

APPENDIX C

Engineering Infrastructure Report

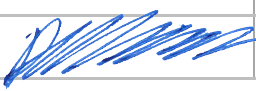
Prepared by:

Kehoe Myers

ENGINEERING INFRASTRUCTURE REPORT

FKG - GOWRIE MOUNTAIN LOT RECONFIGURATION
JANNUSCHS RD, CHARLTON QLD 4350 CHARLTON QLD

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1. INTRODUCTION

Kehoe Myers Consulting Engineers has been engaged to prepare this Engineering Infrastructure Report (EIR) in support of a Development Application to Toowoomba Regional Council (TRC) for the proposed development located on Jannuschs Road, Charlton, Queensland. The subject site is described as Lot 1 on RP46695, Lot 1 on SP191896, Lot 2 on RP24628, Lot 5 on SP217416, Lot 36 on AG108, Lots 28 and 30–34 on RP24623, Lots 1 and 2 on RP195310, and Lots 1 and 2 on RP159685.

The proposed land development comprises a 14-into-14 allotment reconfiguration of existing allotments.

This report seeks to address the onsite engineering issues associated with the proposed development works, including:

- Existing services within the subject area;
- Siteworks and proposed earthworks;
- Site access and transport impacts;
- Stormwater quantity and quality management;
- Sewerage reticulation and requirements;
- Water reticulation and requirements;
- Electrical and telecommunication supply.

This report provides a preliminary assessment of the engineering infrastructure matters relevant to the proposed reconfiguration, including transport access, shared access arrangements, stormwater management, wastewater servicing, water supply, and electrical and telecommunications servicing.

The proposed reconfiguration generally retains the existing rural character of the land, with Lots 1–3 intended to be subject to current and future development approvals and the remaining lots proposed for rural purposes. Infrastructure servicing has therefore been considered at a level appropriate to the nature of the application, with detailed design matters to be confirmed as part of future development, plumbing and drainage, or Operational Works approvals where required.

Based on the preliminary assessment undertaken, the proposed development is considered capable of being appropriately serviced through the use of existing road and water infrastructure, on-site wastewater and water supply solutions where required, and off-grid electrical and telecommunications options. The findings of this report are provided to support the Development Application and demonstrate that the proposed reconfiguration can be accommodated without unacceptable impacts on the surrounding infrastructure networks.

1.1. SITE LOCATION AND DESCRIPTION

The proposed development is located between the Warrego Highway and Witmack Road with frontage on Jannusch Road to the west. The real property description is Lot 1 on RP46695, Lot 1 on SP191896, Lot 2 on RP24628, Lot 5 on SP217416, Lot 36 on AG108, Lot 28, 30-34 on RP24623, Lot 1 & 2 on RP195310 and Lot 1 on RP159685. A locality plan highlighting the overall development site is shown below in **FIGURE 1**.

