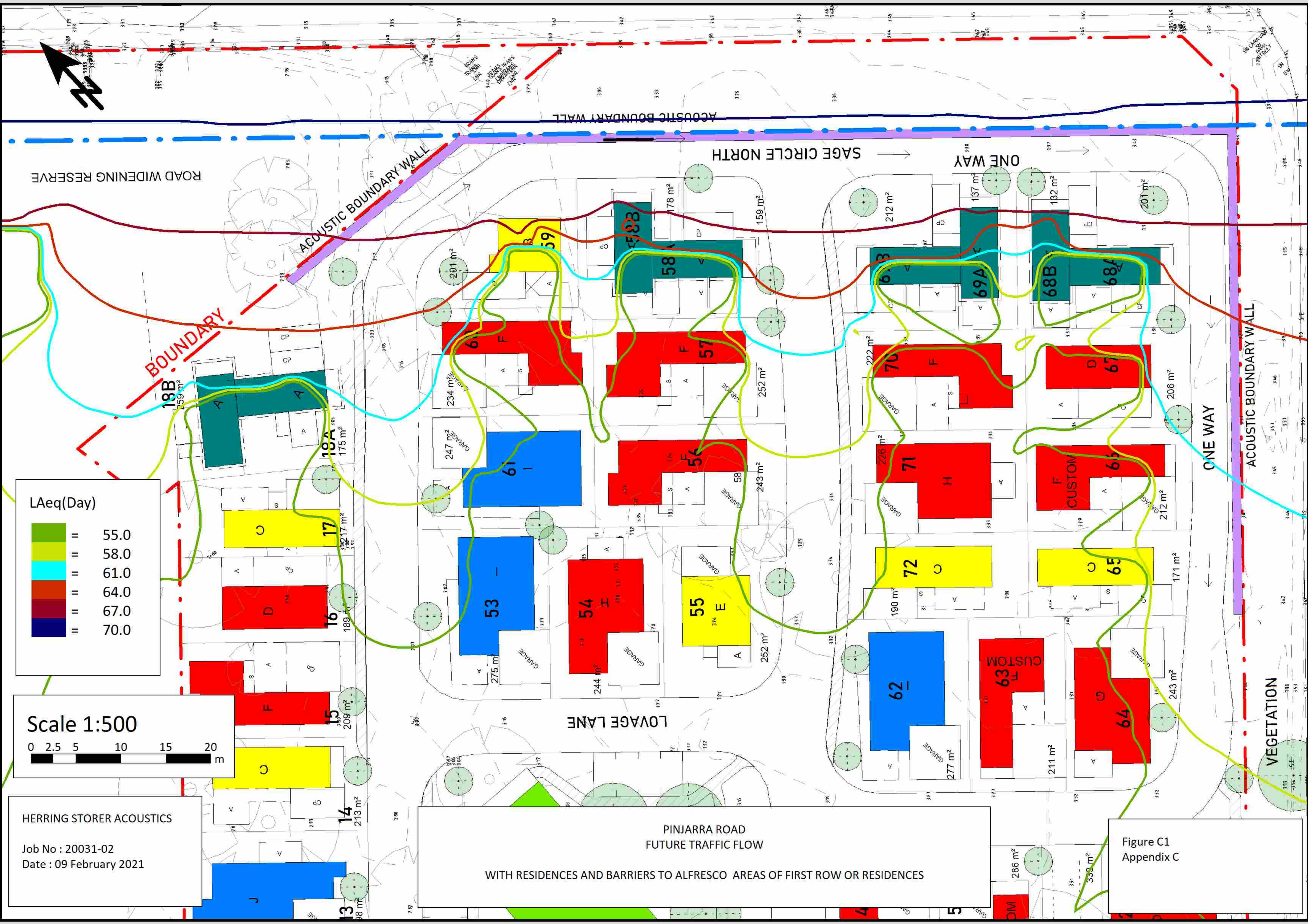
Noise Logging - Pinjarra Road

— LAeq — LA10 — LA90



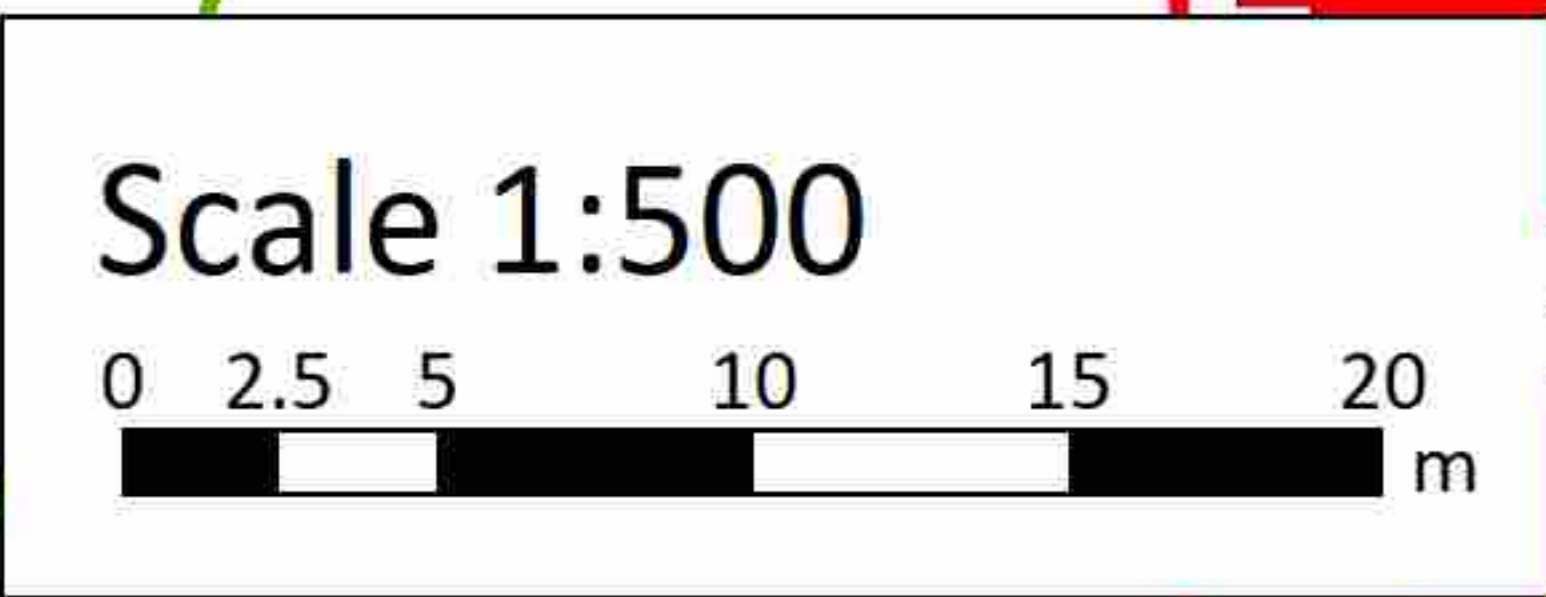
APPENDIX C

FIGURE C1
 $L_{Aeq(16hr)}$ DAY NOISE CONTOURS



LAeq(Day)

Green		55.0
Yellow		58.0
Cyan		61.0
Red		64.0
Dark Red		67.0
Blue		70.0



HERRING STORER ACOUSTICS
 Job No : 20031-02
 Date : 09 February 2021

**PINJARRA ROAD
 FUTURE TRAFFIC FLOW**
 WITH RESIDENCES AND BARRIERS TO ALFRESCO AREAS OF FIRST ROW OR RESIDENCES

Figure C1
 Appendix C

APPENDIX D

LOTS REQUIRING “QUIET HOUSE” DESIGN, LOCALISED SCREENING AND NOTIFICATIONS



NOTES

80 DWELLINGS
 11 - LARGE - BLUE
 37 - MEDIUM - RED
 16 - SMALL - YELLOW
 08 - DUPLEX UNITS - TEAL (x2 DWELLINGS)

TOTAL SITE AREA = 27979m²
 TOTAL LOT NO² = 79
 AVERAGE LOT AREA = 215m²
 COMMUNAL SPACE AREA = 3000m²
 COMMUNAL SPACE LOT AREA RATIO = 10.7%

KEY

FUTURE TREE TO BE PLANTED

ACOUSTIC BOUNDARY WALL

FOOTPATH

DWELLINGS

16x A - THE ARALIA - 1x1
 02x B - THE BAYBERRY - 2x1
 11x C - THE CARAWAY - 1x1
 09x D - THE FOXGLOVE - 2x1
 03x E - THE GINGER - 1x1
 15x F - THE LAVENDER - 2x1
 06x G - THE NETTLE - 2x2
 07x H - THE PEPPERMINT - 2x1
 08x I - THE ROSEMARY - 3x2
 03x J - THE SANTOLINA - 3x1

Residences requiring "Quiet House" design and Notifications of Traffic Noise

607 PINJARRA ROAD

RESIDENCES REQUIRING "QUIET HOUSE DESIGN", LOCALISED SCREENING AND / OR NOTIFICATIONS OF TRAFFIC NOISE

Herring Storer Acoustic
 Job No : 20031-02
 Date : 90 February 2021

RICHARD HAMMOND ARCHITECT
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Figure D1
 Appendix D

MASTERPLAN		
Project number	-	
Date	20.12.17	A2.01
Drawn by	RHA	
Checked by	RHA	Scale@A2
		1 : 500

APPENDIX E

TRAFFIC DATA



Hourly Volume

Pinjarra Rd (M023)

2019/20
Monday to Friday

East of Ronlyn Rd (SLK 5.71)

	All Vehicles		
	EB	WB	Both
00:00	16	15	31
01:00	10	10	20
02:00	9	10	19
03:00	26	12	38
04:00	94	39	133
05:00	281	109	390
06:00	426	242	668
07:00	436	489	925
08:00	466	725	1191
09:00	471	644	1115
10:00	518	593	1111
11:00	582	553	1135
12:00	581	521	1102
13:00	548	500	1048
14:00	646	587	1233
15:00	688	708	1396
16:00	667	700	1367
17:00	595	523	1118
18:00	391	346	737
19:00	250	265	515
20:00	166	133	299
21:00	129	97	226
22:00	67	56	123
23:00	40	35	75
TOTAL	8103	7912	16015

