

PLANNING PROPOSAL



Proposed LEP Amendment - Minimum Lot Size Change

1-5 Orfeo Court, Griffith NSW 2680

Lot 1- 6, DP286968



Prepared for JZ Management

Rev 2.1 - April2023

Proposed LEP Amendment - Minimum Lot Size Change

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TABLE OF CONTENTS

1	INTRODUCTION.....	3
1.1	Background.....	3
2	OBJECTIVES AND INTENDED OUTCOMES.....	3
2.1	Objective	3
2.2	Intended Outcomes.....	4
3	EXPLANATION OF PROVISIONS.....	4
4	JUSTIFICATION OF STRATEGIC AND SITE-SPECIFIC MERIT	4
4.1	Section A - Need for the planning proposal.....	4
4.1.1	Is the planning proposal a result of any strategic study or report?	4
4.1.2	Is the planning proposal the best means of achieving the objectives or intended outcomes, or is there a better way?	4
4.2	Section B - Relationship to strategic planning framework.....	5
4.2.1	Will the planning proposal give effect to the objectives and actions of the applicable regional or district plan or strategy (including any exhibited draft plans or strategies)?	5
4.2.2	Is the planning proposal consistent with a council LSPS that has been endorsed by the Planning Secretary or GSC, or another endorsed local strategy or strategic plan?	5
4.2.3	Is the planning proposal consistent with any other applicable State and regional studies or strategies?	6
4.2.4	Is the planning proposal consistent with the applicable SEPPs?	6
4.2.5	Is the planning proposal consistent with applicable Ministerial Directions (s9.1 directions)?.....	7
4.3	Section C - Environmental, Social and Economic Impact.....	8
4.3.1	Is there any likelihood that critical habitat or threatened species, populations or ecological communities, or their habitats, will be adversely affected as a result of the proposal?.....	8
4.3.2	Are there any other likely environmental effects as a result of the planning proposal and how are they proposed to be managed?.....	9
4.3.3	Has the planning proposal adequately addressed any social and economic effects?	10
4.4	Section D - State and Commonwealth Interests	10
4.4.1	Is there adequate public infrastructure for the planning proposal?	10
4.4.2	What are the views of State and Commonwealth public authorities consulted in accordance with the Gateway determination?	10
3	MAPPING	11
4.5	Subject Land	11
4.6	Current Lot Size Map – LSZ_004A	11
4.7	Proposed Lot Size Map – LSZ_004A.....	12
4.8	Aerial Photograph	12
4.9	Streetscape Photos	13
5	COMMUNITY CONSULTATION DETAILS.....	14
6	PROJECT TIMELINE	14
6	CONCLUSION.....	14

TABLE OF TABLES

Table 1: Relevant goals of the Riverina Murray Regional Plan 2041	5
Table 2: Strategic Considerations Table	6
Table 3: Relevant SEPPs	6
Table 4: s9.1 Directions	7

TABLE OF FIGURES

Figure 1: Aerial Map (Source: Nearmap 2022)	3
Figure 2: Current lot size & proposed lot size (Source: GLEP 2014)	4
Figure 3: Terrestrial Biodiversity Extract (Source: GLEP 2014)	9
Figure 4: Bushfire Prone Land (Source: NSW RFS 2023).....	9
Figure 5: AHIMS Search Extract (Source: AHIMS 2022).....	10
Figure 6: Cadastre Map (Source: Sixmaps 2023)	11
Figure 7: Current Lot Size Map (Source: GLEP 2014)	11
Figure 8: Proposed Lot Size Map (Source: GLEP 2014).....	12
Figure 9: Aerial Map (Source: Nearmap 2022)	12
Figure 10: Streetscape Photo (Source: SP 2022).....	13
Figure 11: Streetscape Photo (Source: SP 2022).....	13
Figure 12: Streetscape Photo (Source: SP 2022).....	13

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1 INTRODUCTION

The following Planning Proposal has been prepared under section 3.33 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) and the Department of Planning and Environment (DPE) guidelines in support of a proposed Minimum Lot Size (MLS) change at 1-5 Orfeo Court, Griffith NSW 2680 (Lots 1-6, DP286968). The amendment of Griffith Local Environmental Plan 2014 (LEP) seeks to reduce the MLS of the subject site from 4,000m² to 3,000m² to allow the creation of an additional dwelling lot.

1.1 Background

The subject site was created under DA109/2020 which approved a boundary alteration and six (6) lot community title subdivision for the purposes of lifestyle dwelling lots. The subdivision was approved under Clause 4.1B whereby the average lot size was not to be less than 4,000m² due to current limited availability of reticulated sewer. The land was also subject to detailed soil/geotechnical analysis where Aerated Wastewater Treatment Systems (AWTS) were proved to perform within accepted environmental standards on lot sizes of 3000m². In approving DA109/2020, Council believed 3000m² MLS was appropriate however, limitations in the current provisions of the LEP prevented the further subdivision of Lot 6 unless an appropriate amendment was activated.

A Scoping Proposal was submitted to Griffith City Council on 16th December 2023 and a Pre-Lodgement meeting was held on 6th January 2023. During the Pre-Lodgement meeting, Council supported the submission of a planning proposal.

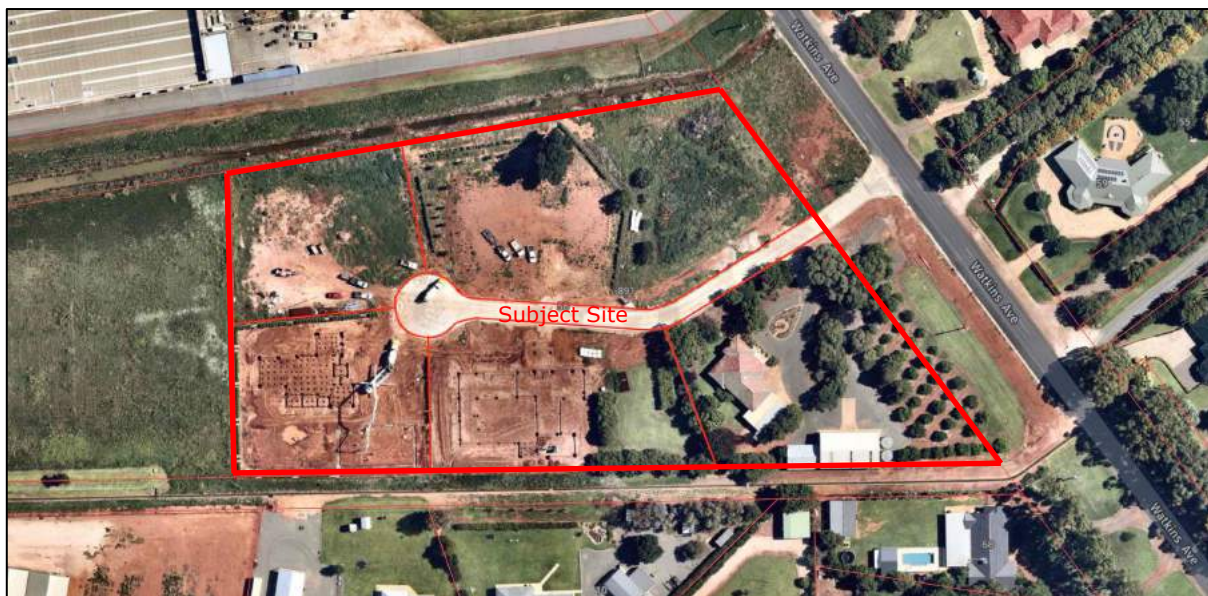


Figure 1: Aerial Map (Source: Nearmap 2022)

2 OBJECTIVES AND INTENDED OUTCOMES

(Part 1 of the Guide)

2.1 Objective

To amend the Griffith Local Environmental Plan 2010 minimum lot size provision of the subject site from 4,000m² to 3,000m² to enable an additional residential lot to be created.

2.2 Intended Outcomes

- To permit additional dwelling development and facilitate further subdivision which is consistent with the adjoining lots.
- Contribute to the diverse array of lot size selection and satisfy existing demand for housing.

3 EXPLANATION OF PROVISIONS

(Part 2 of the Guide)

The subject land currently has a minimum lot size of 3,000m² if the lot is connected to reticulated sewer (Area C) and 4,000m² should the lot not be connected to reticulated sewer.