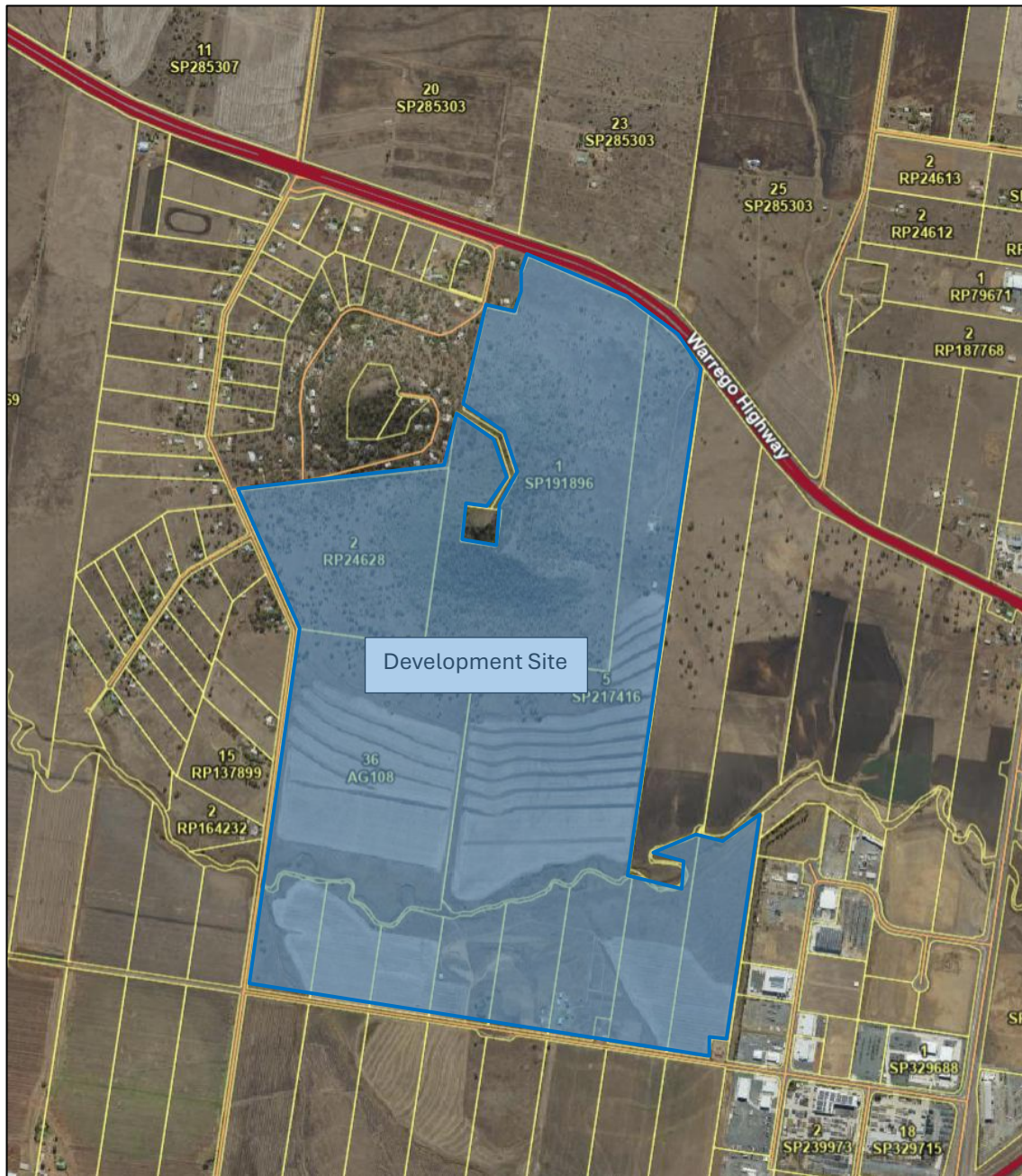


FIGURE 1 SITE LOCALITY MAP (QUEENSLAND GLOBE 2026)

1.2. EXISTING SITE CONDITIONS

Based on the available LiDAR elevation model and aerial images, the majority of the site is vacant land with a mix of dense vegetation and open paddocks. There are several dwellings and shed structures seen across the existing lots. The development has frontage to Warrego Highway, Linora Drive, Rowland Court, Jannusch Road and Witmack Road

Topographically, the northern portion of the development site is located around the lower slopes of Gowrie Mountain and is therefore at a considerably higher elevation than the remainder of the site. As a result, the majority of the site grades generally towards Dry Creek, with a smaller portion of the site draining to the north.

A current aerial image of the proposed development site is shown below in **FIGURE 2**.

