

SHIRE OF MURRAY

**GREENLANDS ROAD
STRUCTURE PLAN**

**Lots 13, 14, 801, 803, 805, 215 and 216
Greenlands Road, WEST PINJARRA**

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December 2016
(Revised February 2017)

endorsement

This structure plan is prepared under the provisions of the Shire of Murray Local Planning Scheme No 3.

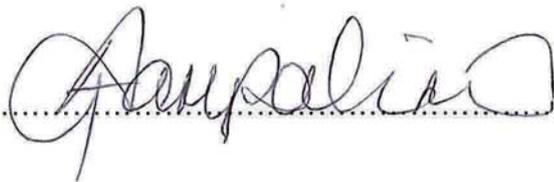
IT IS CERTIFIED THAT THIS STRUCTURE PLAN WAS APPROVED BY RESOLUTION OF THE WESTERN AUSTRALIAN PLANNING COMMISSION ON:

..... 1 MARCH 2017Date

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



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



.....Witness

..... 1 MARCH 2017Date

..... 1 MARCH 2027Date of Expiry

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Amendment No.	Summary of the Amendment	Amendment type	Date approved by WAPC

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PART ONE: IMPLEMENTATION

1.3 STRUCTURE PLAN AREA

This Structure Plan (hereafter referred to as the structure plan) applies to the Special Rural zone No 38 in the Shire of Murray Town Planning Scheme No 4, this being the land contained within the inner edge of the line denoting the structure plan boundary on the structure plan map (Plan 1).

This structure plan shall be known as the “Greenlands Road Structure Plan”. It is shown below and in Appendix 1.

1.4 OPERATION

The date this structure plan comes into effect is the date of the structure plan being approved by the Western Australian Planning Commission.

1.3 STAGING

The land within the structure plan comprises 7 lots (presently) in 4 separate ownerships. It is anticipated that development will commence in the eastern part of the site and progress in stages to the west. However, there are presently no firm plans for development or staging.

1.4 LAND USE, SUBDIVISION AND DEVELOPMENT REQUIREMENTS

The Shire of Murray Town Planning Scheme No 4 specifies the zoning, land use and development requirements for the structure plan area.

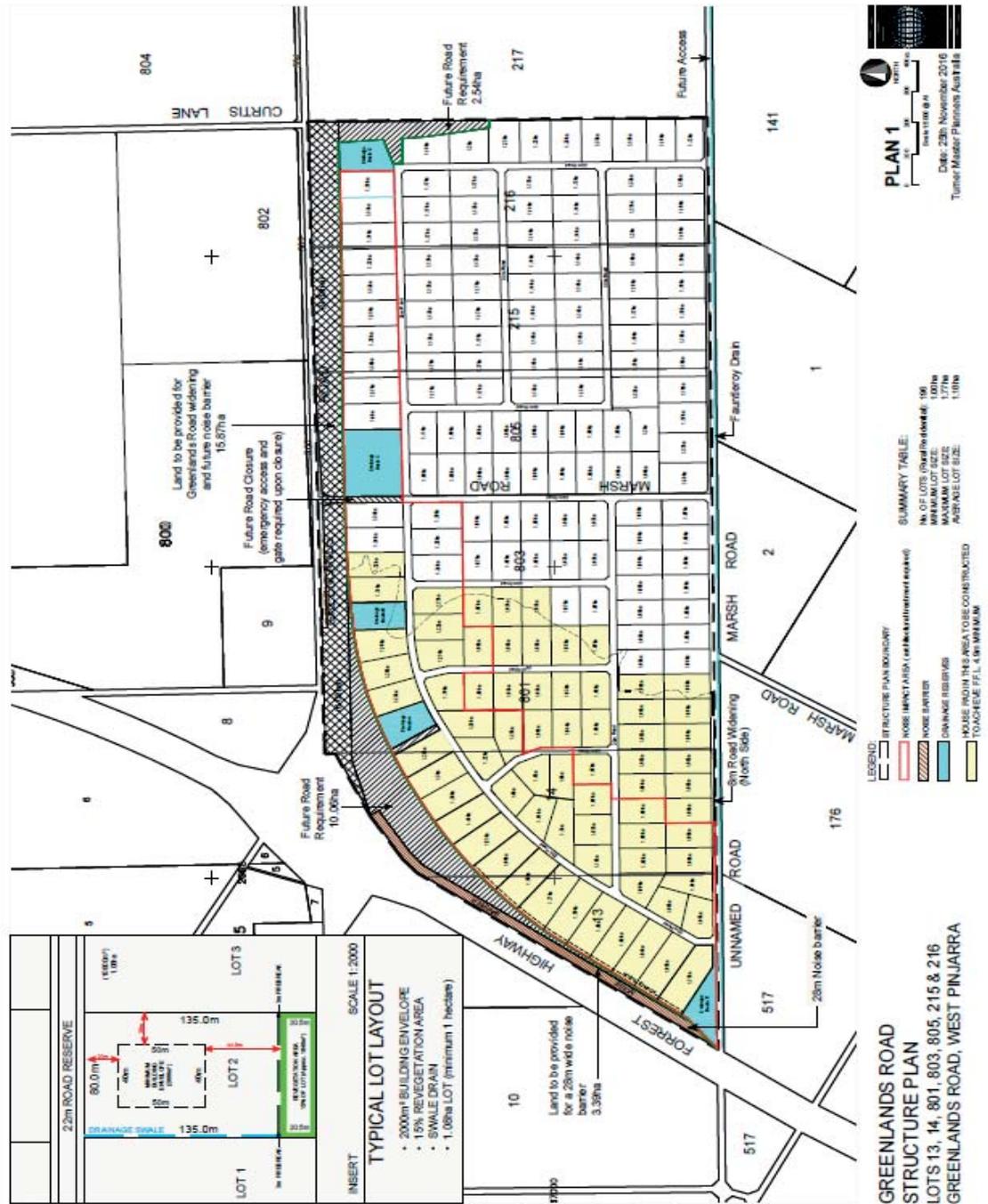
A structure plan is a requirement of condition 1 applicable to Special Rural zone No 38 of Scheme No 4 which states:

“Subdivision and development of the land should be generally in accordance with a local structure plan approved by the Western Australian Planning Commission”.