	Heavy Vehicles				%
	EB	WB	Both		
00:00	1	1	2	6.5	
01:00	0	0	0	0.0	
02:00	1	1	2	10.5	
03:00	2	2	4	10.5	
04:00	15	5	20	15.0	
05:00	50	13	63	16.2	
06:00	79	38	117	17.5	
07:00	72	71	143	15.5	
08:00	71	81	152	12.8	
09:00	75	69	144	12.9	
10:00	76	66	142	12.8	
11:00	81	71	152	13.4	
12:00	73	62	135	12.3	
13:00	76	59	135	12.9	
14:00	92	73	165	13.4	
15:00	82	86	168	12.0	
16:00	69	82	151	11.0	
17:00	59	45	104	9.3	
18:00	32	29	61	8.3	
19:00	16	22	38	7.4	
20:00	11	8	19	6.4	
21:00	8	6	14	6.2	
22:00	5	2	7	5.7	
23:00	3	1	4	5.3	
TOTAL	1049	893	1942	12.1	

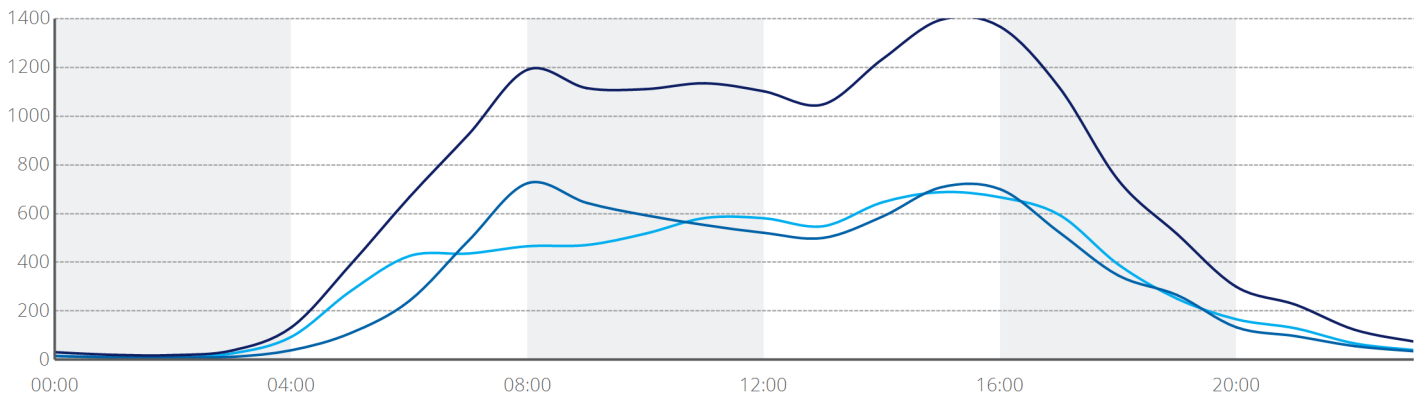


Peak Statistics

AM	TIME	11:30	08:00	08:00
	VOL	593	725	1191
PM	TIME	14:30	15:15	15:15
	VOL	699	774	1460

	10:45	08:15	07:45
	82	84	157
	14:15	15:15	15:15
	92	95	172

Volume



— Eastbound — Westbound — Both Directions

2041 ROM24 Base Scenario - Link Volume Plot for for Pinjarra Rd, Furnissdale All Day

MODEL ASSUMPTIONS

LANDUSE: 2041 MLUFS Land Use (Version 1.4 - August 2018)
NETWORK: 2041 ROM24 Network (20-Year Network Development Plan)
Reference #41283

ROM24 Multi-Modal Model V4.40 24-Hour Traffic Volumes (Factor X 100)

Terms & Conditions :
MRWA Traffic Modelling Data as supplied to approved clients is confidential and is not to be made available to unauthorised persons or organisations. This data should not be used for any purpose other than the stated purpose for which it was requested from MRWA. The MRWA ROM is for estimating regional traffic volumes on regional and major local roads, and it should not be used for estimating local traffic on local roads. The MRWA ROM includes local roads but this is to provide connectivity in the model. MRWA Traffic Modelling Data should be interpreted by an experienced/qualified person. This data should not be used in making decisions relating to commercial or residential developments.



Transport Modelling Section
Enquiries Thomas Ng 9323 6366
MRWA Reference Job #41459
Thu 09 Apr 2020
T:\VOYAGER\JOBS_V2020\41459\Reports\LVP\41459_LVP_All Day_Y41_Pinjarra Rd_Furnissdale.VPR

MRWA ROM24 Base Network - Version 2014

MRWA Transport Modelling Data as supplied to approved clients is confidential and is not to be made available to unauthorised persons or organisations

- 1 Lane Each Direction
- 2 Lanes Each Direction
- 3 Lanes Each Direction
- >=4 Lanes Each Direction

APPENDIX F

PRELIMINARY RESIDENTIAL DESIGNS

MATERIALS AND FINISHES

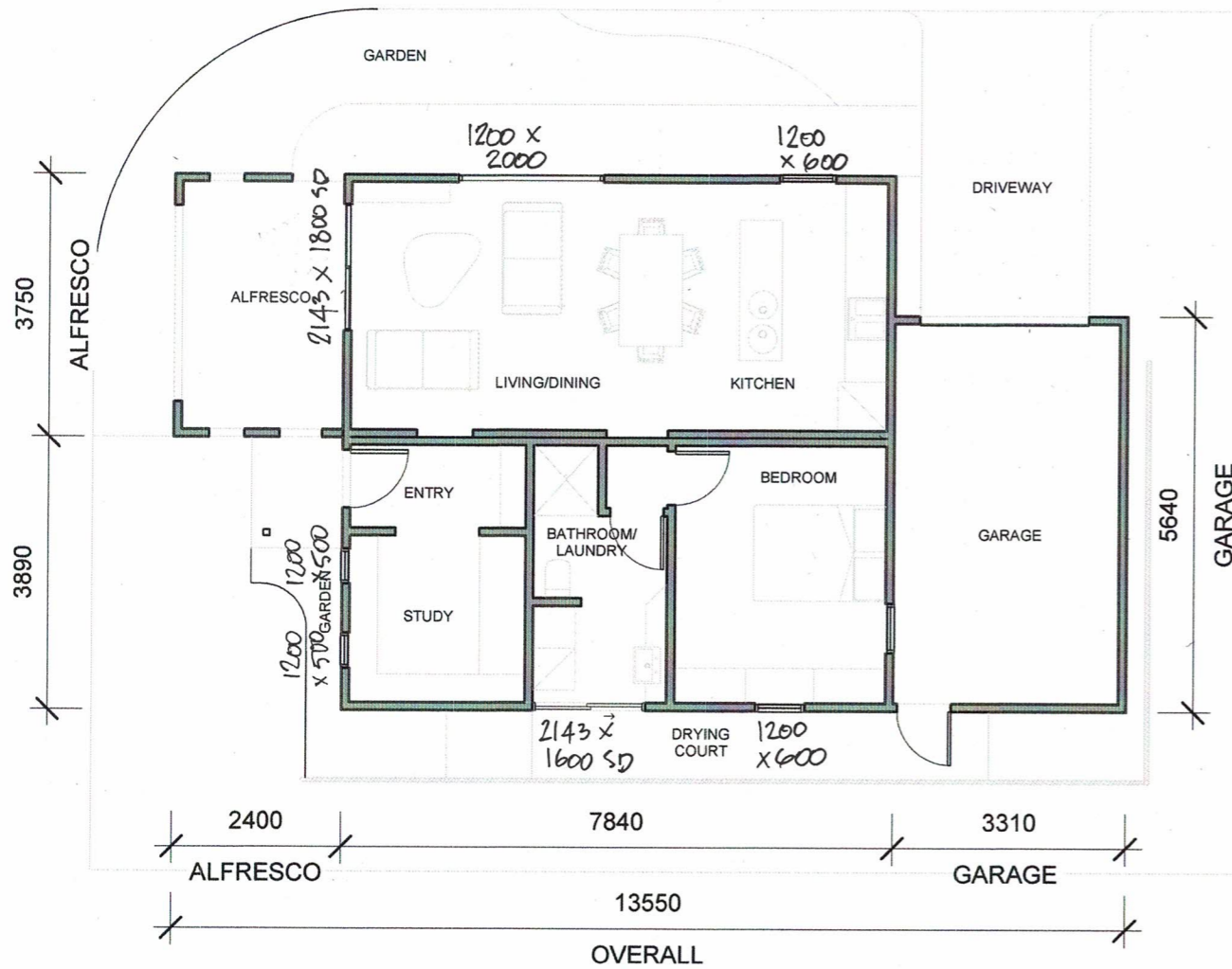
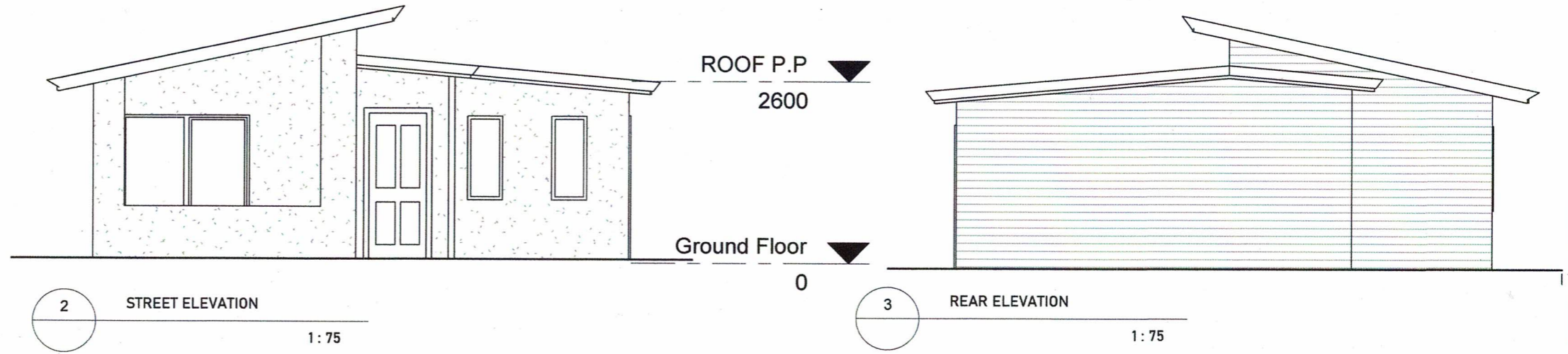
STREET ELEVATIONS TO BE PRIMELINE F.C WEATHERBOARD AND FLAT FIBRE CEMENT SHEET w/ ROLL-ON SAND FINISH TEXTURE