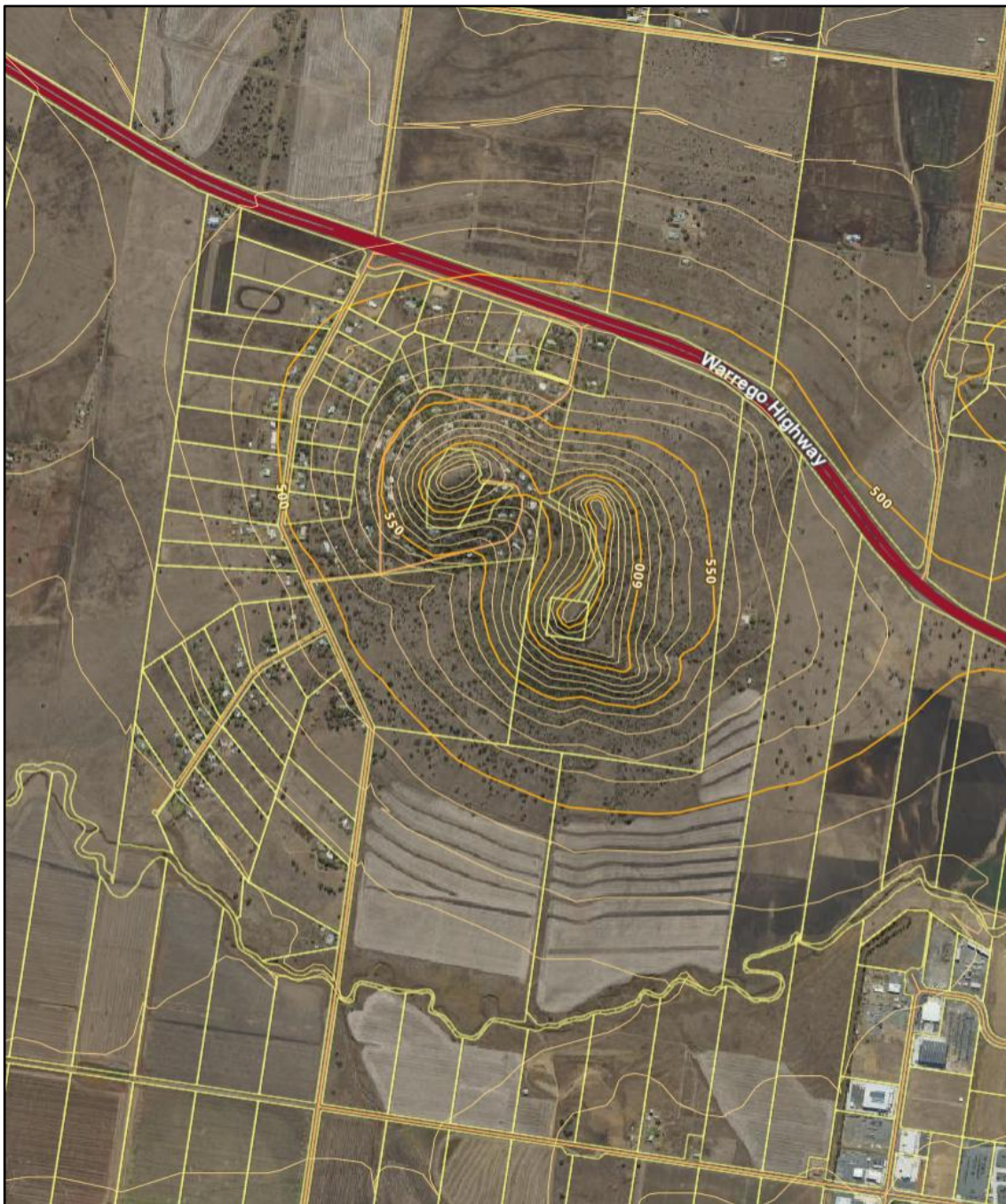


FIGURE 2 SITE AERIAL IMAGE (QUEENSLAND GLOBE 2026)

1.3. PROPOSED DEVELOPMENT LAYOUT

The proposed development layout has been developed in association with the Client and Planner. Based on the proposed site layout, a conceptual engineering design was undertaken to provide access and services for the proposed allotments.

Lot 1 is configured to encompass the water infrastructure located in this area. Lots 1, 2 and 3 are located on Witmack Road and are intended for future industrial use, subject to current and further development approvals. All remaining lots to the North of Dry Creek are proposed as rural lots.

The proposed 14-lot layout for the lot reconfiguration is shown **FIGURE 3** below and attached **APPENDIX A**. This proposed development plan has also been refined into a proposed allotment layout and servicing plan prepared and attached in **APPENDIX B**.