1.6 RESPONSE TO HAZARDS AND SEPARATION REQUIREMENTS

Bushfire attack level contour maps or assessments and, if required, bushfire management plans are to be prepared and submitted with all subdivision applications within the structure plan area, demonstrating compliance with the requirements of State Planning Policy 3.7: Planning in Bushfire Prone Areas. Bushfire attack level assessments should consider the impact of surrounding bush fire

prone areas on the subdivision and development of land within the structure plan area and account for the staging of development. Dwellings located in areas identified as requiring increased building protection measures are to be constructed in accordance with the requirements of Australian Standard 3959: Construction of buildings in bushfire-prone areas.



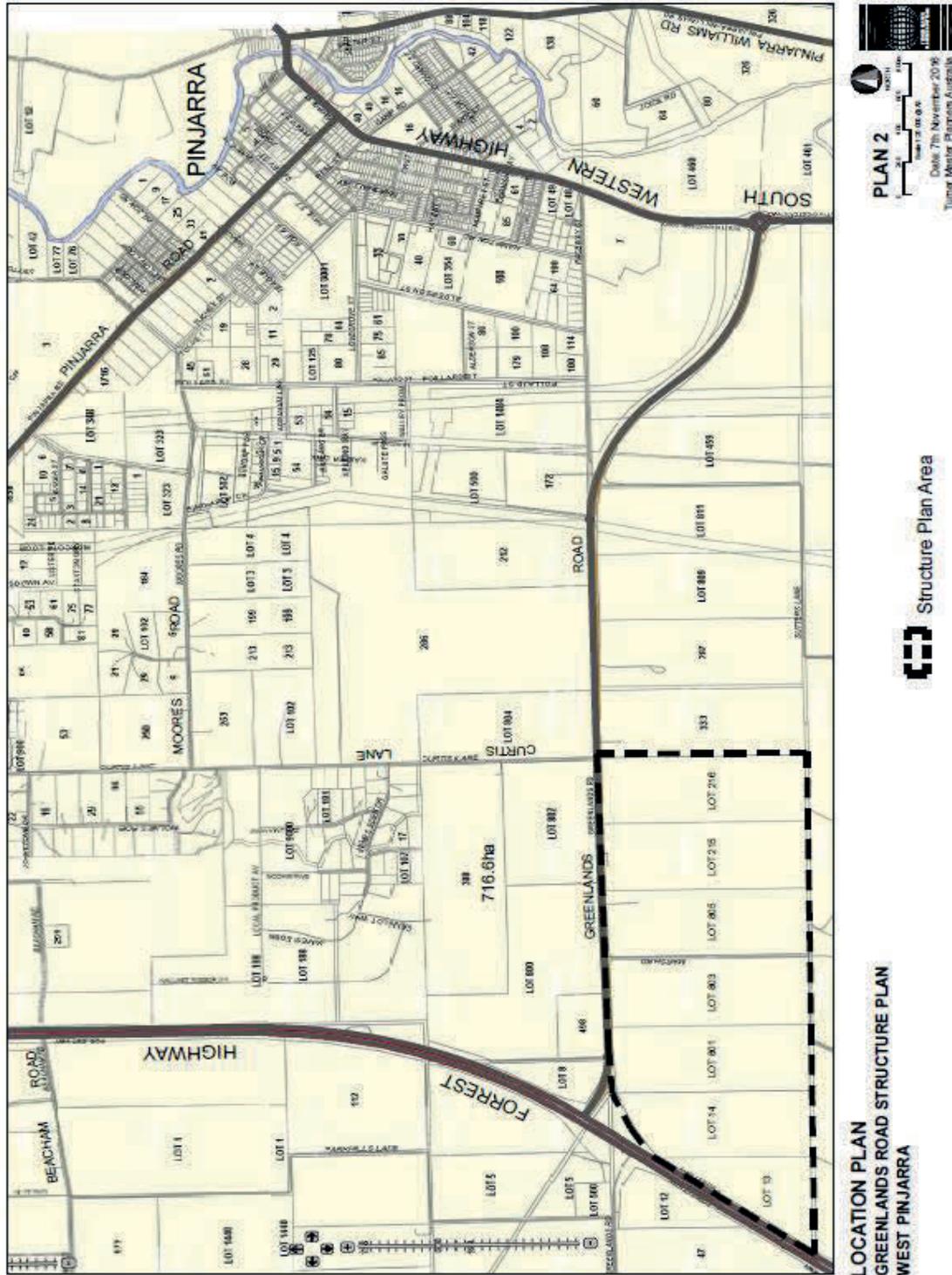
PART TWO: EXPLANATORY SECTION

2.1 LAND DESCRIPTION

The structure plan area comprises the following lots:

Lots 13, 14, 801, 803, 805, 215 and 216 Greenlands Road, West Pinjarra.