To achieve the objectives and intended outcomes as described above, the following is required:

- Amendment of GLEP 2014 Lot Size Map (Sheet LSZ_004A) to include a minimum subdivision lot size of 3,000m² over the subject land.

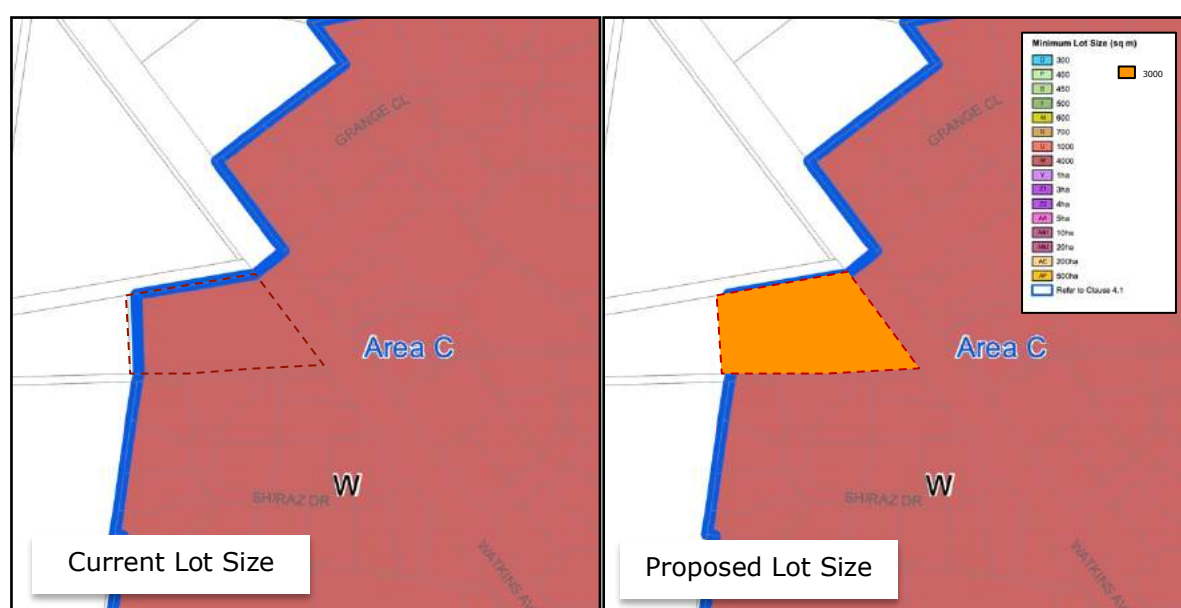


Figure 2: Current lot size & proposed lot size (Source: GLEP 2014)

4 JUSTIFICATION OF STRATEGIC AND SITE-SPECIFIC MERIT

(Part 3 of the Guide)

The planning proposal seeks to reduce the minimum lot size of the subject land to facilitate further subdivision of the land and enable the creation of an additional residential lot. Justification for the proposal, including its strategic relevance and merit, is outlined below.

4.1 Section A - Need for the planning proposal

4.1.1 Is the planning proposal a result of any strategic study or report?

The planning proposal is not the result of a strategic study or report and remains consistent with the strategic directions of the Riverina Murray Regional Plan 2041.

4.1.2 Is the planning proposal the best means of achieving the objectives or intended outcomes, or is there a better way?

A Schedule 1 LEP amendment during the Pre-Lodgement meeting was discussed. It would be inappropriate to list the proposal as an additional permitted use as it would restrict future

subdivision development of an existing residential area. The location is currently suited to residential use and the MLS change will not generate substantial impacts on the existing area.

4.2 Section B - Relationship to strategic planning framework

4.2.1 Will the planning proposal give effect to the objectives and actions of the applicable regional or district plan or strategy (including any exhibited draft plans or strategies)?

The Riverina Murray Regional Plan 2041 (RMRP) is applicable to this proposal. The regional plan includes priorities that emphasise the need to increase the range of housing options in the existing urban area of Griffith. The primary themes are:

1. *Environment*
2. *Communities and places*
3. *Economy*

The proposal is generally consistent with the relevant objectives, strategies and actions contained within the regional plan as discussed below.

Table 1: Relevant goals of the Riverina Murray Regional Plan 2041

Riverina Murray Regional Plan 2041	
Environment objectives	Comments
1: Protect, connect and enhance biodiversity throughout the region	The proposal will protect and enhance biodiversity throughout the region by utilizing an existing residential area which avoids developing significant environmental land.
Communities and places objectives	Comments
5: Ensure housing supply, diversity, affordability and resilience	The proposal will contribute to the housing needs in the community by providing opportunities for an additional dwelling in an existing residential area.
6: Support housing in regional cities and their sub-regions	The proposal supports housing in regional cities by providing opportunities for an additional dwelling in an existing regional residential area. Further development of this land will provide additional housing opportunities and help promote growth throughout the local area.
11: Plan for integrated and resilient utility infrastructure	Any future subdivision and development of this land will have access to existing urban infrastructure networks.

The proposal has strategic merit in relation to its assessment against the RMRP. The proposal will give effect to certain goals and directions of the RMRP, as discussed in the table above.

4.2.2 Is the planning proposal consistent with a council LSPS that has been endorsed by the Planning Secretary or GSC, or another endorsed local strategy or strategic plan?

There are several local strategic plans and studies prepared by Council that are relevant to this proposal. These include:

- Griffith Local Strategic Planning Statement (LSPS)
- Griffith Land Use Strategy – Beyond 2030
- Griffith Housing Strategy

Griffith Local Strategic Planning Statement 2020 – Growing Griffith to 2045

The Griffith LSPS provides the land use planning vision for Griffith over the next 25 years. It highlights the characteristics that make Griffith special and outlines how growth and change will be managed into the future.

The 25-year Vision of the Griffith LSPS is outlined below and will be achieved through a review of the Griffith LEP and DCP as required:

"Griffith is a thriving regional capital with a vibrant lifestyle and diverse economy; embracing community, heritage, culture and the environment."

Consideration of the key LSPS principles have been discussed in the table below:

Table 2: Strategic Considerations Table

Relevant Principle	Consistency	Response
Growing our city		
Priority 1: Increase urban density and housing affordability	Consistent	The proposal is consistent with this priority and aims to increase density closer to Griffith's CBD while also contributing to housing choice and supply. The proposal will influence a better and more efficient use of serviced residential land.
Priority 4: Protect prime agricultural land and lessen land use conflict	Consistent	The proposal focuses on creating an additional lifestyle lot within an existing R5 zone to lessen the demand on rezoning other properties adjoining prime agricultural land.
Love the lifestyle		
Priority 11: Enable access to diverse housing options	Consistent	The proposal will add to housing diversity, mix and choice by providing opportunities for an additional dwelling within an existing residential area.

Griffith Land Use Strategy – Beyond 2030

The Griffith Land Use Strategy provides direction for land use and spatial development for Griffith with a forward vision of approximately thirty years. The proposal is consistent with the land use strategy by utilising existing residential land and avoiding fragmented urban form. The MLS change of the subject site allows an additional lot to be created of consistent size to neighbouring parcels without contributing to unnecessary sprawl.

Griffith Housing Strategy

The Griffith Housing Strategy provides a range of strategies and mechanisms to support housing supply of affordable housing in the area. The proposal is consistent with the strategy by providing the potential for additional large lot lifestyles without occupying land suitable for affordable housing.

4.2.3 Is the planning proposal consistent with any other applicable State and regional studies or strategies?

Other relevant State and regional studies or strategies applicable to the proposal include:

- *A 20-Year Economic Vision for Regional NSW*: The proposal is consistent with this strategy by encouraging regional housing growth close to existing infrastructure and services.

4.2.4 Is the planning proposal consistent with the applicable SEPPs?

The proposal is consistent with the applicable State Environmental Planning Policies (SEPPs), as identified in the NSW Planning Portal and listed in the table below. The proposal does not introduce any policy changes that are inconsistent with the provisions of these SEPPs.

Table 3: Relevant SEPPs

SEPPs Relevant to the Planning Proposal	
SEPP Title	Consistency
State Environmental Planning Policy (Biodiversity and Conservation) 2021: Excluded	Applicable. Not directly relevant to the proposal. Consistent, any future development will continue to be assessable against this policy.
State Environmental Planning Policy (Biodiversity and Conservation) 2021: Land Application	Applicable & relevant. Consistent, any future development will continue to be assessable against this policy.
State Environmental Planning Policy (Biodiversity and Conservation) 2021: Subject Land	Applicable. Not directly relevant to the proposal. Consistent, any future development will continue to be assessable against this policy.