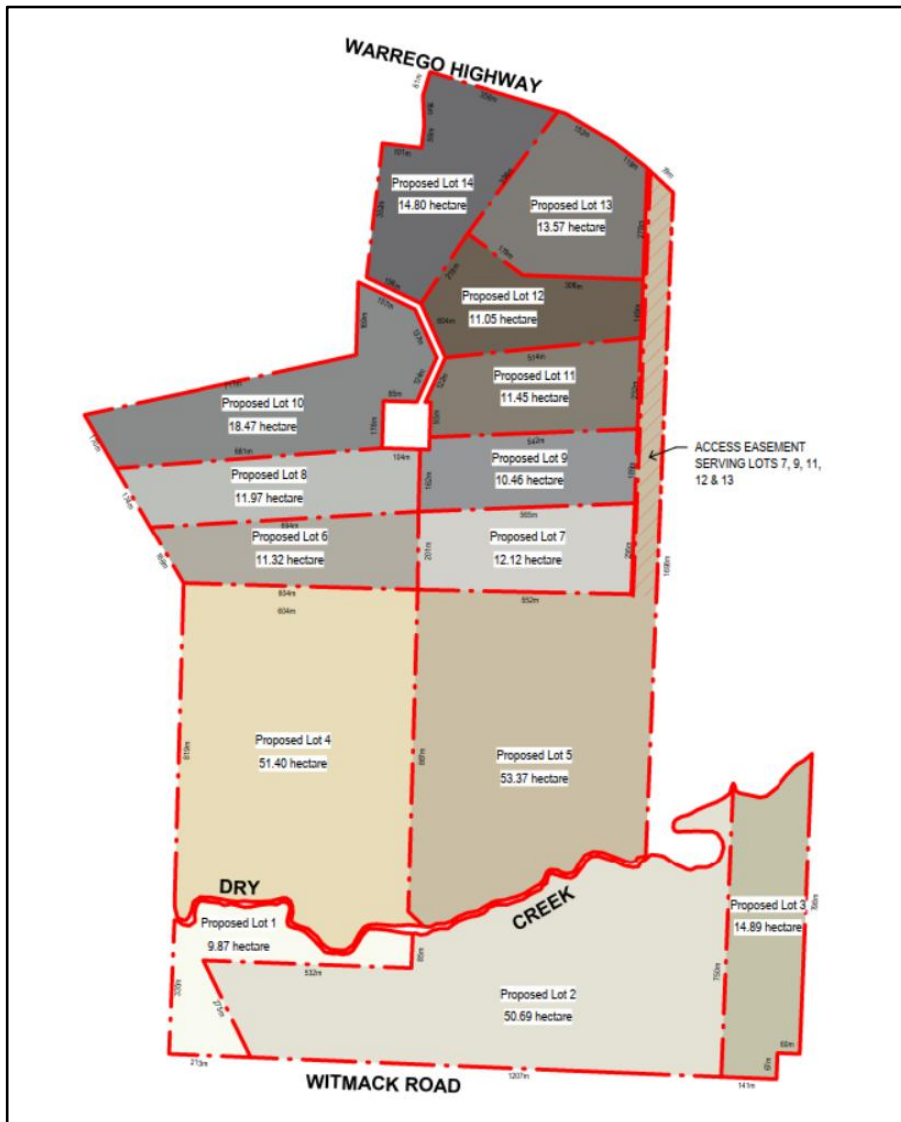


FIGURE 3 LOT RECONFIGURATION CONCEPT (FKG GROUP: 2414-SK05C)

2. TRANSPORT

2.1. ACCESS

Access to proposed Lots 1–3 is to be provided from Witmack Road. These lots are, or will be, subject to current/future development approvals. Accordingly, no upgrades to Witmack Road are proposed as part of this application.

Lots 4, 6, 8 and 10 are proposed to gain access from Jannusch Road, with an alternative access option available for Lot 10 via Rowland Court. The proposed reconfiguration will result in only two additional property accesses to Jannusch Road. On this basis, the existing road network is considered to have sufficient capacity to accommodate the anticipated additional traffic movements, and no further traffic assessment is required. Access to Lot 14 is to be provided from Linora Drive, which is the existing access point for this lot. No access is proposed from the Warrego Highway frontage.

To provide access to the remaining allotments, a new shared access arrangement is proposed from the existing driveway crossover to the Warrego Highway. Based on a preliminary assessment, the existing Warrego Highway access includes road widening generally consistent with the requirements of a Basic Left Turn Treatment (BAL), as outlined in Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections (AGRD04A), Section 8.2, Rural Left-turn Treatments.

Based on the existing conditions, minimum requirements and equations outlined in Table 8.1 and Figure 8.2 of AGRD04A, the required dimensions for the Rural BAL treatment are summarised in **TABLE 1** below.

TABLE 1 Required minimum treatment for Rural BAL

Road Segment:	Warrego Highway	
W	3.50m	Nominal through lane width (m)
C	6.50m	Minimum width from CL. - 6.0 m minimum
A	13.889m	Taper Distance - Equation from Figure 8.2
A Rounded (5m)	15m	
V	100.00km/h	Design speed of major road approach (km/h).
F	1.00m	Formation/carriageway widening (m)
P	25m	Minimum length of parallel widened shoulder (Table 8.1).
Sb	7.5m	Setback distance to give way or stop line
R1	15.00m	Kerb Return Radius

From this assessment, the existing geometry was assessed, and a plan of the access is provided in **APPENDIX C**. **FIGURE 4** below illustrates the existing extent of road widening at the Warrego Highway access. The existing arrangement provides the minimum parallel widened shoulder length required for a 100 km/h design speed, as identified in Table 8.1 of AGRD04A. Applying the taper distance equation from Figure 8.2, the available taper length is also considered sufficient under the existing conditions. Given that the existing access conditions meet the minimum geometry requirements, no further works are proposed. In addition, the Warrego Highway frontage in the vicinity of the proposed access is generally straight, with a clear and unobstructed view to the east. On this basis, sight distance for the proposed access is considered appropriate.