This is shown in the Location Plan (Plan 2) below and in Appendix 2.



2.2 PLANNING BACKGROUND

Arising from it's consideration of the Draft Industrial Land Strategy, in February 2010 the Shire of Murray adopted a revision of the draft Local Planning Strategy to depict a Mixed Business/Industrial corridor over landholdings north and south of Greenlands Road, and a proposed 'Special Rural' classification extending south of Greenlands Road through to Marsh Road/Sutters Lane and adjoining Fautleroy Drain.

The Department of Planning and WAPC's Planning Framework provides the most recent strategic planning guidance confirming the land south of Greenlands Road for Rural Residential (Special Rural) land use and the land west of Curtis Lane as Urban Expansion. The approved Scheme Amendment to the Shire of Murray Town Planning Scheme No 4, being Amendment No 275 (gazetted in September 2016) was consistent with this guidance.

2.3 SPECIAL RURAL ZONE NO 38

The Greenlands Road structure plan area is included in the Special Rural zone No 38 under The Shire of Murray Town Planning Scheme No4. The zone objective is to create rural residential lifestyle lots.

Special provisions are included in this Special Rural zone which address land use, development and subdivisional issues including the following:

- Subdivision in accordance with an approved structure plan.
- Minimum lot size of 1 hectare with building envelopes and site specific development requirements including fencing.
- Specified land use permissibility.
- Keeping of animals to be regulated to prevent overstocking or other detrimental practices.
- Requirements for groundwater extraction licences and approved effluent disposal systems.
- Water management and drainage to accord with an approved LWMS.
- Certain development to be above highest known ground water levels and free of inundation.
- Landscape and tree conservation measures including a Landscape Management Plan and a revegetation plan for native vegetation.
- Provision of reticulated water supply.
- Fire management to accord with a Fire Management Plan.
- Noise amelioration measures for dwellings to accord with standards in the Road Traffic Noise Assessment.

- Closure of the Marsh Road/Greenlands Road intersection upon upgrading of the Forrest Highway and Greenlands Road intersection and alternative access being provided.
- Land being set aside for future regional road purposes

2.4 STRUCTURE PLAN ELEMENTS

The following table shows the main characteristics of the structure plan:

Item	Data
Total area covered by the structure plan	296 hectares
Area of each land use proposed:	Hectares / Lot yield
• Rural Residential	230.53 ha / 196 lots
• Drainage	9.66 ha / 5 lots
• Rural Residential site area (excluding roads)	254.17 ha
Total estimated lot yield	201
Estimated number of dwellings	196
Estimated residential site density	1.29 dwellings per site ha
Estimated population	588 persons @ 3 per dwelling
Public open space	Nil
Estimated percentage of natural area (revegetation)	hectares 15%
Area set aside for regional road purposes:	
a) Future road requirements	12.6 ha
b) Noise barrier (Forrest Highway)	3.39 ha
c) Greenlands Road widening and future noise barrier	15.87 ha

The following features comprise the major elements of the structure plan:

2.4.1 Roads

- Greenlands Road -- road widening provision to accommodate the future upgrading of Greenlands Road to “freeway standard” to MRWA requirements.
- Provision for a future roundabout or flyover at the Curtis Lane intersection with provision for future roads connecting into the rural residential estate (north and south of Lot 216).
- The existing and proposed road system to serve the new rural residential subdivision including a widened 22 m entry road reserve in Marsh Road. That part of Marsh Road shown as “future road closure” on the structure plan is to be closed when Greenlands Road is upgraded to a dual carriageway highway

and MRWA provide alternative access to the estate off Greenlands Road.

- The proposed 22 m wide elongated loop roads serving the estate will be accessed via Marsh Road pending alternative access being provided by MRWA off a new road connection on the eastern boundary.
- The internal loop road network has been designed to provide alternative means of access and egress to all “parent” lots. Emergency access is proposed from the north-eastern and south-eastern sides of the estate to future roads planned to the east and also utilising the existing Sutters Lane road reserve. This access has been accepted by FESA in relation to the Fire Management Plan.
- Island slow points may be located within the long straight stretches of roads within the estate to slow traffic and provide visual punctuation.

2.4.2 Noise

- A noise barrier comprising a 4 metre high bund and wall is proposed adjoining the Forrest Highway within a 28m wide strip of land abutting the highway reserve.
- Provision is made in the land set aside for widening of Greenlands Road for a future noise bund to be constructed as part of the future upgrading of Greenlands Road.
- Delineation of a noise impact area adjoining the Forrest Highway and Greenlands Road is shown on the structure plan. Within this area architectural treatment of dwellings is required to reduce noise levels.
- Dwellings on lots adjacent to the Forrest Highway and Greenlands Road should be located away from the noise source.

2.4.3 Rural Residential Lots

- Proposed lots vary from 1 ha to 1.77 ha. The average lot size is 1.18 ha. Larger lots are located adjacent to Forrest Highway and Greenlands Road.
- Lots with regular shapes have typical frontages of 80 to 90 m.

2.4.4 Building Envelopes

- A typical lot layout is shown on the structure plan with an 80 metre frontage and 135 metre depth and a 2,000 square metre building envelope.
- A building envelope plan is required to be prepared and submitted for Council approval prior to subdivision.