SIDE AND REAR ELEVATIONS TO BE PRIMELINE F.C WEATHERBOARD PAINT FINISH

ALL ROOFS TO BE CUSTOM ORB w/ COLORBOND FASCIA AND GUTTER IN SIMILAR FINISH

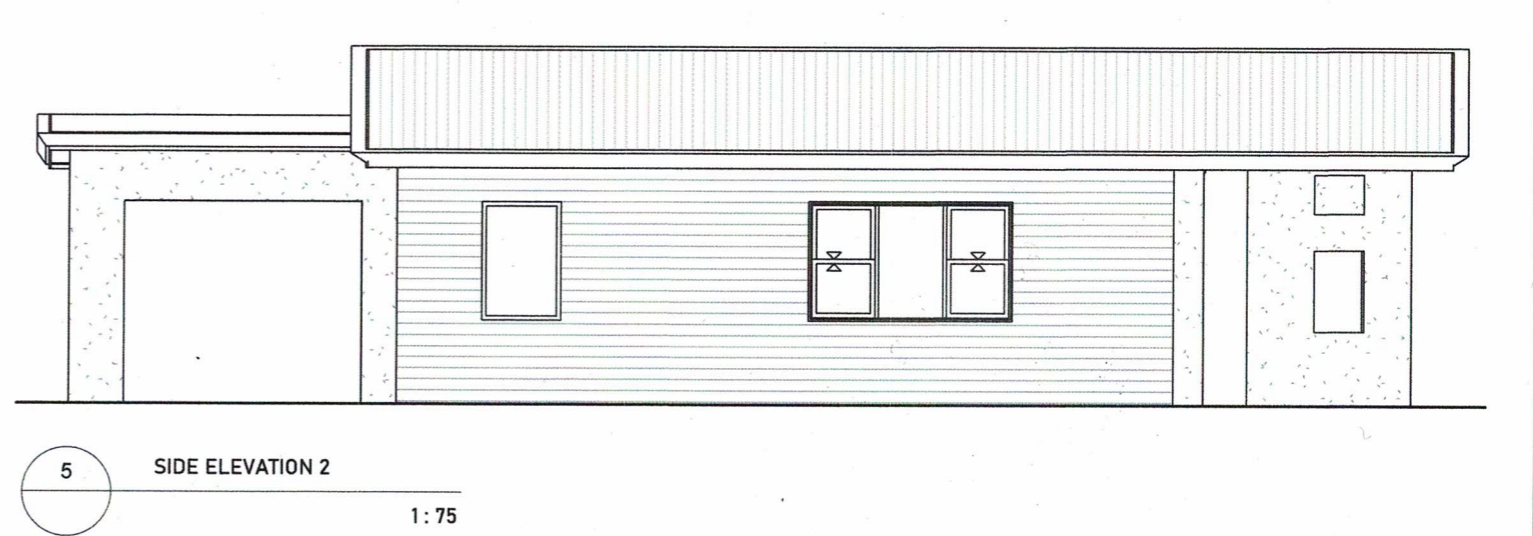
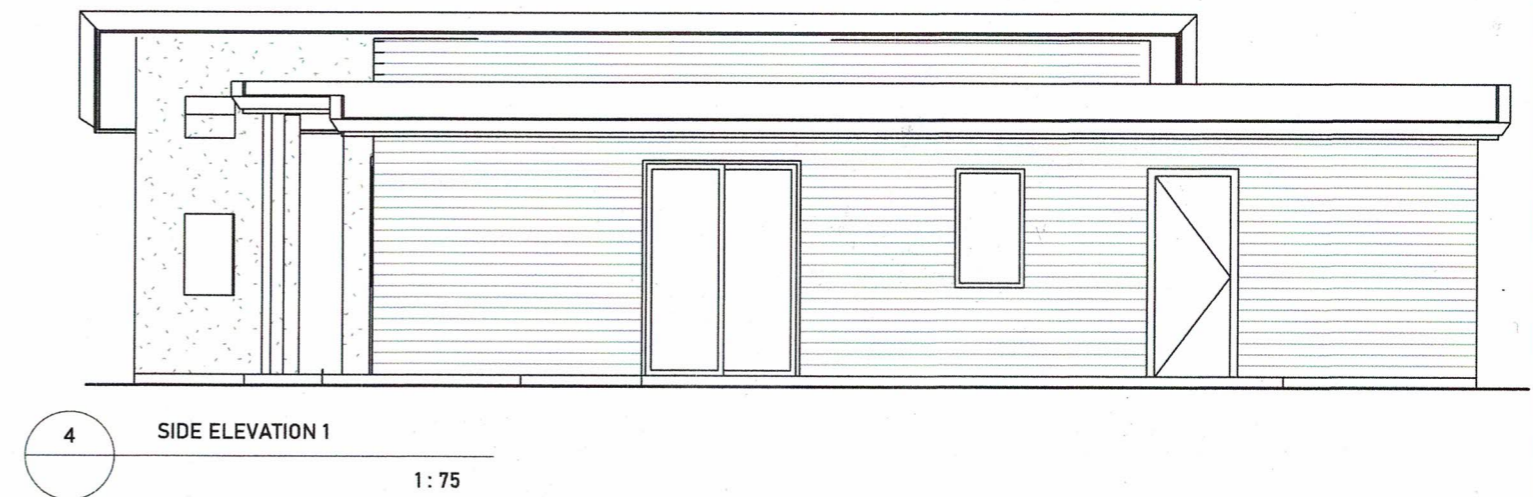
PATIO TUBE STRUCTURES TO CARPORT AND ALFRESCO

FINAL COLOUR FINISHES TO BE CONFIRMED



1 FLOOR PLAN
A-100 1:100

HOUSE - 57m²
ALFRESCO - 08m²
GARRAGE - 17m²
VERRANDAH - 02m²



4 SIDE ELEVATION 1
1:75

5 SIDE ELEVATION 2
1:75



RICHARD HAMMOND ARCHITECT
16/342 SOUTH TERRACE, SOUTH FREMANTLE
0438 918 753 | RICHARD@HRARCHITECTS.COM.AU

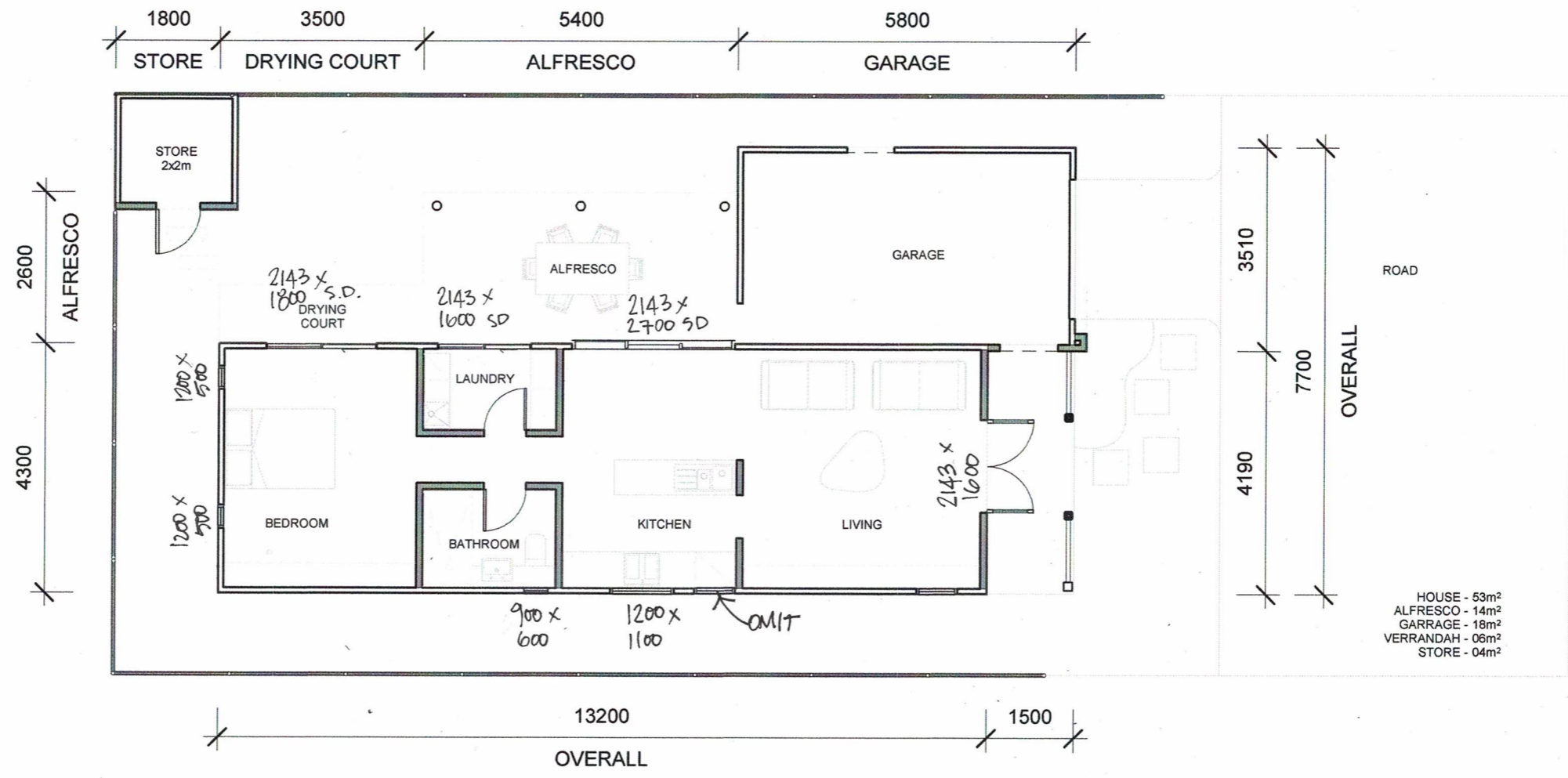
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No.	Description	Date
0	PRELIMINARY	20.03.11
1	HOME NAME UPDATED	20.07.14