FIGURE 4 EXISTING BASIC LEFT TURN TREATMENT (BAL) INVESTIGATION (KEHOE MYERS: PR02)

2.2. SHARED ACCESS

Internally, access to Lots 7, 9, 11, 12 and 13 is proposed to be provided via a shared access easement. The shared access will extend along the internal frontage of these allotments and will provide a formed rural access suitable for the anticipated rural use of the lots.

The shared access is proposed to be designed generally in accordance with Toowoomba Regional Council's rural road typical cross-section requirements, adopting a rural gravel road profile appropriate to the scale and function of the access.

FIGURE 5, below, illustrates the typical Rural Roads – Gravel cross-section proposed for the shared access arrangement.

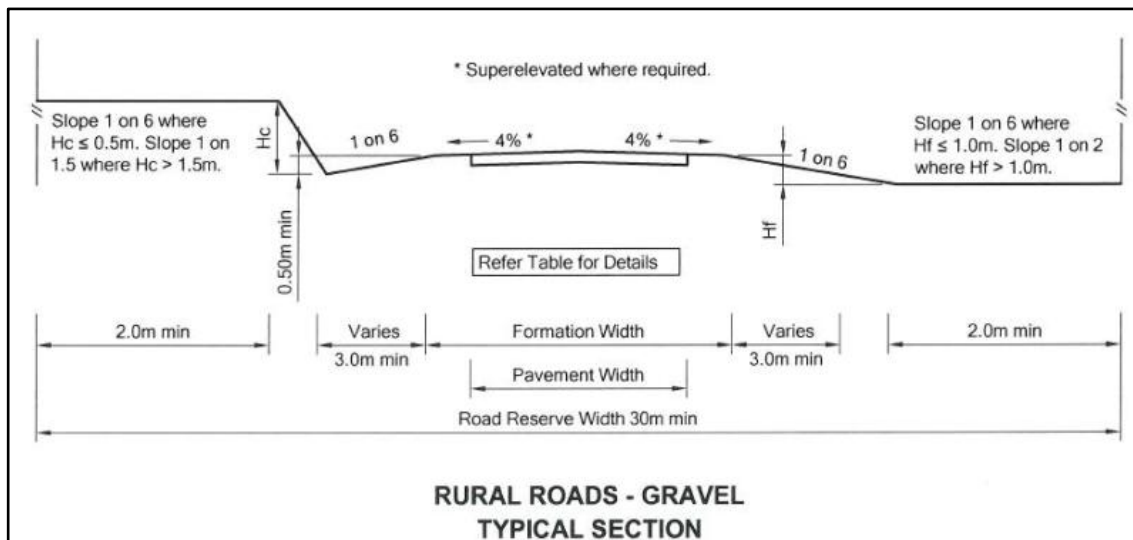


FIGURE 5 RURAL ROADS - FORMED TYPICAL CROSS-SECTION

3. STORMWATER MANAGEMENT PLAN

3.1. STORMWATER QUANTITY MANAGEMENT

The proposed allotments are large rural lots. As a result, any increase in impervious area associated with future development and the proposed access works is expected to be minor relative to the overall allotment areas. On this basis, the net increase in stormwater runoff arising from the proposed reconfiguration is considered negligible.

The proposed internal access serving Lots 5, 7, 9, 11 and 13 will be designed generally to match the existing topography where practicable. The access formation and associated drainage will be developed to avoid concentrating stormwater flows and to maintain existing overland flow paths as far as reasonably achievable.

3.2. STORMWATER QUALITY MANAGEMENT

As the proposed development is for rural purposes and does not include development for '*urban purposes*', stormwater quality management is not triggered under the Queensland State Planning Policy (SPP). As such, stormwater quality treatment is not required to be provided as part of this development application.

Proposed Lots 1–3, which will gain access from Witmack Road, are intended to be subject to future development approvals. Any stormwater quality management requirements associated with the future development of these lots will therefore be assessed and addressed as part of those subsequent applications, where required.

4. WASTEWATER

4.1. EXISTING COUNCIL SEWER INFRASTRUCTURE

Council's reticulated sewer network is not available to the subject site; therefore, an appropriate on-site effluent management system will be installed to service the proposed allotment waste requirements.