2.4.5 Drainage

- The main drainage for the area is the Greenlands Drain located on the south side of Greenlands Road.
- Lots will have small swales constructed on the lowest side and rear boundaries to drain runoff into the road drainage swales.
- The major drainage routes are proposed in the road reserves and (in the most westerly road only) a drainage easement located adjoining the road frontage. Culverts will provide lot access.
- Drainage within the rural residential estate will generally flow north-westerly into the drainage basins adjoining Greenlands Road and then into the Greenlands Drain.
- A small catchment area in the south – western corner of the site is drained into a basin with an outlet into the Fautleroy Drain adjoining the Forrest Highway.

2.4.6 Revegetation and Landscaping

As the site is void of any significant vegetation and trees the primary approach to landscaping will be to revegetate areas at the rear or side of lots comprising an area of 15% of each lot. Other landscaping of the estate will include the internal roads and will emphasise the edges of the estate, peripheral roads and the adjoining property to the east. A revegetation and landscape plan coordinated with fire management and building envelopes will be prepared for the approval of the Shire of Murray.

2.4.7 Fire Management

The structure plan has been designed so as to take into account the following fire mitigation measures:-

- Location of Development
- Vehicle Access
- Private driveways
- Water Supplies
- Siting of Development
- Building Protection Zones, Hazard Separation Zones, Hazard Reduction
- Planting of trees
- Dwelling Construction Standards
- Staging mitigation requirements

2.5. SITE ASSESSMENT

The structure plan has been prepared based upon the findings of the following studies:

- Engineering Services.
- Environmental Assessment and land capability assessment.
- Revegetation Strategy
- Local Water Management Strategy and drainage proposals.
- Greenlands Road intersection traffic assessment.
- Forrest Highway and Greenlands Road noise studies.
- Fire Management Plan
- Aboriginal Heritage Survey.

The site assessments, investigation results and advice from the project consultants conducting these studies have informed the preparation of the structure plan. Copies of these reports are contained in the Appendix and are briefly summarised below.

2.5.1 Engineering Servicing Report

APPENDIX 3 contains a report by Development Engineering Consultants outlining the engineering servicing proposals for the ODP area. It comprises:

- Roads
- Underground Power.
- Water Supply
- Wastewater-Sewerage
- Drainage
- Telecommunications.

This report addresses how the land can be developed and serviced. Particular mention is made of drainage proposals that are also included in the Local Water Management Strategy for the land.

Attached to the engineer's report are their plans showing the drainage investigations and drainage proposals for the estate. They are preliminary plans and could be expected to be refined at the detailed subdivision design stage.

2.5.2 Environmental Impact Assessment

An Environmental Impact Assessment by Bioscience is shown in **Appendix 4**.

The main environmental constraint affecting development of the area is surface water and drainage. The area is located within a Multiple

Use Wetland on Pinjarra soils and as such is subject to seasonal water-logging and inundation. It is also within the Peel - Harvey Coastal Plain Catchment Area and a water quality hotspot zone according to the Department of Sustainability, Environment, Water, Population and Communities. As a result adequate stormwater management is essential with a focus on nutrient removal.

The subject site requires on-site drainage retention and compensation which provides an opportunity for innovative design for drainage and nutrient removal such as biological wetland filters within the drainage system. Constructed wetlands may also provide an opportunity for vegetation rehabilitation and provide a refuge and habitat for local fauna.

The subject area has been extensively cleared and as a result has little native vegetation and provides little to no habitat for native fauna. Bioscience recommends that as many native species as possible be retained and native indigenous vegetation should also be used for landscaping. Rehabilitation programs should be considered for local wildlife with a focus on species in decline.

2.5.3 Revegetation Strategy

According to mapping conducted by Heddle et al. (1980) and subsequent assessment conducted by WALGA, native vegetation in and around the subject site has been historically cleared to greater than 70%. As a result, revegetation of the site will provide much needed natural quality to the area. A revegetated corridor comprising of 15% of each lot located at the rear or side provides over 25 ha of revegetated land. This is illustrated in Figure 9 (below).

Note that the Structure plan has been modified since this report was prepared, however, the principles and the substance of the revegetation proposal remain consistent. The revegetation proposals will also be defined in additional detail in the Landscape Management Plan to be prepared prior to subdivision.



Figure 9: Revegetation Corridors

The strategy proposes the rear, or in some cases, the rear and side 15% of each lot will be rehabilitated with native species from the Cannington Complex. The rehabilitation is to provide an increase in ecological value to the estate however should not be confused with restoration. Rehabilitation will provide parkland cleared natural corridors however restoration would include a restricted 3 tier vegetation structure providing great ecological value however would also create substantial fire hazard. As a result rehabilitation is restricted to specified trees and some shrubs.

The Revegetation Strategy by Bioscience is in **Appendix 5**.

2.5.4 Aboriginal Heritage Survey

An Aboriginal Site Survey of Lots 13, 14, 801 & 803 Greenlands Road West Pinjarra was conducted by Dr Amanda Yates with the assistance of George Walley in late November early December 2011.

A copy of this report is in **Appendix 6**.

No previously recorded Aboriginal sites are located within the designated survey area, and no new sites were identified by this survey.

The elders have approved the proposed development subject to the following requests:

- Retention of native vegetation around watercourses.
- Natural watercourses to be protected above and below ground.
- Noongar naming for streets.
- Grow and maintain native vegetation.
- Encourage developers to use indigenous workers and trades.

2.5.5 Road Traffic Noise Assessment

The noise assessment considered the acoustic impacts from future road traffic to the proposed subdivision. As well as taking into account future increased traffic volumes, the noise modelling also considered the proposed grade separation of the Greenlands Road, Forrest Highway interchange. Predicted noise levels were then assessed against the Western Australian Planning Commission's State Planning Policy 5.4 Road and Rail Transport Noise and Freight Considerations in Land Use Planning.