THE GINGER
PROVIDENCE LIFESTYLE
'E'

FLOOR PLAN & ELEVATIONS

Project number	A-100
Date	20.07.14
Drawn by	RHA
Checked by	RHA
Scale@A3	As indicated



1 FLOOR PLAN
 A-101 1:100



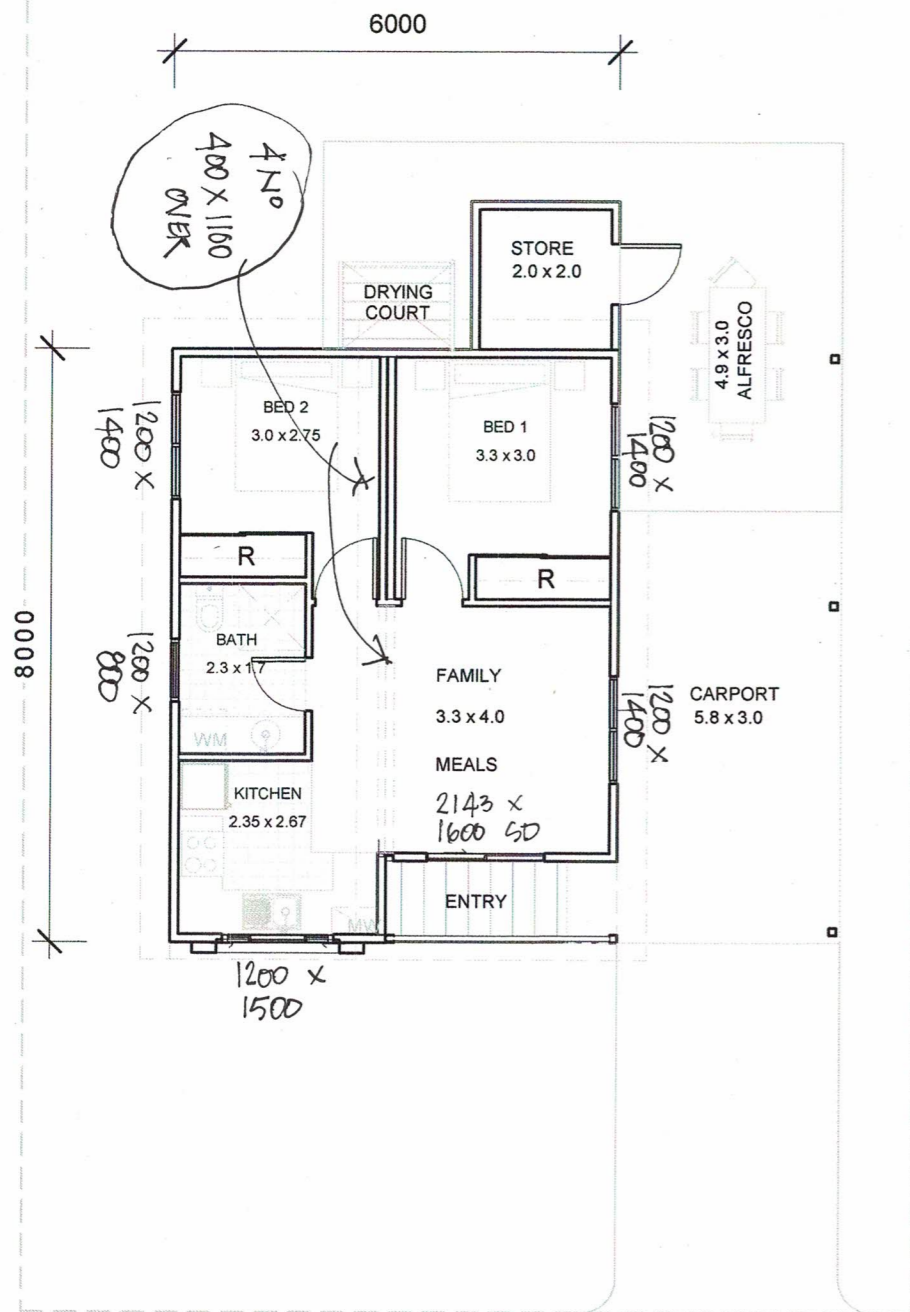
RICHARD HAMMOND ARCHITECT
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 0438 918 753 | RICHARD@HRARCHITECTS.COM.AU

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No.	Description	Date
0	PRELIMINARY	20.11.03
1	HOME NAME UPDATED	20.07.14

'THE CARAWAY'
 PROVIDENCE LIFESTYLE
 'C'

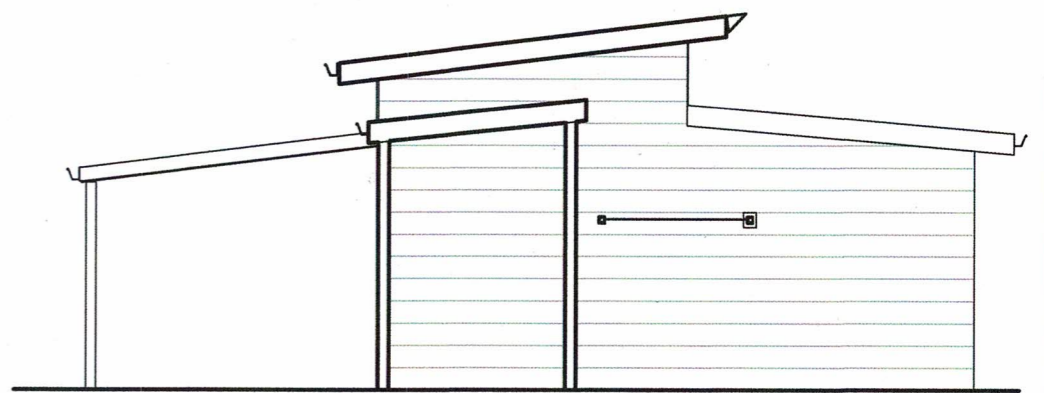
FLOOR PLAN		A-100
Project number	Project Number	
Date	20.07.14	
Drawn by	RHA	
Checked by	RHA	
Scale@A3	1:100	



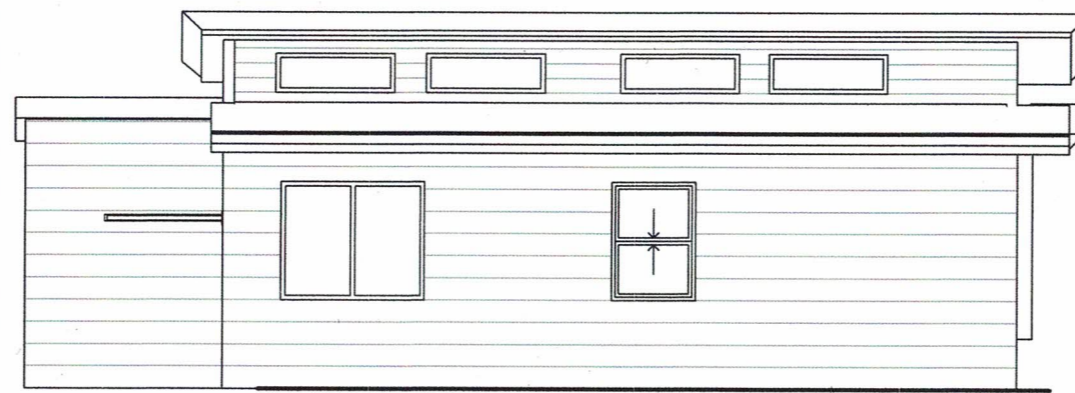
1 FLOOR PLAN
1:100



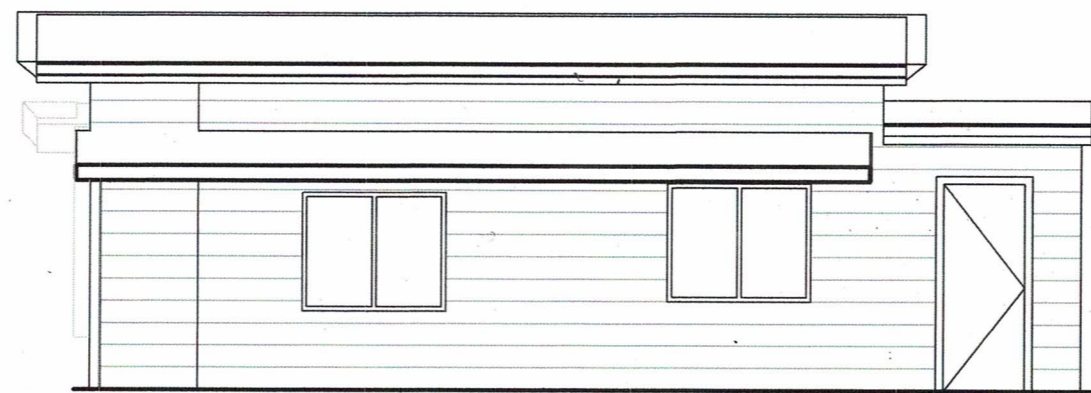
2 STREET ELEVATION
1:75



3 REAR ELEVATION
1:75



4 SIDE ELEVATION 1
1:75



5 SIDE ELEVATION 2
1:75

MATERIALS AND FINISHES
 STREET ELEVATIONS TO BE PRIMELINE F.C WEATHERBOARD AND FLAT FIBRE CEMENT SHEET w/ ROLL-ON SAND FINISH TEXTURE
 SIDE AND REAR ELEVATIONS TO BE PRIMELINE F.C WEATHERBOARD PAINT FINISH
 ALL ROOFS TO BE CUSTOM ORB w/ COLORBOND FASCIA AND GUTTER IN SIMILAR FINISH
 PATIO TUBE STRUCTURES TO CARPORT AND ALFRESCO
 FINAL COLOUR FINISHES TO BE CONFIRMED