State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004: Land Application	Applicable. Not directly relevant to the proposal. Consistent, any future development will continue to be assessable against this policy.
State Environmental Planning Policy (Exempt and Complying Development Codes) 2008: Land Application	Applicable & relevant. Consistent, any future development will continue to be assessable against this policy.
State Environmental Planning Policy (Housing) 2021: Land Application	Applicable & relevant. Consistent, any future development will continue to be assessable against this policy.
State Environmental Planning Policy (Planning Systems) 2021: Land Application	Applicable & relevant. Consistent, any future development will continue to be assessable against this policy.
State Environmental Planning Policy (Primary Production) 2021: Land Application	Applicable. Not directly relevant to the proposal. Consistent, any future development will continue to be assessable against this policy.
State Environmental Planning Policy (Resilience and Hazards) 2021: Land Application	Applicable. Not directly relevant to the proposal. Consistent, any future development will continue to be assessable against this policy.
State Environmental Planning Policy (Resources and Energy) 2021: Land Application	Applicable & relevant. Consistent, any future development will continue to be assessable against this policy.
State Environmental Planning Policy (Transport and Infrastructure) 2021: Land Application	Applicable. Not directly relevant to the proposal. Consistent, any future development will continue to be assessable against this policy.
State Environmental Planning Policy (Transport and Infrastructure) 2021: Subject Land	Applicable. Not directly relevant to the proposal. Consistent, any future development will continue to be assessable against this policy.
State Environmental Planning Policy No 65—Design Quality of Residential Apartment Development: Land Application	Applicable. Not directly relevant to the proposal. Consistent, any future development will continue to be assessable against this policy.

4.2.5 Is the planning proposal consistent with applicable Ministerial Directions (s9.1 directions)?

The following table outlines the relevant s9.1 directions and the level of consistency of this planning proposal.

Table 4: s9.1 Directions

s9.1 Ministerial Directions	
Direction title	Consistency
<i>Focus Area 1: Planning Systems</i>	
1.1 Implementation of Regional Plans	Consistent. The direction applies as a planning proposal is being prepared by a relevant planning authority and the subject land is within the boundaries of an endorsed Regional Plan. The proposal satisfies the objectives of this direction by demonstrating consistency with the overall vision, land use strategy and relevant goals, directions and actions contained in the Regional Plan.
1.2 Development of Aboriginal Land Council land	Not applicable. Subject land is not on the land application map of chapter 3 of the SEPP (Planning Systems) 2021.
1.3 Approval and Referral Requirements	Consistent. The direction applies as a planning proposal is being prepared by a relevant planning authority that may involve additional or altered planning provisions. The proposal is consistent with this direction as it does not introduce any unnecessary provisions to the development assessment process.
1.4 Site Specific Provisions	Consistent. The direction applies as a planning proposal is being prepared by a relevant planning authority that will allow a particular development to be carried out. The proposal is consistent with this direction as it will not involve more restrictive site-specific planning controls.
1.5 – 1.22	Not applicable. Subject land is not within the relevant areas whereby these directions apply.
<i>Focus Area 2: Design and Place</i>	
<i>[This Focus Area was blank when the Directions were made]</i>	
<i>Focus Area 3: Biodiversity and Conservation</i>	

s9.1 Ministerial Directions	
<i>Direction title</i>	<i>Consistency</i>
3.1 Conservation Zones	Consistent. The direction applies as a planning proposal is being prepared by a relevant planning authority. The proposal is consistent with this direction as it is not located on land within a conservation zone.
3.2 Heritage Conservation	Consistent. The direction applies as a planning proposal is being prepared by a relevant planning authority. The proposal is consistent with this direction as it is not located on land within a heritage conservation area.
3.3 – 3.4	Not applicable. Subject land is not within the relevant area whereby these directions apply.
3.4 Recreation Vehicle Areas	Consistent. The direction applies as a planning proposal is being prepared by a relevant planning authority. The proposal is consistent with this direction as existing relevant planning provisions will be maintained.
3.6 – 3.10	Not applicable. Subject land is not within the relevant area whereby these directions apply.
<i>Focus Area 4: Resilience and Hazards</i>	
4.1 – 4.6	Not applicable. Subject land is not within the relevant area whereby these directions apply.
<i>Focus Area 5: Transport and Infrastructure</i>	
5.1 Integrating Land Use and Transport	Consistent. The direction applies as a planning proposal is being prepared by a relevant planning authority that will alter provisions relating to residential land. The proposal is consistent with this direction as it will provide additional residential opportunities closer to jobs and services in the Griffith CBD.
5.2 Reserving Land for Public Purposes	Consistent. The direction applies as a planning proposal is being prepared by a relevant planning authority. The proposal is consistent with this direction as it will not impact services and facilities reserved for public land.
5.3 – 5.4	Not applicable. Subject land is not within the relevant area whereby these directions apply.
<i>Focus Area 6: Housing</i>	
6.1 Residential Zones	Consistent. The direction applies as a planning proposal is being prepared by a relevant planning authority. The proposal is consistent with this direction as it will not impact the existing zoning and encourage opportunities for future housing development.
6.2 Caravan Parks and Manufactured Home Estates	Consistent. The direction applies as a planning proposal is being prepared by a relevant planning authority. The proposal is consistent with this direction as existing relevant planning provisions will be maintained.
<i>Focus Area 7: Industry and Employment</i>	
7.1 - 7.3	Not applicable. Subject land is not within the relevant area or zone whereby these directions apply.
<i>Focus Area 8: Resources and Energy</i>	
8.1	Not applicable. Subject land is not within the relevant area or zone whereby these directions apply.
<i>Focus Area 9: Primary Production</i>	
9.1 – 9.4	Not applicable. Subject land is not within the relevant area or zone whereby these directions apply.

4.3 Section C - Environmental, Social and Economic Impact

4.3.1 ***Is there any likelihood that critical habitat or threatened species, populations or ecological communities, or their habitats, will be adversely affected as a result of the proposal?***

There is no likelihood that any critical habitat or threatened species, populations or ecological communities or their habitats would be adversely affected by the proposal. The subject land is not mapped as sensitive to terrestrial biodiversity. The subject area is an existing residential lot and a reduction in MLS will not adversely affect biodiversity.

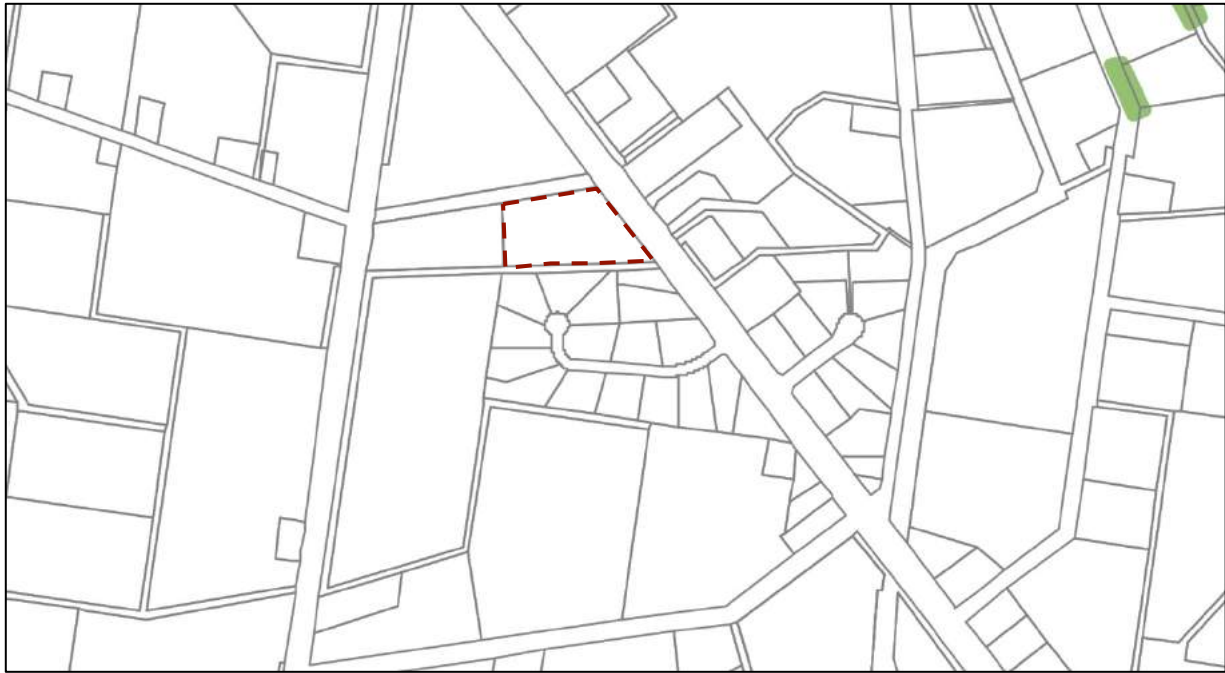


Figure 3: Terrestrial Biodiversity Extract (Source: GLEP 2014)

4.3.2 Are there any other likely environmental effects as a result of the planning proposal and how are they proposed to be managed?