In the application of outdoor noise criteria from the policy to new noise sensitive developments, the objectives of this policy are to achieve:

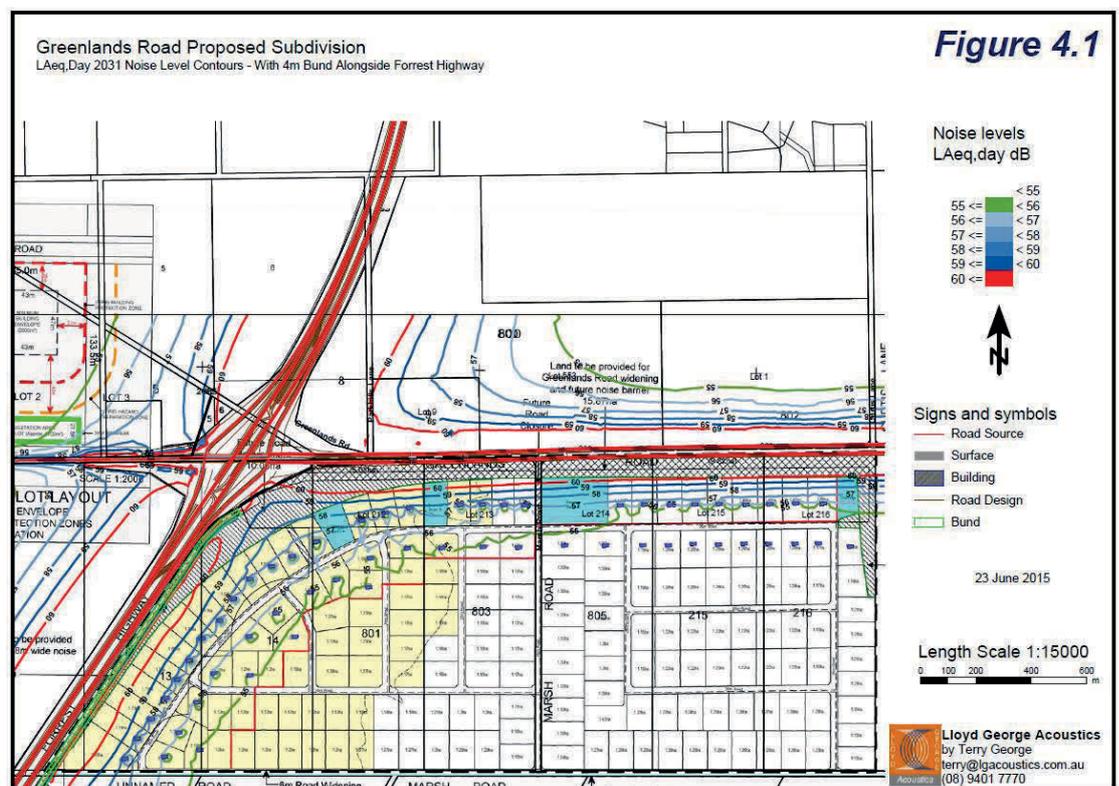
- acceptable indoor noise levels in noise-sensitive areas (e.g. bedrooms and living rooms of houses); and
- a 'reasonable' degree of acoustic amenity in at least one outdoor living area on each residential lot.

With the incorporation of a 4.0 metre high bund along Forrest Highway and provision for a future noise bund along Greenlands Road, noise levels at residences will be below the limit. However, there will be some residences where the noise levels will be within the noise impact area (margin) and those dwellings are to incorporate "Package A" architectural treatments. The lots affected are shown in the structure plan and illustrated in Figure 4.1 (below).

Given the size of the lots, it is unlikely any dwelling would be multiple storeys. However, should an owner of one of the lots within the noise impact area have a preference for a multiple storey dwelling, the owner at their cost would be required to obtain an acoustic assessment to determine the required architectural treatments to the upper floor. The reason for this is that the noise bund will be less effective to upper floors and therefore the architectural treatments may need to be increased above those of “Package A”.

The analysis has shown that to comply with the criteria of the State Planning Policy 5.4 Road and Rail Transport Noise and Freight Considerations in Land Use Planning a combination of a noise bund and architectural treatments will be required.

The Lloyd George Acoustics report is included in **Appendix 7**.



2.5.6 Traffic Assessment

(a) Traffic Access and Intersections (MRWA)

Main Roads WA provided the following advice on 29th July 2011 for access management and road design for Greenlands Road:

1. “General Road reserve width to allow a future dual carriageway with 27 metres centre line to centre line allowing a semi trailer to turn through the

median. The overall road reserve width is 80 metres, a standard requirement for such roads and matches that recently resumed for the western end of Greenlands Road around the trotting track (compares to 100 m for Forrest Hwy and 90 m for the current Pinjarra Western Bypass reservation).

2. Access Arrangements to Greenlands Road
 - a. An access to the industrial area (Pinjarra end) – located west of Sutters Lane and adjusted to miss power lines.
 - b. Curtis Lane

3. At Curtis Lane three options are to be considered for the ultimate – the interim will be a t-junction with appropriate control for the traffic volume.
 - a. grade separated four way intersection
 - b. four way roundabout
 - c. four way signalised intersection.

4. At the industrial area a grade separated intersection has been considered (allowing a four way with a future road to the south) with allowance for an interim t-junction.