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No.	Description	Date
0	PRELIMINARY	20.03.11
1	HOME NAME UPDATED	20.07.14

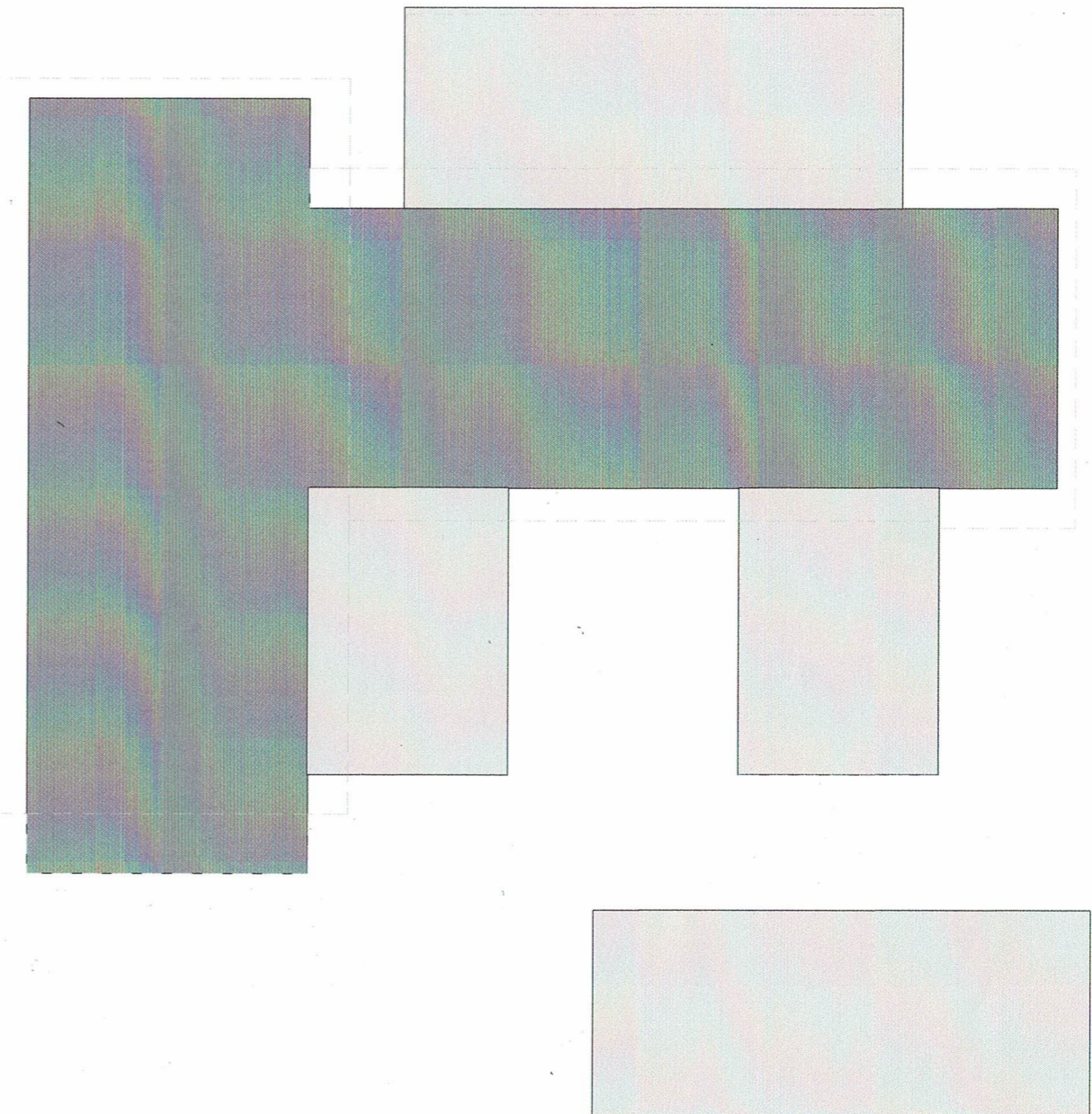
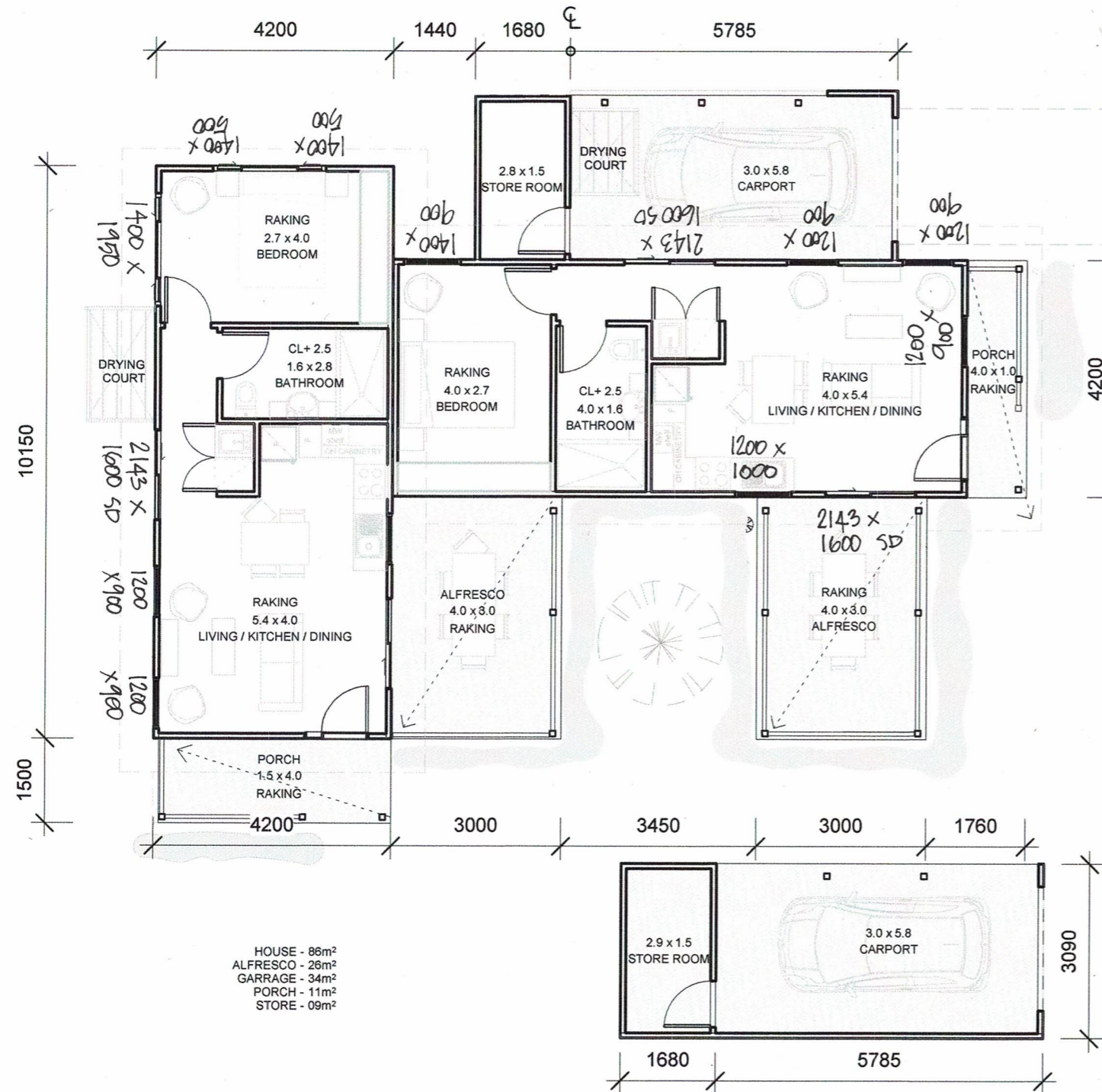
'THE BAYBERRY'
 PROVIDENCE LIFESTYLE
 'B'

FLOOR PLAN & ELEVATIONS	
Project number	A-100
Date	20.07.14
Drawn by	RHA
Checked by	RHA
Scale@A3	As indicated

HOUSE : 42m²
 ALFRESCO: 12m²
 CARPORT: 17m²
 STORE: 4m²

NOTE:
 SUSPENDED CEILING HEIGHTS
 AT 2.5m

 SITE BUILT
 PREFABRICATED



RICHARD HAMMOND ARCHITECT
 16/342 SOUTH TERRACE SOUTH FREMANTLE
 0438 918 753
 rharchitect@bigpond.com

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No.	Description	Date

'The Aralia'
 Providence Lifestyle
 'A'

FLOOR PLAN

Project number	xx	A-100
Date	20.07.14	
Drawn by	RHA	Scale
Checked by	RHA	
		1 : 100

From: [NAUDE Daniel \(RCPM\)](#)
To: [Rod Peake](#); [Andrea Lawson](#)
Cc: [DAVIES Paul \(Con\)](#); [BARNSELY Robert \(DSWO\)](#)
Subject: Reply: Amended Development Application Referral: Lot 156 Pinjarra Road, Furnissdale (SLK - 5.3)
Date: Friday, 12 March 2021 12:14:11 PM
Attachments: [image005.png](#)
[image007.png](#)
[image018.png](#)
[image019.png](#)
[image024.png](#)
[image003.jpg](#)
[image004.jpg](#)
[image001.png](#)
[image013.png](#)
[image014.png](#)
[image015.png](#)
[image016.png](#)
[image017.png](#)
[riverside-dr-int-v2-A1 1-500.pdf](#)

Dear Andrea and Rod

I refer to your correspondence below seeking comments regarding the proposed development at Lot 156 Pinjarra Road and thank you for the opportunity to comment again.