Bushfire

The subject land is not prone to bushfire hazard.

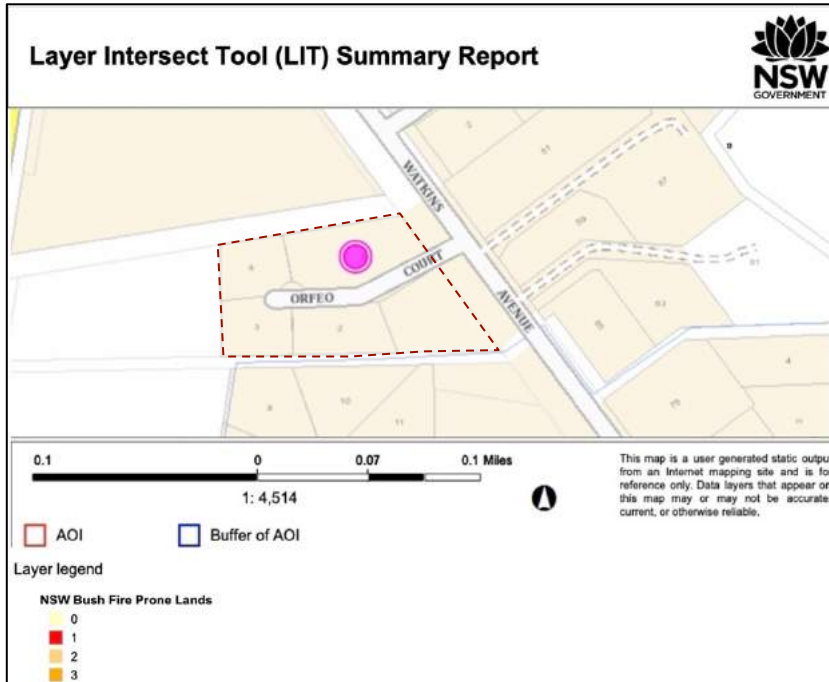


Figure 4: Bushfire Prone Land (Source: NSW RFS 2023)

Flooding

The subject land is not prone to flooding.

Contaminated Land

The subject land is an existing residential area and not listed in Council records as potentially contaminated. No potentially contaminating activities have occurred on the site according to all available historical data. A site inspection did not reveal any potential contamination issues over the precinct area.

An AHIMS search confirmed there are no identified Aboriginal or European heritage items on the subject site. The proposal and future development will rely on the generic due diligence process, as outlined in the Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW (DECCW 2010), to ensure that development will proceed with caution and if any Aboriginal objects are found, work will be stopped, and relevant authorities notified.

Figure 5: AHIMS Search Extract (Source: AHIMS 2022)

The social and economic effects of the planning proposal are expected to be positive. Reducing the minimum lot size will create a potential for residential development and have positive impacts on the current demand for housing while also providing employment opportunities during approval and construction stages.

4.4.1 Is there adequate public infrastructure for the planning proposal?

4.4.2 What are the views of State and Commonwealth public authorities

The views of State and Commonwealth public authorities will be sought following the issue of a Gateway determination on this matter.

Other relevant mapping required to support the proposal is provided below (as per guidelines).

The map displays a residential area with various lot sizes color-coded according to the legend. The streets shown include STAFFORD RD, ORANGE CL, SHIRAZ DR, and WATKINS AVE. A specific area is highlighted with a blue outline and labeled 'Area C'. The legend indicates that the minimum lot size for Area C is 300 sq m.

Minimum Lot Size (sq m)
300
400
450
500
600
700
1000
1200
1500
1ha
2ha
3ha
4ha
5ha
10ha
20ha
30ha
40ha
50ha
Refer to Clause 4.1

Rev2.1 – Apr2023

4.7 Proposed Lot Size Map – LSZ_004A

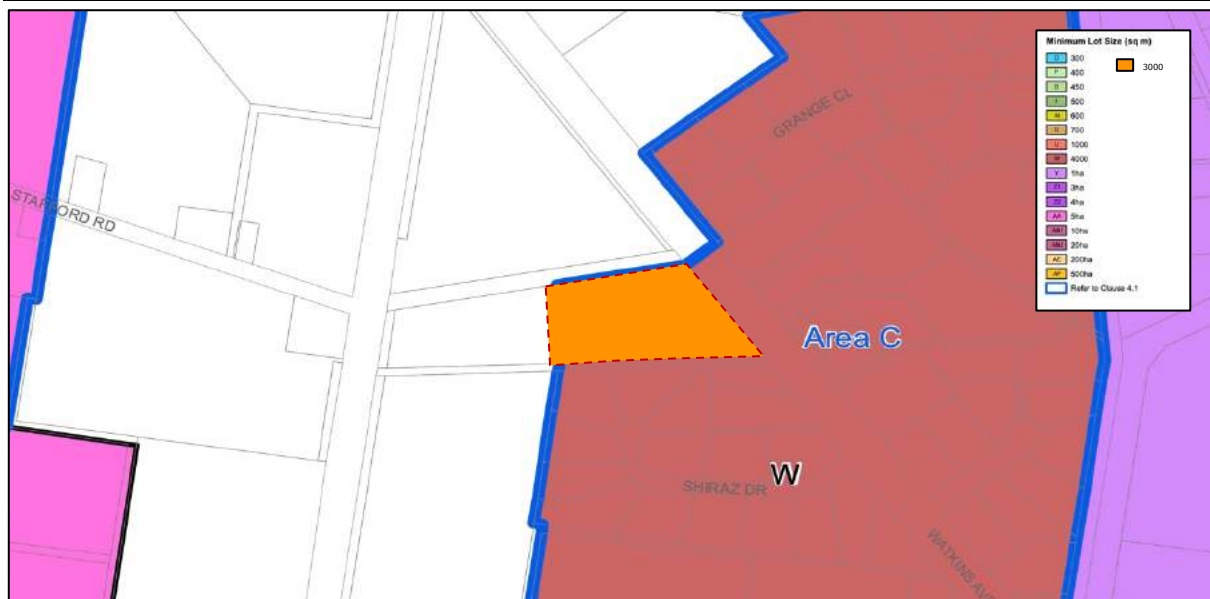


Figure 8: Proposed Lot Size Map (Source: GLEP 2014)

4.8 Aerial Photograph



Figure 9: Aerial Map (Source: Nearmap 2022)

4.9 Streetscape Photos



Figure 10: Streetscape Photo (Source: SP 2022)



Figure 11: Streetscape Photo (Source: SP 2022)



Figure 12: Streetscape Photo (Source: SP 2022)

5 COMMUNITY CONSULTATION DETAILS

(Part 5 of the Guide)

Community consultation will be undertaken in accordance with relevant sections of the Act and Regulations. In addition, the Gateway determination will confirm the extent and nature of community consultation to be undertaken for the purpose of this proposal.