5. Marsh Road - it is envisaged that Marsh Road would remain open for some time (assuming rural residential to the south), this would be reviewed once a dual carriageway was constructed and other access options become available (such as the four way at Curtis Lane and eastern access via a realigned SW Hwy). Ultimately Marsh Road would be closed (if other suitable access becomes available) and/or remain as left in / left out if this is considered safe at the time. It is considered that upon construction of the dual carriageway that Marsh Road would at the most be a left in left out arrangement with no median access.

For your information and input into your traffic study for upcoming discussion.”

Since then MRWA firmed up their road design and land requirements for Greenlands Road and the Forrest Highway intersection.

The MRWA has advised that Marsh Road should ultimately be closed upon the upgrading of Greenlands Road and the Forrest Highway intersection. Accordingly, Marsh Road is noted on the Structure plan as “to be closed”. Upon its closure the Shire advised that Marsh Road should become a gated emergency access to the estate.

It is proposed to utilise Marsh Road as the primary entrance to the estate for the short and medium term future or until such time as access is denied by MRWA. In that event it would be necessary for MRWA to provide appropriate alternative access to the estate via the south leg of a 4 way intersection of Curtis Lane and Greenlands Road. Road widening

Land requirements are shown on the Structure Plan. Land to be given up by the land owners upon subdivision is noted as "Land to be provided". This is for:

- A 28 m wide noise barrier (3.39 ha) adjoining existing Forrest Highway; and
- Greenlands Road widening and a future noise barrier (15.87 ha).

Other land is shown as "Future Road requirement". This is land to be set aside as a lot by the land owners upon subdivision for acquisition by MRWA (or other authority), comprising:

- 10.06 ha for the ultimate Forrest Highway/Greenlands Road intersection; and
- 2.54 ha for the future Curtis Lane/Greenlands Road 4-way intersection and extension of Curtis Lane.

(b) Greenlands Road/Marsh Road Intersection (Shawmac)

The traffic generated by the estate and the intersection of Greenlands Road with Marsh Road was assessed by Shawmac.

Modelling confirms that under current flow regimes in Greenlands Road, and with all access off Marsh Road, a channelised unsignalised intersection would perform satisfactorily. The assessment is based on Greenlands Road remaining at two lanes.

With traffic flow increasing to an estimated 18,000 vpd in Greenlands Road and at the current two lane configuration, intersection performance is predicted to suffer with the right turn movement out of the subdivision reducing to a Level of Service "E".

As the Greenlands Road - Marsh Road intersection is located adjacent to Forrest Highway an assessment of the effect of the intersection on the performance of the road network was undertaken.

With Greenlands Road widened to a four lane dual carriageway, and allowing for staged turns, the intersection is predicted to perform satisfactorily.

Subject to compliance with design guidelines with respect to horizontal and vertical geometry and intersection sight distances, it is considered that there are no aspects of the proposed configuration that do not comply with recommended intersection spacing or are likely to introduce unacceptable risk or operational performance into the road environment.

MRWA has advised that the future intersection of Forrest Highway and Greenlands Road is planned to relocate ramps and bridging further east than the original plan resulting in inadequate separation distances to Marsh Road. Accordingly, upon the upgrading of Greenlands Road and the Forrest Highway intersection, Marsh Road will be closed.

The Shawmac report is in **Appendix 8**.

2.5.7 Fire Management Plan

The Bush Fire Hazard Assessment has identified the subject land as having "LOW" bush fire hazard levels under the AS 3959 requirements. Building Protection Zones and Hazard Separation zones will be introduced to increase protection around existing dwellings and dwellings will be constructed to AS 3959-2009.

Individual building applications will require a Bushfire Attack Level assessment at the time of issuing a building license, should the owner want to reduce the clearing and increase the building construction standards.

The Fire Management Plan prepared by FirePlan is in **Appendix 9**.

The Department of Fire and Emergency Services advised that minor administrative changes are required to the Fire Management Plan which can be completed at the subdivision stage. An updated Fire Management Plan will be required to be submitted with an application for subdivision.

2.5.8 Local Water Management Strategy

This Local Water Management Strategy (LWMS) has been prepared by Bioscience Pty Ltd to establish water management criteria to guide the development of the land into 1 hectare (approx.) rural residential lots. This is shown in **Appendix 10**.

The primary objective of this LWMS is to support a development that manages the total water cycle in a sustainable manner, whilst adhering to the principles of Water Sensitive Urban Design (WSUD) related to water conservation, water quantity and quality, groundwater, stormwater, ecosystem health, protection of infrastructure and issues relating to public health and social values.

The key to achieving the objective is in the existing geomorphology of the land, having low permeable soils with shallow groundwater in most of the site, is a constraint that should be overcome by importing suitable fill materials and an adequate compaction plan in developing areas.

A drainage strategy is proposed to detain surface water on site in basins prior to discharging predevelopment flows into the existing drainage system. A series of basin sub-catchments are proposed across the site with the table drainage systems constructed along roadways that will be linked into the basins. The basins will compensate the flows to predevelopment rates. There will also be planting (typically native grass sedges and rushes) in the basins to provide opportunities for nutrient uptake and completion of the treatment train approach.

2.5.9 Property Management Plan - Keeping Of Horses

Keeping of horses (stables) is a discretionary use under the Special Rural zoning.