Please be advised that Main Roads still has a number of concerns regarding the proposed development. Notwithstanding, it is considered that the proposal can be progressed from a Main Roads perspective, subject to the matters outlined below being addressed via the recommended conditions of approval to Main Roads' specifications, as applicable, and satisfaction of the WAPC and the Shire of Murray.

Pinjarra Road intersection upgrade / Transport Impact Assessment ('TIA')

The subject land forms part of a broader DCP area and Main Roads acknowledge that the developer is therefore only responsible to construct the interim intersection upgrade and the timing for further upgrading of the intersection, to reflect the ultimate intersection layout, is yet to be established through the preparation of the DCP for the area.

On this basis, intersection will need to be designed to accommodate both the ultimate intersection layout/traffic infrastructure requirements for the future development area south of the Pinjarra Road junction and the interim intersection layout, to reflect the specific traffic demands generated by the development, and/or satisfy minimum development requirements to bring the existing infrastructure to an urban standard. Finalising the ultimate intersection layout will inform the requisite land area requirements to facilitate the road reserve boundary to implement the ultimate intersection layout. This is an important aspect because it will enable paths and services to be placed on their final and proper alignments.

Main Roads recommends that the Riverside Drive road reserve be widened in accordance with the Furnissdale West Structure plan and Main Roads concept plan. From a road engineering perspective, the development should, as a minimum, be required to fully upgrade the western side of Riverside Drive to an 'urban standard' (pavement widening, kerb and drain). Not doing this will significantly complicate the installation of the path which needs to be installed on the western side of Riverside Drive. The extent of any additional minor intersection works on the Eastern side of Riverside Drive will be established once further detailed design is undertaken. The Applicant has submitted further road cross sections information for Main Roads review, in response to our previous referral comments. It is considered that this information can be further developed, using Main Roads' base concept design and updated traffic analysis, discussed below. To determine the ultimate intersection layout design requirements, the necessary traffic modelling, including a SIDRA analysis of anticipated traffic volumes for the proposed development area and the future development north of Pinjarra Road, will need to be completed.

Main Roads does not support GTA consultants amended TIA. More specifically, the analysis did not use Main Roads' traffic data for Pinjarra Road for the ultimate development of the area to determine the ultimate layout for the Riverside Drive / Pinjarra Road intersection. ROM 2041 data was supplied to the consultant and should have been used for the analysis. Instead, the consultant have elected to use 2031 ROM data and the associated lower traffic volumes. The modelling, based on the reduced traffic volumes, therefore suggests that a two-lane approach to Pinjarra Road (as anticipated and shown by Main Roads conceptual layout – attached) is not required. Main Roads does not support this finding and is prepared to assist in the matter and undertake its own traffic analysis to resolve this issue, if requested.

It is considered that the development proposal can be progressed with agreement from the developer to continue further discussion with Main Roads and undertake additional modelling to determine the ultimate intersection layout requirements.

Existing Access

The existing access onto Pinjarra Road is required to be decommissioned and a condition is included below to this effect.

Noise Assessment

Main Roads does not accept the updated Noise Management Plan (NMP) submitted for consideration. Given that the development is proposed on a green fields site, it is considered appropriate that noise attenuation in the form of a noise barrier be provided to ensure an acceptable level of residential amenity is provided for future occupiers of the Estate/Lifestyle Village. It is considered that a noise wall could be recessed into the site and appropriately landscaped if there is potential concerns with the visual impact of such a wall.

The Applicant has not updated the traffic noise assessment to correctly forecast traffic growth on Mandurah Road. It was previously advised that the adopted traffic figure should be based on a 4% to 5% growth rate to take future growth in this location into consideration (Activity Centre Area), which also reflects the 2041 ROM24 Link Volume Plots previously provided. It is anticipated that the traffic volumes to be used should at least reference 35, 000 vpd for a 20 year forecasting period.

The Applicant has further assumed that the future road pavement will be dense graded asphalt, which is not supported by Main Roads. At this stage it is considered that any future pavement upgrade will comprise micro-surfacing, which has a lower acoustic performance than dense graded asphalt.

The assessment also assumes that future development levels for the site will remain unchanged and have used the existing natural ground level for modelling purposes, which is not supported. The road cross section information recently provided suggests that filling of the site will occur and modelling should therefore be reviewed on this basis.

The Applicant has also not undertaken the necessary modelling to accommodate the planned 3rd lane on Pinjarra Road/ the ultimate network in this location, as reflected in the Peel Region Scheme. The applicant is of the view that it is not required for the developer to do so and the responsibility for noise attenuation for a 3rd lane rests with the State/Main Roads.

Main Roads does not support this view on the basis that the 3rd lane is currently identified in the Region Scheme as a planning requirement and development/subdivision along Pinjarra Road is required in general to accommodate this future network requirement through appropriate development design (i.e. development set backs and access), road intersection design, and the ceding of land by developers to the Crown for this reserve requirement, where appropriate. This aspect is also acknowledged in this application with the proposed ceding of land requirements along Pinjarra Road and intersection design.

Main Roads has sought advice from DPLH (Simon Luscombe) to confirm with whom the

respective responsibilities/obligations rest and has received confirmation that the developer is required to undertake modelling for the 3rd lane and to provide any noise attenuation identified in the assessment.

It is recommended that the NMP should be reviewed with consideration to the above to establish what the future noise levels that will be received at the property and to use this information as the basis to enter into discussions with the Shire regarding appropriate noise attenuation for the development and preparation of a NMP.

It is considered that the NMP should be reviewed in respect to the following:

- Update and incorporate appropriate future traffic volumes for the purposes of noise modeling;
- inclusion of a 3rd traffic lane to accommodate future network planning;
- Adopt micro-surfacing as a future road pavement for the purposes of noise modelling; and
- Review modelling with reference to future development site levels.

It is considered that the development can be progressed with agreement from the Applicant to review the NMP in respect to the above and acknowledgment that the development interface with Pinjarra Road may need to be amended to reflect the outcome and further discussion with the Shire and Main Roads.

Landscaping/screening

Main Roads' previous comments remain valid.

Recommended Conditions

1. Prior to commencement of works, the submitted Transport Impact Statement (Ref: W202190 REV B-Final, dated 15/02/2021) shall be revised to the satisfaction of the [WAPC/Shire] on the advice of Main Roads WA, incorporating an updated SIDRA analysis, to determine the ultimate layout of the Pinjarra Road / Riverside Drive intersection.
2. Prior to commencement of works, the Pinjarra Road / Riverside Drive intersection shall be designed and approved to the satisfaction of the [WAPC/Shire] on the advice of Main Roads WA. The detailed design shall include (without being limited to) the following:
 - i. an 'ultimate' intersection layout concept which accommodates the future development traffic of the locality, with due regard to the recommendations of the final Transport Impact Statement, and future servicing requirements (refer condition 2.ii below) of the 'Furnissdale West Structure Plan' planning precinct; and
 - ii. a detailed 'interim intersection layout design to support the proposed development traffic, including provision of an appropriate corner road truncation area, drainage, kerbing, pedestrian footpath and lighting.

The approved interim intersection layout is to be constructed at the full cost of the landowner/applicant prior to the commencement of the use.

3. Prior to commencement of development, a 10 metre-wide land area measured along the full Pinjarra Road road frontage and a corner truncation area, as determined by the detailed 'interim' intersection layout design, is to be ceded to the Crown free of cost, in accordance with the Peel Region Scheme.

Note: It is assumed that the Shire will require the general widening of Riverside Drive road reserve in accordance with the 'Furnissdale West Structure Plan' and the Main Roads-approved intersection design.

4. Prior to commencement of works, the Noise Management Plan (Ref: 27222-2-20031-02, dated February 2021) shall be revised to the satisfaction of the [WAPC/Shire] on the advice of Main Roads WA. The Noise Management Plan shall be implemented at the full cost of the landowner/applicant to the satisfaction of the [WAPC/Shire].
5. Prior to commencement of works, the existing driveway / crossover on Pinjarra Road is to

be removed and the road verge reinstated to the specifications of Main Roads and satisfaction of the [WAPC/Shire]

6. The Pinjarra Road road reserve is to be fenced to the specifications of Main Roads. This fence may constitute a noise barrier or an alternative suitable fence to the specifications of Main Roads and satisfaction of the [WAPC/Shire].

Please do not hesitate to contact me should you require any further assistance in the matter.

Regards,

Daniel Naude

ROAD CORRIDOR PLANNING MANAGER

Metropolitan and Southern Regions / South West

p: +61 9724 5724 | **m:** +61 4189 31078

w: www.mainroads.wa.gov.au

cid:image005.png@01D7169E.4E8CC090



From: NAUDE Daniel (RCPM)

Sent: Tuesday, 19 January 2021 5:48 PM

To: Rod Peake <RodP@murray.wa.gov.au>; Andrea Lawson <Andrea.Lawson@dplh.wa.gov.au>

Cc: DAVIES Paul (Con) <paul.davies@mainroads.wa.gov.au>; BATT Tim (RMC) <tim.batt@mainroads.wa.gov.au>

Subject: FW: Reply: Development Application Referral: Lot 156 Pinjarra Road, Furnissdale

Dear Andrea and Rod

I refer to the Development Application referral for the above and advise that Main Roads has concerns with the proposal in its current form, as outlined below.

TIA/Traffic Report

Main Roads notes from the application forms associated with the Development Application that 'Grouped Housing Development'/'Grouped Dwelling Development' is the nominated land use/Use Class for the proposed development is. The planning report submitted in support of the development, however, describes the development as a Lifestyle Village for "Over 50's". The accompanying traffic analysis was undertaken on the basis of an assumed reduced trip generation rate of 3 vehicle trips 'per dwelling', given the proposed use, as opposed to the typical 8 vehicle trips per dwelling assigned for conventional residential development/Grouped Dwelling development for traffic analysis purposes.

Main Roads is prepared to accept the adopted trip generation rate given the proximity of the development to public transport/bus routes and walkable catchment to the Activity Centre Plan Area to the east.