6 PROJECT TIMELINE

(Part 6 of the Guide)

Following lodgement of the planning proposal, Council will develop a project timeline including Council acceptance, Gateway determination, public exhibition, reporting, Ministerial (or delegated) approval and implementation. A draft timeline would take the form of the following example:

Project Step	Date
1. Lodgement of proposal to Council	TBA
2. Consideration and acceptance by Council	TBA
3. Lodgement by Council to NSW Planning for Gateway determination	TBA
4. Gateway determination (formal commencement date)	TBA
5. Completion of required technical information by Council (timeframe)	TBA
6. Government agency consultation (timeframe pre and post exhibition as required by Gateway determination)	TBA
7. Public exhibition period (timeframe, commencement & completion dates)	TBA
8. Public hearing dates (if required)	TBA
9. Consideration of submissions (timeframe)	TBA
10. Consideration of proposal post exhibition (timeframe)	TBA
11. Submission to the Department to finalise the LEP Amendment	TBA
12. Local plan-making authority date to make the plan (if authorised)	TBA
13. Local plan-making authority date to forward to the PCO for publication	TBA
14. Publication (Gazettal)	TBA
TOTAL (expected days)	TBA

6 CONCLUSION

The primary objective of the Planning Proposal is to amend the Griffith Local Environmental Plan 2014 Minimum Lot Size provisions applicable to the subject land by reducing the MLS from 4,000m² to 3,000m². This will facilitate the creation of an additional dwelling lot by allowing further subdivision of the land.

The proposal is considered to have strategic merit as it:

- Supports and is consistent with relevant objectives, strategies and actions of the Riverina Murray Regional Plan 2041;
- Is consistent with the strategic directions, themes, principles and relevant key action items of the Griffith Strategic Planning Statement, in particular those relating to priorities of housing choice;
- Contributes to achieving the strategic directions and recommendations of other relevant local strategies including the Griffith Land Use Strategy & Housing Strategy;
- Satisfies the requirements of relevant State Planning Policies;
- Is consistent with applicable Ministerial Directions;
- Has identified and provided response to key environmental issues to ensure ecologically sustainable development;
- Confirmed that adequate public infrastructure is available, or able to be augmented, to the site to service future residential development activity;
- Allows more efficient use of residential land that has distinctive site-specific locational advantages due to its proximity to existing urban services and infrastructure networks; and
- Is in the general public interest of the local and wider community.

The proposal is in the strategic interest of Griffith City Council and is recommended for endorsement.

22018: Document History

Revision No.	Date	Authorised By		
		Name/Position	Signature	Notes
Rev 1.0 – Draft	16/01/2023	Patrice McMullen Research Planner		For internal review
Rev 1.1 – Draft	13/02/2023	Emily Hewitt Town Planner		For internal review
Rev 1.2 Draft	24/02/2023	Garry Salvestro Director		Issued to client for review
Rev 2.0 Final	02/03/2023	Garry Salvestro Director		Issued for printing & DA lodgment
Rev 2.1 Revised Final	18/04/2023	Garry Salvestro Director		Minor edits and reissued to Council



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Site Assessment For Effluent Disposal System Report

CLIENT: JZ MANAGEMENT – GRIFFITH, NSW

LOCATION: LOT 102-106, No. 891 WATKINS AVENUE, GRIFFITH, NSW

REGISTRATION No: GED20-71

PROJECT DESCRIPTION: PROPOSED EFFLUENT DISPOSAL SYSTEM

DATE REQUESTED: 9 JUNE 2020

DATE OF INVESTIGATION: 19 JUNE 2020

DATE REPORTED: 5 AUGUST 2020

ARTL - NATA ACCREDITED LABORATORIES



INTRODUCTION AND PROJECT UNDERSTANDING

It is the purpose of this investigation to assess the above site for the suitability of an onsite treated effluent disposal system. The current property owners are proposing to subdivide the site and construct 5 x five bedroom residential dwellings at the site. As the site is not connected to Council's reticulated sewer network on-site treated effluent disposal will be required.

The field investigation including detailed site visit, excavation of 2 boreholes (BH1 & BH2) to 2.0m and percolation testing were carried out on the 19th June 2020. Laboratory testing (Emerson Class and Soil Grading) were completed on recovered samples at our NATA accredited laboratory in Griffith. A site plan showing borehole/percolation test locations, borehole logs and test reports are attached to this report.



SITE DESCRIPTION

The site is located immediately south of the commercial district of Griffith. The site is situated to the west of Watkins Avenue and is generally flat. A 6 lot subdivision is proposed for the site. This investigation focuses on 5 of the proposed lots (Lot 102 to 106).

The borehole investigation revealed the site is underlain by topsoil to 0.1m overlying alluvial materials comprising low, low to medium, medium & high plasticity sandy clay, clay & silty clay and low plasticity clayey silt extending to the borehole termination depth at 2.0m. No groundwater or seepage was encountered during the drilling, however it should be noted that variations to the water table level could fluctuate with changes to the season, temperature and rainfall.

There was no evidence of surface seepage and soaks and the surface soil was moist at the time of the investigation. No sign of erosion was evident and therefore the site should not pose the problem of uncontrolled run-off and erosion. However, run-on and upslope and down slope seepage, if any, to the land application system should be avoided by using earthworks or a drainage system approved by Council.

Table 1: Land Capability Rating

Land Features		Land Capability Class Rating					
		Very Good (1)	Good (2)	Fair (3)	Poor (4)	Very Poor (5)	Site Result
General Characteristics							
Site drainage / runoff		Very Slow	Slow	Moderate	Rapid	Very Rapid	1
Flood / inundation potential (yearly return exceedances)		Never		<1 in 100	<1 in 20	>1 in 20	1
Slope (%)		0 - 2	2 - 8	8 - 12	12 - 20	>20	1
Landslip						Present or past failure	1
Seasonal watertable depth (m) (inc perched water tables)		>5	5 – 2.5	2.5 – 2.0	2.0 – 1.5	<1.5	2
Rainfall (mm/yr)		<450	450 - 650	650 - 750	750 - 1000	>1000	2
Pan Evaporation (mm/yr)		>1500	1250 - 1500	1000 - 1250	-	<1000	2
Soil Profile characteristics	Structure	High	Moderate	Weak	Massive	Single Grained	1
	Profile Depth	>2m	1.5 – 2m	-	1.5m – 1.0m	<1m	1
	Percolation (mm/hr)	50 - 75	20 – 50 75 - 150	15 – 20 150 - 300	- 300 - 500	<15 >500	1-2
	Stoniness (%)	<10		10 - 20	-	>20	1
	Emerson Test (dispersion/slaking)	5&6	4	3	2	1	2-4



FIELD AND LABORATORY RESULTS

The permeability of the underlying clay was assessed by carrying out a series of percolation tests at the site. The tests indicated an average permeability of 0.17m/day on the underlying material. This classifies the underlying soil as “Category 5” as per Table 5.1 AS1547:2012 – “On-site domestic-wastewater management”. A soil grading was performed on the underlying material and confirms the soil to be a “Category 5”. An Emerson Class Test was also performed and indicated the material to be “potentially moderately to highly dispersive”. The percolation, grading and Emerson class test reports are herewith attached. A land capability assessment has also been undertaken in Table 1 above. The results show that the site features range from very good to poor (Emerson class) and therefore is considered suitable for primary or secondary treated effluent disposal systems with appropriate management practices undertaken.

Disposal Area Sizing For Each 5 Bedroom Residence

The treated effluent disposal area is to service the proposed 5 bedroom residence and will have water reduction fittings in place including triple A rated taps and reduced flush toilets. It is noted that the residence will have reticulated water supply. Therefore the calculation rates are based on 150L/person/day (allow 6 persons). This assumption is based on Appendix H in AS1547.

It should be noted that if the above design flow rates are adopted then the minimum design capacity for the septic tank shall be determined by:

- Providing for around 24 hours settling volume plus 8 hours hydraulic buffering volume for the daily flows as adopted.
- Providing for scum and sludge accumulation over a 5 year period using the following rates;
 - 1) All waste 80L/person/year
 - 2) Greywater 40L/person/year
 - 3) Blackwater 50L/person/year

The required disposal area is calculated based on the soil data available for different types of land application system. The following assumptions are made in the calculation:

- Daily effluent flow rate per household - 900 litres*
- Design Loading Rate (DLR) - 10 mm/day
- Design Irrigation Rate (DIR) - 3mm/day
- Width of the trench (where applicable) - 600mm
- Depth of trench (where applicable) - 700mm
- Depth of aggregate (where applicable) - 300mm
- Depth of topsoil (where applicable) - 300mm
- The underlying materials are assessed to be “potentially moderately to highly dispersive”.
- “Soil Category 5” as per AS1547
- Climatic data for Griffith provided by the Bureau of Meteorology is adopted.

Note: * - Assume 150 litres of waste water per person per day.

1. Absorption Trench

Based on the above assumptions, climatic data and water balance analysis undertaken, the following minimum dimensions for the disposal area for the absorption trench disposal system are recommended.