Soil land units within the Greenlands Estate have a low capability to sustainably keep horses, with 2ha of pasture area (not irrigated) required for 1 light horse or 1ha of irrigated pasture area. Lots of less than 1.5 ha with B2 soils are not considered suitable for keeping horses. Therefore the keeping of horses in the estate is generally dependent upon irrigation for pasture and/or hand feeding. Water logging after heavy rains will also require horses to be yarded and/or stabled at those times. For these reasons the keeping of horses in the estate is not encouraged but for any such application the Shire will require an Equine Management Plan.

It is noted that each property is required to obtain written approval for the keeping of horses from the Shire of Murray, prior to any horse being placed on the land.

2.6 SUBDIVISION AND DEVELOPMENT

Subdivision may occur generally in accordance with the structure plan subject to the Special Rural zone special provisions and subdivision conditions imposed by the WAPC. Development of the lots will subsequently occur in conformity with the Shire of Murray TPS No 4 and the development conditions therein and also having regard to the structure plan.

APPENDICES

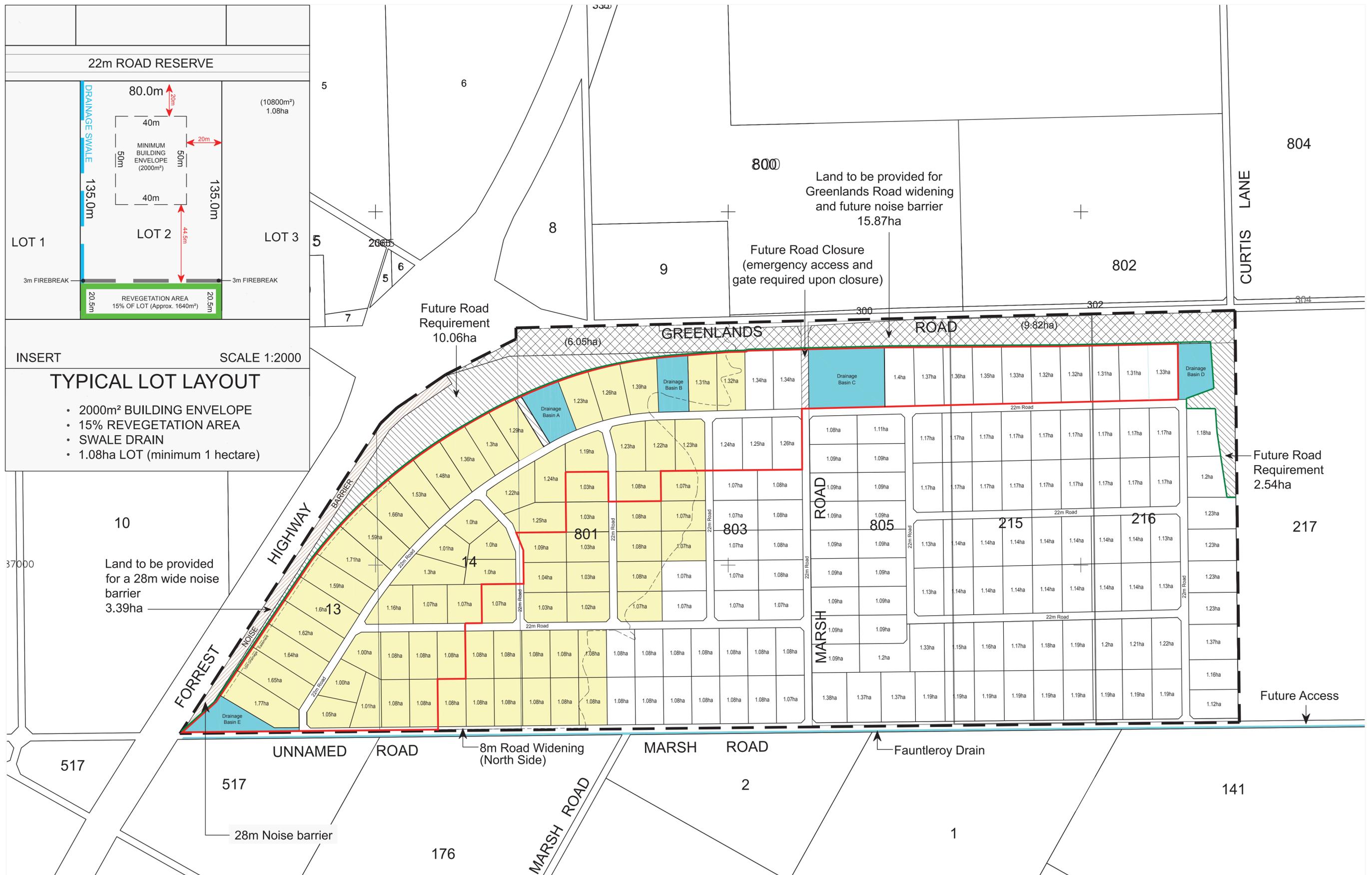
- 1. STRUCTURE PLAN (Plan 1)**
- 2. LOCATION PLAN (Plan 2)**
- 3. ENGINEERING SERVICING REPORT**
- 4. ENVIRONMENTAL IMPACT
ASSESSMENT**
- 5. REVEGETATION STRATEGY**
- 6. ABORIGINAL HERITAGE SURVEYS**
- 7. ROAD TRAFFIC NOISE ASSESSMENT**
- 8. TRAFFIC ASSESSMENT –
GREENLANDS ROAD GUIDE PLAN**
- 9. FIRE MANAGEMENT PLAN**
- 10. LOCAL WATER MANAGEMENT
STRATEGY**