The method used in the analysis for of estimating future traffic on Pinjarra Road is, however, not accepted by Main Roads in this instance. GTA consultants have used recent count data and then applied a very low/conservative growth rate of 0.5. Main Roads' available longer term modelling (ROM) data should have been used. The traffic report has also not considered additional traffic volumes/demands on Pinjarra Road which will be generated by the approved 'Barragup-Furnissdale Activity Centre Policy' area (Activity Centre) and the recently approved commercial development to the east on the corner of the nearby Pinjarra Road / Ronlyn Road intersection. Attached are 2031 and 2041 ROM24 link volume plots plus ROM24 2016 validation plot for Pinjarra Road in the vicinity of the Pinjarra Road / Riverside Drive intersection which should be used in the traffic assessment.

The method of estimating future traffic on Pinjarra Road also has implications for traffic volumes

referenced in the noise modelling discussed further below.

Turn movements at the intersection of Pinjarra Road and Riverside Drive have been largely based on existing movement at the intersection. This may change significantly with future development but it appears that no sensitivity analysis was done on this aspect, particularly if the percentage turning right out of the side road was ultimately much higher than the 5% used.

With respect to this development, it is agreed that the traffic volumes (250 vpd) generated by the development are low and that they do not warrant any upgrading of the Pinjarra Road / Riverside Drive intersection at this stage, noting that existing traffic is about 500vpd and ultimate volumes are in the order of 5000vpd (GTA predict 5600vpd – a previous traffic report prepared by Porters predicted 4775vpd).

The report has also not addressed the longer term layout for the intersection, but does acknowledge requirements outlined in the Furnissdale West Structure Plan for widening the Riverside Drive road reserve to 24.4m (from current 20m) and upgrading this road to an urban standard with provision for a median and on-road cyclists.

The above may become relevant as the development is situated in a 'Development Contribution Plans' Area which, under Schedule 13 (see 'Roads' provision 1.2) appears to require developers to contribute 100% towards various infrastructure in the precinct, including upgrading of the Pinjarra Road / Riverside Drive intersection. Typically, contributions towards intersection upgrades are determined on a pro-rata/proportional traffic volumes being contributed to an intersection.

Provision of a footpath along the western side of the development to link up with the path along Pinjarra Road has been recommended and is supported.

Road Requirements:

The site plan depicts a 10 meter road widening for Pinjarra Road in accordance with the Peel Region Scheme, which is supported. The site plan does not, however, depict a corner truncation following the proposed road widening, which should be provided, having regard to the ultimate road reserve requirements for the intersection. It is Main Roads' expectation that the road widening and truncation will be ceded free of cost to the Crown.

Main Roads has investigated the longer term requirements for the upgrade of the Riverside Drive / Pinjarra Road intersection to determine if any road widening is required. Attached is a preliminary layout that Main Roads have prepared showing the likely future layout and road reserve widening required to accommodate future traffic demands at the intersection. As can be seen from the plan, some additional road widening over and above the 24.4m previously identified/suggested by the Structure Plan is required. Note that no work has been done to determine if there are any additional requirements for drainage (drainage basins etc). It is therefore recommended that more detailed engineering investigations be undertaken to confirm the road widening requirements that will impact the subject land.

In order to fit in with the longer term planning objectives for Riverside Drive, the development should, as a minimum, upgrade the road to an urban standard; including kerbing and draining the western side of the road (taking into consideration the ultimate requirements for this road) for the full length of the frontage. This will enable the development driveways to properly set up for the future and facilitate the construction of the footpath required.

These works and the ceding of the road reserve widening could, from a Main Roads perspective, be accepted as sufficient to cover this development's contribution(s) required for road upgrades associated with the overall structure area.

Road Traffic Noise/Acoustic Assessment

Main Roads does not support the 2041 forecast volumes (21,146 vpd) used in the noise modelling, which is considered to be very conservative. Current daily traffic volumes are

between 15,000 and 16,000 vpd and the planning precinct in question is identified for significant future urban growth in strategic planning documents (i.e. the 'Barragup-Furnissdale Activity Centre Policy' area and Furnissdale West Structure Plan). It is considered that a 4% to 5% growth rate should be used in line with the 2041 ROM data.

Pinjarra Road currently has a chip seal formation/pavement. At this stage it is unlikely that the road surface would be upgraded to 'dense-graded asphalt' and the assessment should be reviewed, using 'micro-surfacing' for noise modelling purposes.

There is potential for the recommended 'Quiet House' design packages to change as a result of the updated study which may also require changes to the proposed draft Local Development Plan.

Noise Bund/Landscape Buffer

Main Road has a number of concerns regarding the proposed noise bund design, location and the landscape approach.

The proposed noise attenuation barrier comprises a bund/berm with a 0.5m high fence on top. The bund is also proposed to be retained to restrict the area footprint of the structure. Main Roads' principle concern relates to the proposed zero meter setback from the Pinjarra Road road-widening boundary, which is not supported by Main Roads.

Main Roads typically supports a minimum 1m setback where a 1:3 batter is proposed, subject to appropriate landscaping to stabilise the bund. Maintenance of the noise band, as proposed, will require ongoing access from the Pinjarra Road reserve which is not supported. The proposed bund design features a 1:1 batter/slope which is very steep and unlikely to be successfully landscaped in the short term and thereafter maintained, as typically required for noise bunds. The proposed design also includes 'rock pitching' assumed to be required as a result of the proposed steep batters, which may impact landscaping but also create additional drainage run-off from the development into the Pinjarra Road reserve, which is not supported in principle as the site currently drains away from Pinjarra Road.

The development proposes landscaping/screening to be undertaken in the Primary Region Road reserve/10 meter road widening area. No landscaping detail has been provided for review. The Shire has approached Main Roads to enter into a landscape management/maintenance agreement for Pinjarra Road, however, this agreement has not been finalised. Main Roads wish to advise, should the agreement be executed, that there is no certainty at this stage that the agreement would be an ongoing long-term arrangement and there is potential for management and care of the road reserve to revert back to Main Roads, in which case Main Roads cannot provide any commitment regarding ongoing maintenance or replacement of any landscaping standards/initiatives which may be supported by the Shire for the development at this point in time. Highway road verges are generally maintained to a minimum standard according to policy and allocated budgets, which varies over time.

Pinjarra Road is also identified for upgrading to a 3rd lane in each direction in the longer term and landscaping which still exists at the time is likely to be impacted when the upgrading occurs. It is therefore recommended that should there be a particular requirement/local planning objective to screen the development and/or proposed noise attenuation measures in the longer term, that the landscaping approach be reconsidered to rather provide landscaping/screening within the development site.

It is recommended that the above matters be addressed prior to the application being determined.

Please do not hesitate to contact me on the number below should you require any further assistance.

Regards,

Daniel Naude

ROAD CORRIDOR PLANNING MANAGER

Metropolitan and Southern Regions / South West

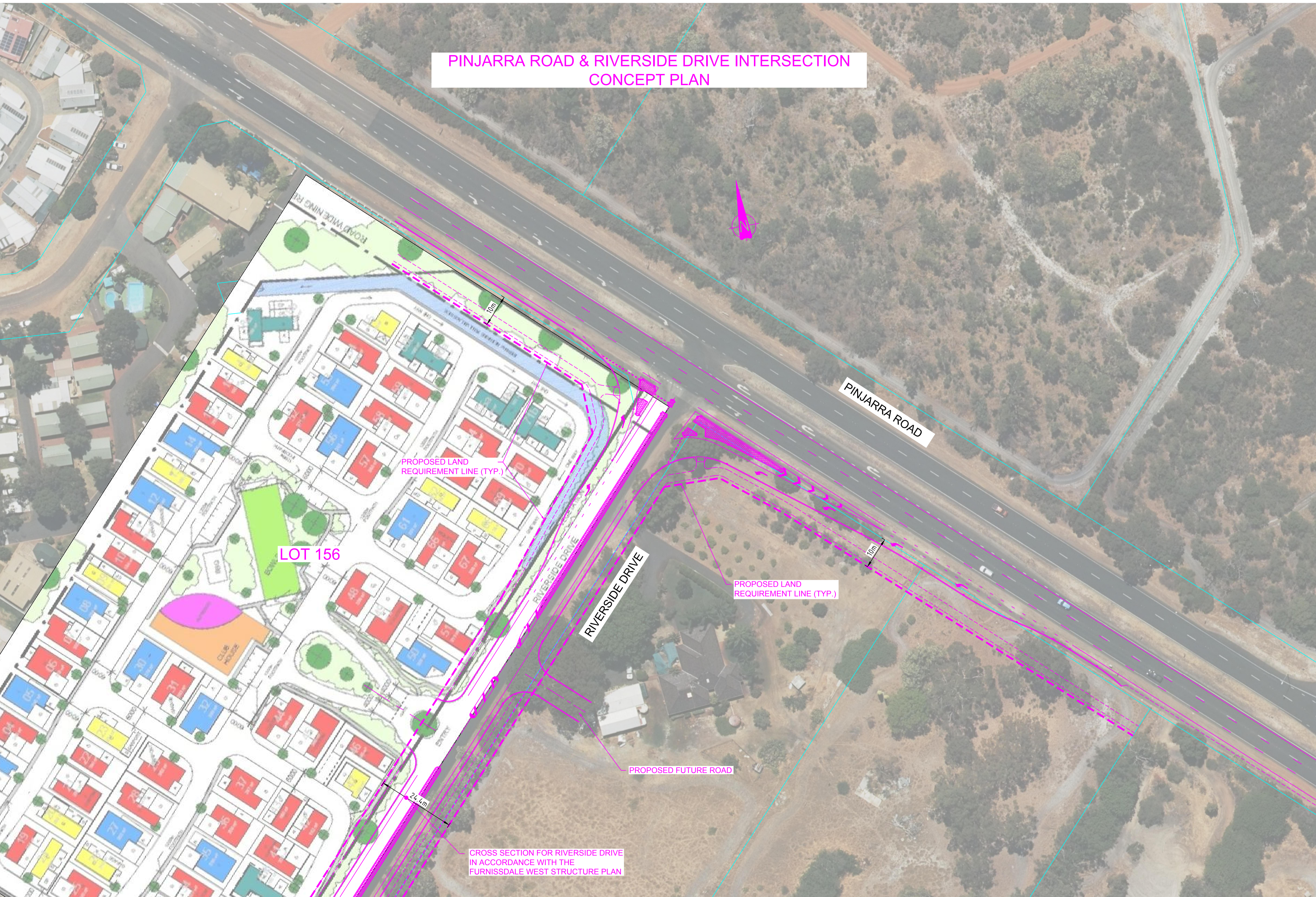
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w: www.mainroads.wa.gov.au

cid:image013.png@01D6EDE5.20BE6290



PINJARRA ROAD & RIVERSIDE DRIVE INTERSECTION CONCEPT PLAN



LOT 156

PROPOSED LAND REQUIREMENT LINE (TYP.)