- Minimum Absorption Area (wetted area) - 300m²
- Minimum length of the trench - 230m (width 0.6m, depth 0.7m)

2. Evapotranspiration – Absorption Area/Trench

Based on the above assumptions, climatic data and water balance analysis undertaken, the following minimum dimensions for the disposal area for the evapotranspiration disposal system are recommended provided that the rate of irrigation does not exceed 3mm/day. **It should be noted that this system is considered suitable for secondary treated effluent only.**

- Area - 200m²
- Length - 100m
- Depth of imported material - 200mm

It should be noted that adoption of smaller size disposal area would require deeper depth of imported material. **Vegetation planting on-site to encourage evapotranspiration is considered when calculating irrigation and absorption trench areas for this method of disposal.**

3. Pressurised Irrigation System

These systems may be used as alternatives to the conventional sub-surface disposal systems outlined in sections above. Consideration through consultation with the local authority will be required prior to choosing this method of disposal because the treatment system will need to conform to effluent quality standards to ensure protection of public health as such:

- Five days biochemical oxygen demand (BOD5) not greater than 20mg/L
- Suspended solids not greater than 30mg/L
- Thermotolerant coliforms not greater than 10 per 100mL.
- Where chlorine is used as a disinfectant, free residual chlorine measured by a field test at the first irrigation outlet, is not less than 0.5mg/L after a 30min contact period.
- Nutrients not more than authorised by the local authority.

All other requirements are to be met as per AS1547.

Irrigation Area

Based on the above assumptions, water balance analysis and soil data available, the following minimum irrigation area is recommended provide proper control of the effluent is maintained and the rate of irrigation does not exceed 3mm/day.

- Area - 300m²

The area calculated above assumes there will be vegetation planting on-site. If no planting is to occur on site and evaporation only of the treated effluent is utilised for disposal then the disposal area will need to be increased to 350m².



COMMENTS AND RECOMMENDATIONS

- Land application shall be placed at least 40m away from any channels and 250m away from any domestic groundwater well.
- The irrigation system can only be used for secondary-treated effluent complying with the effluent-quality requirements of Part 4, Appendix 4.2A, 4.2A10.6 of AS1574:2012.
- Primary effluent is normally not suitable for irrigation systems but may be permitted by the local authority under special circumstances.
- The proper drainage system should be incorporated with the land application system design as appropriate to ensure surface run-off does not enter into the system.

Should you have any queries, please do not hesitate to contact us.

Yours truly,

Nathan McLaren
Environmental Consultant

Attachments:

- Addendum
- Site Diagram showing Borehole and Percolation Test Locations
- Borehole Logs with Explanatory Note
- Percolation, Emerson Class, and Soil Grading Reports
- Water Balance Calculation

ADDENDUM



LIMITS OF INVESTIGATION

The recommendations made in this report are based on the assumption that the test results are representative of the overall subsurface conditions. However, it should be noted that even under optimum circumstances, actual conditions in some parts of the building site may differ from those said to exist, because no geotechnical engineer, no matter how qualified, and no subsurface exploration program, no matter how comprehensive, can reveal all that is hidden by earth, rock and time. Because the investigation procedure generally includes sampling from either one, two or three boreholes, it may not be possible to conclusively establish the presence or extent the condition of the underlying soil and rock over the whole block until site work commences for the construction.

The client should also be aware that our recommendations refer only to our test site locations and the ground level at the time of testing.

The recommendations in this report are based on the following: -

- a) The information gained from our investigation.
- b) The present "state of the art" in testing and design.
- c) The building type and site treatment conveyed to us by the client.
- d) Historical Information

Should the client or their agent have omitted to supply us with the correct relevant information, or make significant changes to the building type and/or building envelope, our report may not take responsibility for any consequences and we reserve the right to make an additional charge if more testing is necessary.

Notwithstanding the recommendations made in this report, we also recommend that whenever footings are close to any excavations or easements, that consideration should be given to deepening the footings.

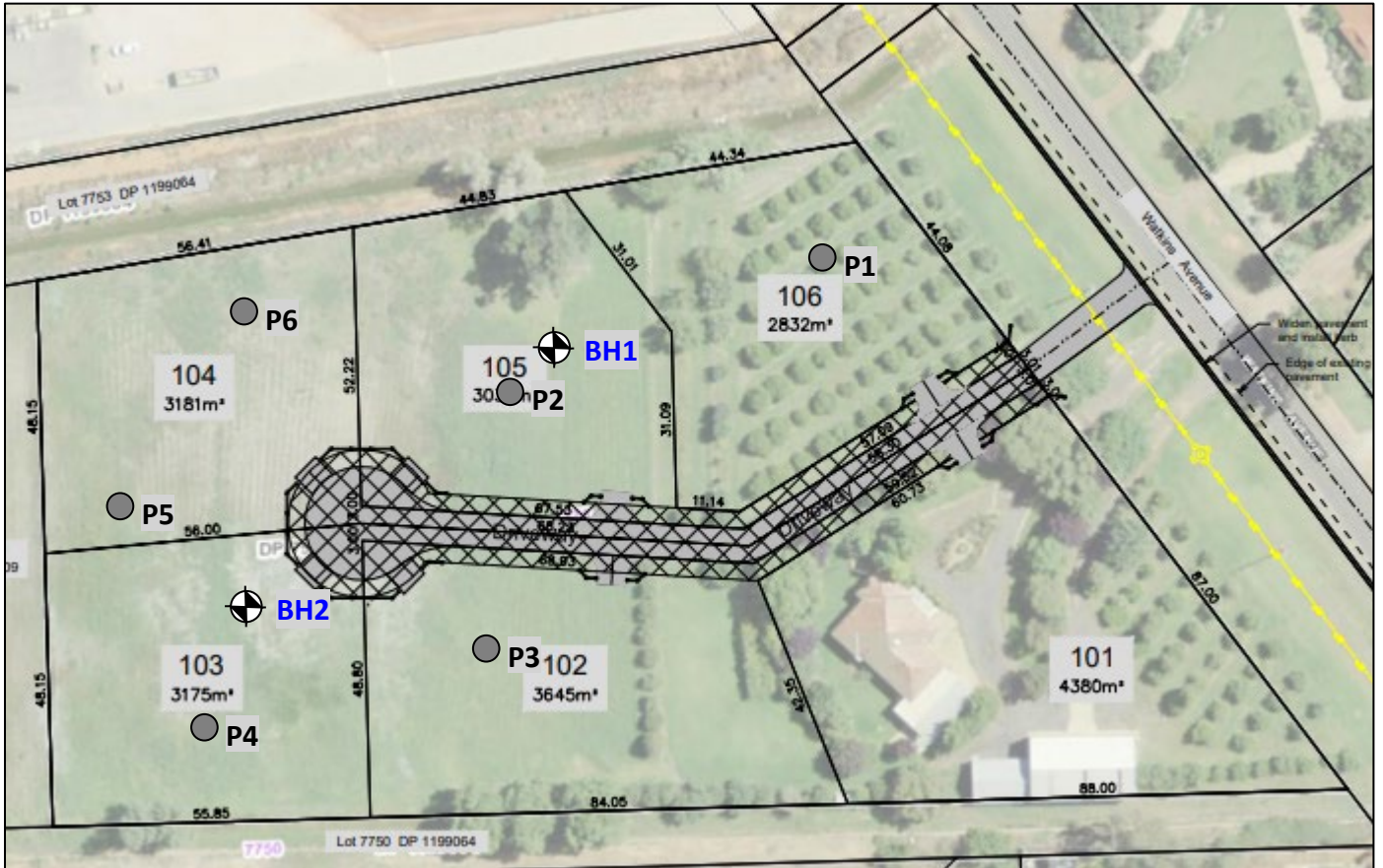
Unless otherwise stated in our commission, any dimensions or slope direction and magnitude should not be used for any building costing calculations and/or positioning. Any sketch supplied should be considered as only an approximate pictorial evidence of our work.



ADDITIONAL INFORMATION

Refer also to the CSIRO Information Sheet: - BTF18 "Foundation Maintenance and Footing Performance: A Home Owner's Guide, which can be accessed through <http://www.publish.csiro.au/pid/7076.htm>.