**GREENLANDS ROAD
STRUCTURE PLAN**

APPENDIX 1

STRUCTURE PLAN

**GREENLANDS ROAD
STRUCTURE PLAN**



**GREENLANDS ROAD
STRUCTURE PLAN**
LOTS 13, 14, 801, 803, 805, 215 & 216
GREENLANDS ROAD, WEST PINJARRA

INSERT SCALE 1:2000

TYPICAL LOT LAYOUT

- 2000m² BUILDING ENVELOPE
- 15% REVEGETATION AREA
- SWALE DRAIN
- 1.08ha LOT (minimum 1 hectare)

- LEGEND:**
- STRUCTURE PLAN BOUNDARY
 - NOISE IMPACT AREA (architectural treatment required)
 - NOISE BARRIER
 - DRAINAGE RESERVES
 - HOUSE PAD IN THIS AREA TO BE CONSTRUCTED TO ACHIEVE F.F.L. 4.9m MINIMUM

SUMMARY TABLE:

No. OF LOTS (Rural Residential):	196
MINIMUM LOT SIZE:	1.00ha
MAXIMUM LOT SIZE:	1.77ha
AVERAGE LOT SIZE:	1.18ha

PLAN 1

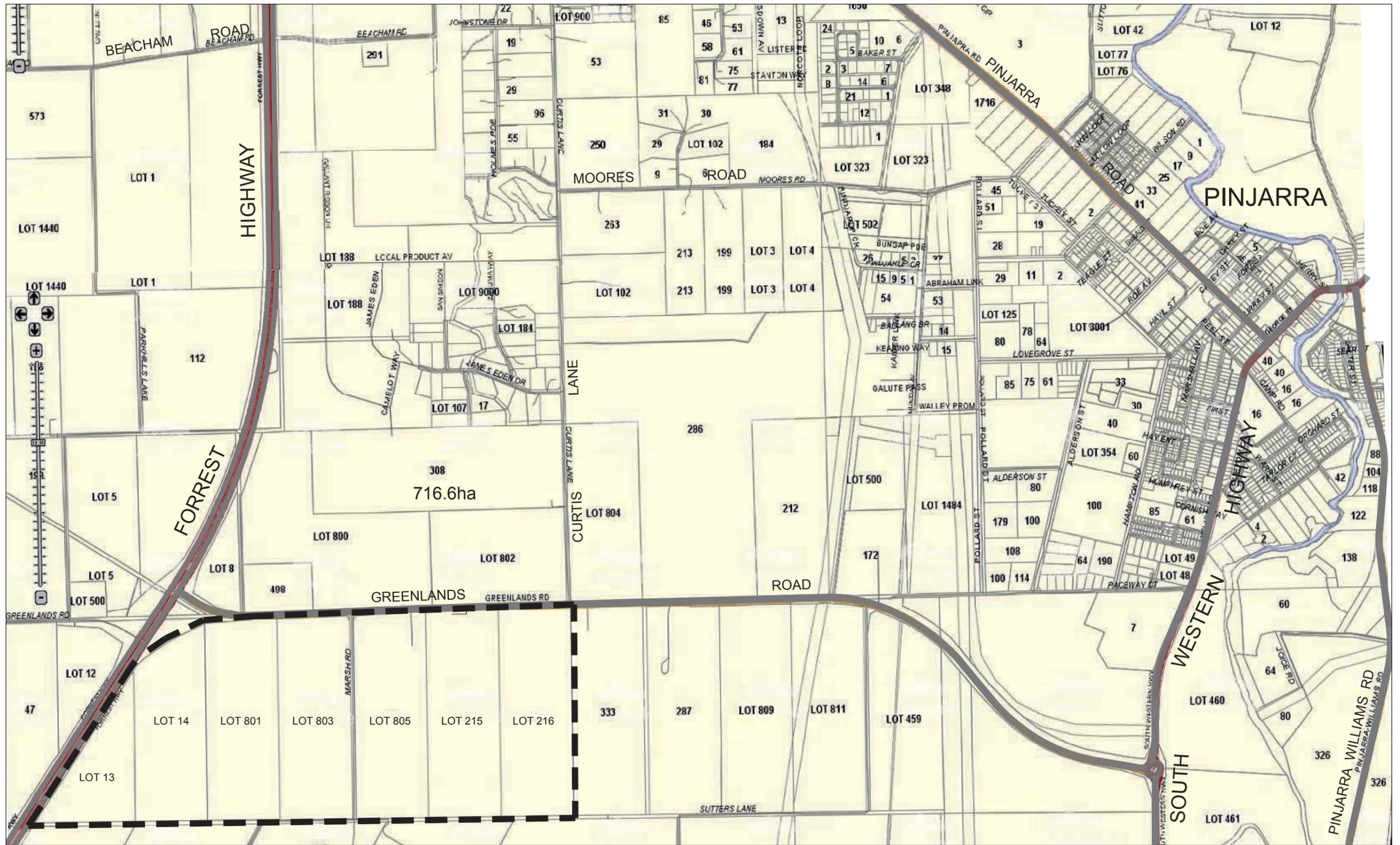
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Date: 25th November 2016
Turner Master Planners Australia

APPENDIX 2

LOCATION PLAN

**GREENLANDS ROAD
STRUCTURE PLAN**



**LOCATION PLAN
GREENLANDS ROAD STRUCTURE PLAN
WEST PINJARRA**

 Structure Plan Area

PLAN 2

0 200 400 600 800m

Scale 1:20 000 @ A3

NORTH

TURNER MASTER PLANNERS AUSTRALIA

Date: 7th November 2016
Turner Master Planners Australia