RIVERSIDE DRIVE

PINJARRA ROAD

PROPOSED LAND REQUIREMENT LINE (TYP.)

PROPOSED FUTURE ROAD

CROSS SECTION FOR RIVERSIDE DRIVE IN ACCORDANCE WITH THE FURNISSDALE WEST STRUCTURE PLAN

From: [Tim Reynolds \(Herring Storer Acoustics\)](#)
To: [Tom Hockley](#)
Subject: FW: Lot 156 Pinjarra Road - State Planning Policy 5.4 Acoustics
Date: Tuesday, 23 March 2021 12:38:40 PM
Attachments: [image003.png](#)
[image002.png](#)
[Figure R1 - Partial Barrier 22 03 21.pdf](#)

Hi Tom,

Further to below, we confirm that the noise modelling included the traffic flows and road widening, as outlined by MRWA.

Regards,
For Herring Storer Acoustics

Tim Reynolds



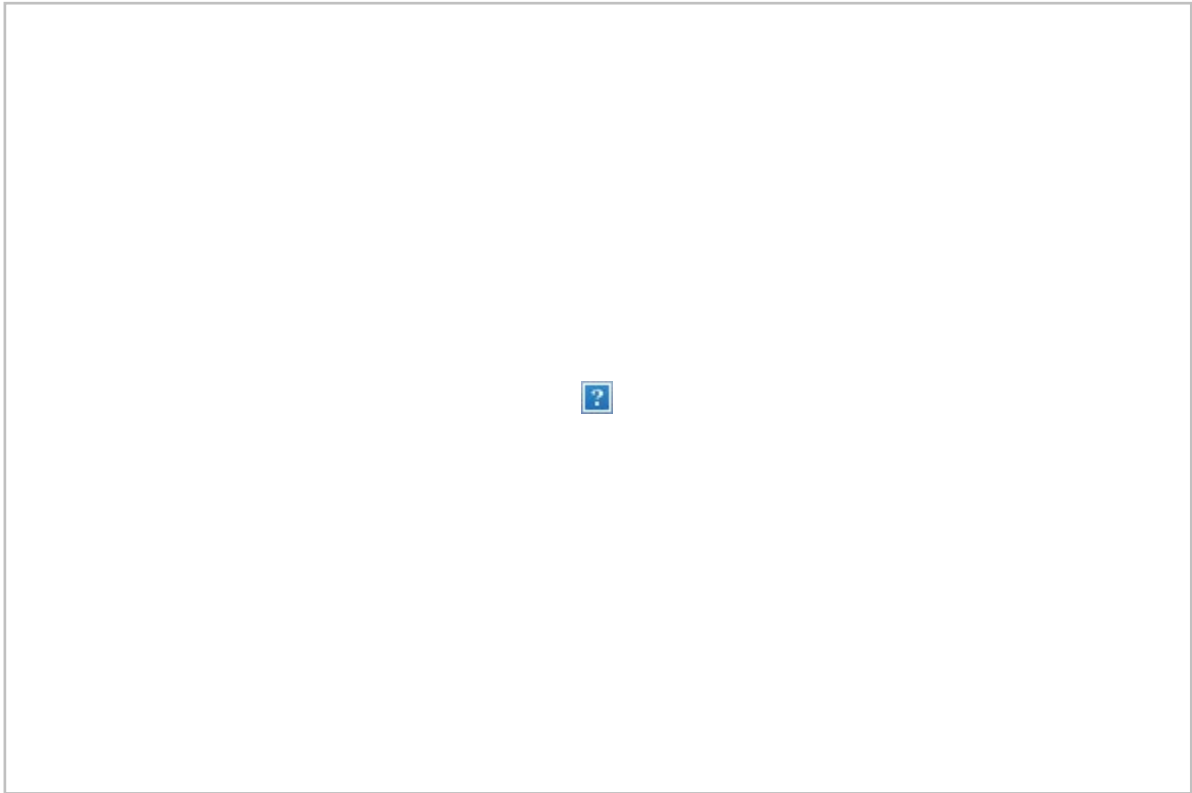
Suite 34, 11 Preston St, COMO WA 6152
Tel 9367 6200
www.hsacoustics.com.au

From: Tim Reynolds (Herring Storer Acoustics)
Sent: Monday, 22 March 2021 1:45 PM
To: Tom Hockley <tom@allerdingassoc.com>
Subject: Lot 156 Pinjarra Road - State Planning Policy 5.4 Acoustics

Hi Tom,

As requested, we have undertaken additional modelling, with the inclusion of partial fencing / barrier along the boundary to Pinjarra Road.

The modelling shows that with partial fencing / barriers as shown on the attached, compliance with State Planning Policy 5.4 would be achieved with the inclusion of "Quiet House" design for those lots / residences as shown below.



We note that this also account for the road surface remaining chip seal.

Thus, the recommendation of the previous report, as shown below would achieve compliance with the intent of State Planning Policy 5.4 :

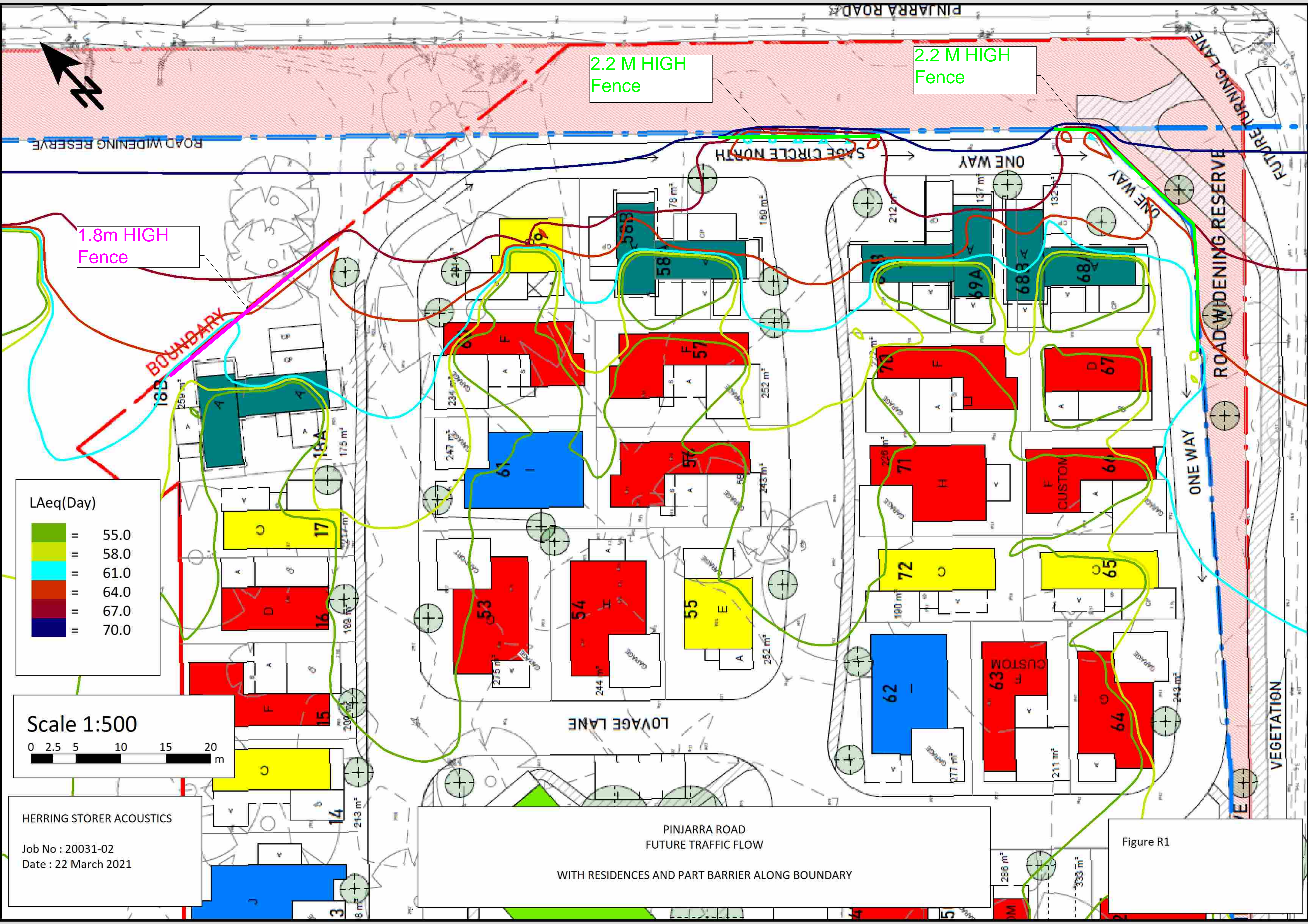
- Provide “Quiet House” design to those lots indicated above to achieve compliance with the Policies internal criteria.
- Provide localised screening / barriers to alfresco areas to some lots to achieve compliance with the above criteria. Localised barriers / fencing to be a minimum surface density of 15 kg/m².
- No glazing to bedroom in facades facing Pinjarra Road.

Regards,
For Herring Storer Acoustics

Tim Reynolds



Suite 34, 11 Preston St, COMO WA 6152
Tel 9367 6200
www.hsacoustics.com.au



2.2 M HIGH Fence

2.2 M HIGH Fence

1.8m HIGH Fence

185 BOUNDARY

SAGE CIRCLE NORTH

ONE WAY

ONE WAY

ROAD WIDENING RESERVE

FUTURE TURNING LANE

VEGETATION

LOVAGE LANE

WITH RESIDENCES AND PART BARRIER ALONG BOUNDARY

Figure R1