SITE PLAN



NOT DRAWN TO SCALE

AITKEN ROWE TESTING LABORATORIES PTY LTD

Borehole No.: 1

Sheet No.: 1 of 1

Ground Level: Existing

Date: 19/06/2020

Method: Auger Drilling with TC Bit

GPS N: 6203791

E: 412516

USCS Symbol	Description	Depth (m)	Moisture Condition	Consistency/ Rel. Density	Sample		Lab. Test	Remarks & Field Records
					Type	No.		
CL	TOPSOIL: Sandy Silty CLAY; low plasticity, fine to medium sand, red brown		MC<PL	F				NATURAL
CL - CI	CLAY; low to medium plasticity, with fine to medium sand, red orange brown		MC>PL		D	1A		
CH	CLAY; high plasticity, with fine to medium sand, orange brown	0.5		St.-VSt.				
		1.0						
CH	CLAY; high plasticity, with fine to medium sand, trace fine to medium gravel, yellow brown	1.5						
CI	Silty CLAY; medium plasticity, with fine to medium sand, trace fine to medium gravel, yellow brown grey	2.0						
	End of Borehole (BH1) @ 2.0m	2.5						
		3.0						
		3.5						
		4.0						
Registration No.: GED20-71							Logged By: JP	
Location: Lot 102 - 106, No. 891 Watkins Avenue, Griffith, NSW							Scale: As shown	
Client: JZ Management - Griffith, NSW							Groundwater: Dry on completion	

AITKEN ROWE TESTING LABORATORIES PTY LTD

Borehole No.: 2

Sheet No.: 1 of 1

Ground Level: Existing

Date: 19/06/2020

Method: Auger Drilling with TC Bit

GPS N: 6023750

E: 412462

USCS Symbol	Description	Depth (m)	Moisture Condition	Consistency/ Rel. Density	Sample		Lab. Test	Remarks & Field Records
					Type	No.		
CL	TOPSOIL: Sandy CLAY; low plasticity, fine to medium sand, red brown		MC>PL	F		2A		
CL	Sandy CLAY; low plasticity, fine to medium sand, red brown				D			
CI	Sandy CLAY; medium plasticity, with fine to medium sand red orange brown	0.5		St.				
CH	CLAY; high plasticity, with fine to medium sand, trace fine to medium gravel, yellow brown	1.0		St.-VSt.				
ML	Clayey SILT; low plasticity, with fine to medium sand, yellow brown grey	1.5		VSt.				
		2.0						
	End of Borehole (BH2) @ 2.0m							
		2.5						
		3.0						
		3.5						
		4.0						
Registration No.: GED20-71							Logged By: JP	
Location: Lot 102 - 106, No. 891 Watkins Avenue, Griffith, NSW							Scale: As shown	
Client: JZ Management - Griffith, NSW							Groundwater: Dry on completion	



AITKEN ROWE TESTING LABORATORIES PTY LTD **LOG SYMBOLS**

LOG COLUMN	SYMBOLS	DEFINITION		
Groundwater Record		Standing water level. Time delay following completion of drilling may be shown.		
		Groundwater seepage into borehole or excavation noted during drilling or excavation.		
Samples	D	Small disturbed bag sample taken between the depths indicated by lines.		
	B	Bulk disturbed sample taken between the depths indicated by lines.		
	U	Undisturbed 50mm diameter tube sample taken between the depths indicated by lines		
Field Tests	N=17 4, 7, 10		Standard Penetration Test (S.P.T.) performed between depths indicated by lines. Individual figures show blows per 150mm penetration driven by SPT hammer.	
	N _c	5	Dynamic Cone Penetration Test performed between depths indicated by lines.	
		7	Individual figures show blows per 100mm penetration for 60 degree solid cone driven by 9 Kg hammer.	
		3		
Moisture Condition (Clay or Silt based)	MC>PL		Moisture content estimated to be greater than plastic limit.	
	MC=PL		Moisture content estimated to be approx. equal to plastic limit.	
	MC<PL		Moisture content estimated to be less than plastic limit.	
Moisture Condition (Gravel or Sand based)	D		DRY – runs freely through fingers.	
	M		MOIST – does not run freely but no free water visible on soil surface.	
	W		WET – free water visible on soil surface.	
Consistency (Clay or Silt based)	VS		VERY SOFT – unconfined compressive strength less than 25kPa.	
	S		SOFT – unconfined compressive strength 25-50 kPa.	
	F		FIRM – unconfined compressive strength 50-100kPa.	
	St.		STIFF – unconfined compressive strength 100-200kPa.	
	VSt.		VERY STIFF – unconfined compressive strength 200 – 400kPa.	
	H		HARD – unconfined compressive strength greater than 400kPa.	
Relative Density (Gravel or Sand based)		Description	Density Index Range % S.P.T.	'N' Value Range Blows/300mm
	VL	VERY LOOSE	<15	0-4
	L	LOOSE	15-35	4-10
	MD	MEDIUM DENSE	35-65	10-30
	D	DENSE	65-85	30-50
	VD	VERY DENSE	>85	> 50
Hand Penetrometer Readings	300 250 280	Numbers indicate individual test results in kPa on representative undisturbed material unless noted otherwise.		
Laboratory Test	L.S. %	Linear Shrinkage (As per RTA Method T113)		
	M.C. %	Field Moisture Content (As per Australian Standard AS1289.2.1.1 or RTA Method T120)		
	I _{ss}	Shrink-Swell Index (As per Australian Standard AS1289.7.1.1)		
Remarks	'V' bit	Hardened steel 'V' shaped bit.		
	'TC' bit	Tungsten Carbide wing bit.		
	T ⁶⁰	Penetration of auger string in mm under static load of rig rear axle without rotation of augers.		

AITKEN ROWE TESTING LABORATORIES PTY LTD

ARTL Griffith: 17b Battista Street, Griffith NSW 2680

PAGE: 1

OF: 1

TEST REPORT**SOIL PERCOLATION & EMERSON CLASS**

CLIENT: JZ MANAGEMENT - GRIFFITH, NSW

PROPERTY LOCATION: LOT 102 - 106, No. 891 WATKINS AVENUE

GRIFFITH, NSW

MATERIAL TYPE: CLAY

DATE OF TEST: 19/06/2020

TEST METHOD: AS1547

AS1289.3.8.1

REGISTRATION No.: **GED20-71****MEASUREMENT OF DROP IN WATER LEVEL**

Time Elapsed (minutes)	Water Level (mm)					
	P1	P2	P3	P4	P5	P6
0	*	*	*	*	*	*
10	10	15	5	10	20	10
20	20	30	10	20	30	20
30	30	40	15	30	35	30
40	35	50	20	40	40	40
50	40	55	25	50	45	50
60	45	60	30	55	50	60

TIME TAKEN FOR 25mm WATER LEVEL FALL

Site	Absorption Rate (mins/25mm)
P1	33.3
P2	25
P3	50
P4	27.3
P5	30
P6	25

Permeability: 0.17 m/day**D.L.R:** 10 mm/day**D.I.R.:** 3 mm/day**Emerson Class Number:** 2 to 4

APPROVED SIGNATORY: _____

Nathan McLaren

DATE: 3/6/2020 _____

**AITKEN ROWE Testing Laboratories Pty Ltd**

ARTL Griffith: 17b Battista Street, Griffith NSW 2680

*

TEST REPORT: GEOTECHNICAL INVESTIGATION - SOIL ANALYSIS

CLIENT : JZ MANAGEMENT - GRIFFITH, NSW
 JOB DESCRIPTION : EFFLUENT DISPOSAL ASSESSMENT
 LOT 102 - 106, No. 891 WATKINS AVENUE
 GRIFFITH, NSW

PAGE: 1

OF: 1

SUBMITTED BY : ARTL

DATE SAMPLED: 19/06/2020

DATE SUBMITTED: 19/06/2020

SAMPLING METHOD: AS1289.3.6.1

SAMPLING CLAUSE: *

ORDER No.: *

MATERIAL SOURCE : CLAY

PROPOSED USE : DESIGN

MATERIAL TYPE : SOIL

REGISTRATION No : R28 **GED20-71**

SAMPLE NUMBER :		1A	2A	*	*	*	*
SAMPLING LOCATION :		100-400	100-400	*	*	*	*
DEPTHS BETWEEN WHICH SAMPLES TAKEN (mm) :		*	*	*	*	*	*
TESTS	TEST ELEMENT	*	*	*	*	*	*
AS1289.3.6.1	PASS 100.0mm SIEVE %	*	*	*	*	*	*
	PASS 75.0mm SIEVE %	*	*	*	*	*	*
	PASS 53.0mm SIEVE %	*	*	*	*	*	*
	PASS 37.5mm SIEVE %	*	*	*	*	*	*
	PASS 26.5mm SIEVE %	*	*	*	*	*	*
	PASS 19.0mm SIEVE %	*	*	*	*	*	*
	PASS 13.2mm SIEVE %	*	*	*	*	*	*
	PASS 9.50mm SIEVE %	*	*	*	*	*	*
	PASS 6.70mm SIEVE %	*	*	*	*	*	*
	PASS 4.75mm SIEVE %	*	*	*	*	*	*
	PASS 2.36mm SIEVE %	*	*	*	*	*	*
	PASS 1.18mm SIEVE %	100	100	*	*	*	*
	PASS 600µm SIEVE %	98	96	*	*	*	*
	PASS 425µm SIEVE %	95	93	*	*	*	*
	PASS 300µm SIEVE %	92	88	*	*	*	*
	PASS 150µm SIEVE %	83	72	*	*	*	*
	PASS 75µm SIEVE %	74	57	*	*	*	*
T111	STANDARD MAX. DRY DENSITY (1L MLD, A.1ii) t/m ³	*	*	*	*	*	*
	OPTIMUM MOISTURE CONTENT %	*	*	*	*	*	*
T113	LINEAR SHRINKAGE %	*	*	*	*	*	*
AS1289.2.1.1	FIELD MOISTURE CONTENT %	*	*	*	*	*	*
AS1289.3.8.1 (AIR DRIED)	EMERSON CLASS	2	4	*	*	*	*
	TYPE OF WATER	DISTILLED	DISTILLED	*	*	*	*
AS1289.6.7.2	COEFFICIENT OF PERMEABILITY m/sec.	*	*	*	*	*	*
	LABORATORY MOISTURE RATIO %	*	*	*	*	*	*
FALLING	LABORATORY DENSITY RATIO %	*	*	*	*	*	*
HEAD	% OVERSIZE DISCARDED (+19.0mm)	*	*	*	*	*	*
	SURCHARGE MASS APPLIED (1L MOULD, 3kPa)	*	*	*	*	*	*

ACCREDITED FOR
**TECHNICAL
COMPETENCE**

Accredited for compliance with
 ISO/IEC 17025 - Testing.
 The results of the tests,
 calibrations and/or measurements
 included in this document are
 traceable to Australian/national
 standards.

ACCREDITATION NUMBER 4679

*
*
*

All samples are oven dried and dry sieved during prep. unless otherwise stated

APPROVED SIGNATORY : 

Nathan McLaren

DATE: 3/7/2020

SIZE OF AREA FOR EACH MONTH (DISREGARDING STORAGE OF EFFLUENT) 900L/Day

Month	Pan Evaporation <i>E</i> mm	Evapotrans- piration <i>ET</i> (<i>ET</i> =0.75 <i>E</i>)	Rainfall <i>R</i> mm	Retained rainfall <i>R_r</i> (<i>R_r</i> = 0.75 <i>R</i>)	<i>LTAR</i> per Day mm	<i>LTAR</i> per month mm	Disposal rate per month mm	Effluent applied per month L	Size of Area m ²
Jan.		240	53	40	2	62	262	27900	106
Feb.		202	33	25	2	56	233	25200	108
Mar.		162	50	38	2	62	187	27900	150
Apr.		95	40	30	2	60	125	27000	216
May		55	51	38	2	62	79	27900	354
Jun		30	42	32	2	60	58	27000	466
Jul		38	45	34	2	62	66	27900	421
Aug		60	40	30	2	62	92	27900	303
Sep		90	48	36	2	60	114	27000	237
Oct		129	52	39	2	62	152	27900	184
Nov		192	35	26	2	60	226	27000	120
Dec		225	37	28	2	62	259	27900	108
Sum		1518	526						
								Ave. Area =	231

DEPTH OF STORED EFFLUENT (TRIAL)

Month	First Trial area m ²	Effluent applied per month L	Application rate mm	Disposal rate per month mm	Gain/Loss mm	Increase in depth of stored effluent mm	Depth of Effluent for month mm	Increase in depth of effluent mm	Computed depth of Effluent mm
Dec.	200	-	-	-	-	-	-	-	0
Jan.	200	27900	140	262	-123	-409	0	-409	-409
Feb.	200	27900	140	233	-94	-313	-409	-313	-722
Mar.	200	27900	140	187	-47	-157	-722	-157	-878
Apr.	200	27900	140	125	15	48	-878	48	-830
May	200	27900	140	79	61	203	-830	203	-628
Jun	200	27900	140	58	82	272	-628	272	-356
Jul	200	27900	140	66	73	244	-356	244	-112
Aug	200	27900	140	92	48	158	-112	158	47
Sep	200	27900	140	114	26	85	47	85	132
Oct	200	27900	140	152	-13	-42	132	-42	90
Nov	200	27900	140	226	-86	-288	90	-288	-198
Dec	200	27900	140	259	-120	-399	-198	-399	-597

CALCULATION OF IRRIGATION AREA

$$\text{Area } A_i = \frac{Q_w}{\text{DIR}}$$

$Q_w = 6300 \text{ Litre}$ $Q_w = \text{weekly effluent flow}$ $\text{DIR} = \text{design irrigation rate}$
 $\text{DIR} = 21 \text{ mm/week}$

Irrigation A= 300 m²

CALCULATION OF ABSORPTION TRENCH

Data **Note:** b = minimum 200mm, max. 900mm, Typical 300-450mm
width b=900mm Depth of aggregate=min. 200mm, max. 400mm, Typical 200-400mm
depth d=700mm Depth of topsoil= min. 100mm, max. 150mm, Typical 100-150mm
aggregate depth=300mm Aw= wetted area

$$Q_d = \text{design daily flow in L/Day} \quad \text{DLR} = \text{Design Loading Rate in mm/d} \quad W = \text{width in mm}$$

$Q_d = 900 \text{ litre}$ $\text{DLR(Primary)} = 5 \text{ mm/day}$ $\text{DLR (Secondary)} = 8 \text{ mm/day}$

$$A_w = \frac{Q_d}{\text{LTAR}}$$

$Q_d = 900 \text{ litre}$ $Q_d = \text{daily effluent flow}$ $\text{LTAR} = \text{Long Term Acceptance Rate (mm/day)}$
 $\text{LTAR} = 3 \text{ mm/day}$

A_w = 300 m²

$$L = \frac{A_w}{b + d_w}$$

$L = \text{trench length (m)}$ $A_w = \text{wetted area}$ $b = \text{trench width}$ $d_w = 2 * 0.5d$
 $d_w = \text{allowance for depth of wetted walls (m)}$

Length, L= 231 m

$$L = \frac{Q_d}{\text{DLR} * W}$$

$L = \text{length in mm}$

Length, L= 257 m (for primary effluent) **L= 161 m (for secondary effluent)**

CALCULATION OF EVAPOTRANSPIRATION - ABSORPTION AREA/TRENCH

$$\text{Area, } A_e = 200 \text{ m}^2 \quad \text{Be} = \text{width} + 2\text{depth}$$

$\text{Length, } L = A_e / \text{Be}$

Length, L= 100 m

WATER BALANCE 900L/Day

Parameter	Symbol	Formula	Units	Value
Design wastewater flow	Q		L/Day	900
Design Irrigation Rate	DIR		mm/week	21
Design Percolation Rate	DPR		mm/day	3.0
Nominated Irrigation Area	A		m ²	300
Design Irrigation Rate	DIR	Q/A	mm/month	91.50

Weather Data: Griffith

Parameter	Symbol	Formula	Units	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Days in month	D		days	31	28	31	30	31	30	31	31	30	31	30	31
Median Precipitation	MP		mm/month	53	33	50	40	51	42	45	40	48	52	35	37
Evapotranspiration	ET		mm/month	240	202	162	95	55	30	38	60	90	129	192	225
Percolation Rate	PR		mm/month	93	84	93	90	93	90	93	93	90	93	90	93
Maximum Allowable Irrigation Rate	MIR		mm/month	280	253	205	145	97	78	86	113	132	170	247	281

During June and July DIR does exceed MIR. Therefore we need to reduce the design irrigation rate.

Parameter	Symbol	Formula	Units	Value
Design wastewater flow	Q		L/Day	900
Nominated Irrigation Area	A		m ²	351
Design Irrigation Rate	DIR	Q/A	mm/month	78.00

Required Irrigation Area 351 m2