All proposed allotments are of sufficient size for on-site effluent disposal. Therefore, it is considered reasonable that compliant on-site effluent disposal systems can be configured for each allotment without requiring atypical earthworks or specialised treatments. The available area and grading provide flexibility for system layout and allow designers to position land application areas to suit localised soil conditions as part of future plumbing and drainage approvals.

5. WATER SUPPLY

5.1. EXISTING COUNCIL WATER INFRASTRUCTURE

From TR Maps, there are seen to be existing water infrastructure adjacent to the development. **FIGURE 6** below indicates the existing water network adjacent to the site.



FIGURE 6 EXISTING WATER MAIN INFRASTRUCTURE (TR MAPS 2026)

5.2. PROPOSED WATER CONNECTION

Water servicing for the proposed allotments is intended to be provided as follows:

Lots 1 to 3 can be serviced from the existing water main within Witmack Road. As these lots are, or will be, subject to separate current/future development approvals, no upgrade to the Witmack Road water main is proposed as part of this application.

Lots 4, 6, 8 and 10 are proposed to be serviced from the existing water infrastructure within Jannusch Road and Rowland Court. As the proposed reconfiguration will result in only two additional properties connecting to this water main, it is considered that the existing infrastructure has sufficient capacity to service these lots.

Lots 5, 7, 9, 11, 12 and 13 will not be connected to reticulated water as part of this application. These lots are proposed to be serviced by on-site water supply systems, to be specified as part of future plumbing and drainage applications.

Lot 14 is currently serviced from Linora Drive, which will remain the existing water connection point for this lot.

Further details of the proposed water service connections will be provided as part of future detailed design and/or subsequent plumbing and drainage applications.”

6. ELECTRICAL, STREET LIGHTING AND COMMUNICATIONS

6.1. EXISTING INFRASTRUCTURE

From a 'Dial Before You Dig' search of the proposed development site, it was seen that there are no existing services in the subject allotment.

6.2. PROPOSED DEVELOPMENT WORKS

No hard-wired electrical or telecommunications connections are proposed to be provided to the allotments as part of this application. The proposed allotments are intended to be serviced by wireless communications options, such as 5G, Starlink, NBN Fixed Wireless or NBN Satellite, where available.

Electrical supply is proposed to be provided by on-site solar power systems or other suitable off-grid technologies, to be determined by future lot owners as part of subsequent building or development works.

7. CONCLUSION

As detailed in the sections above, the proposed 14 into 14 lot reconfiguration is considered able to be appropriately serviced with respect to transport, stormwater, wastewater, water supply, electrical and telecommunications infrastructure.

Access to the proposed allotments will be provided via the existing road network, including Witmack Road, Jannusch Road, Rowland Court, Linora Drive and the existing Warrego Highway access. The existing Warrego Highway access has been assessed against the requirements of a rural Basic Left Turn Treatment (BAL) and is considered to provide sufficient existing geometry for the proposed shared access arrangement. Based on the proposed access arrangements and the limited number of additional property accesses, the existing road network is considered capable of accommodating the development traffic without requiring further traffic assessment as part of this application.

The proposed shared access easement will provide internal access to Lots 7, 9, 11, 12 and 13 and is proposed to be formed generally in accordance with Toowoomba Regional Council's rural road typical cross-section requirements. Detailed design of the shared access, including formation, pavement, grading and drainage details, will be confirmed as part of future detailed design and Operational Works approvals, where required.

Stormwater Quantity and Quality Management have been addressed above and are seen to be sufficient for the size and intensity of the proposed development.

Council's reticulated sewer network is not available to the subject site. Given the size of the proposed allotments, it is considered that on-site effluent disposal systems can be suitably accommodated within each lot, subject to future plumbing and drainage approvals. Water servicing will be provided through a combination of existing reticulated water connections for lots with access to nearby water infrastructure and on-site water supply systems for lots not proposed to connect to reticulated water as part of this application.

No hard-wired electrical or telecommunications connections are proposed to be provided to the allotments as part of this application. The proposed allotments are intended to be serviced by wireless communications options and on-site solar power systems or other suitable off-grid technologies, to be determined by future lot owners as part of subsequent building or development works.

On this basis, the proposed development is considered capable of being appropriately serviced through the use of existing infrastructure, on-site servicing solutions and future detailed design processes, without resulting in unacceptable impacts on the surrounding infrastructure networks.

8. REFERENCES

Text References

Toowoomba Regional Council, Toowoomba Regional Planning Scheme

<https://www.tr.qld.gov.au/planning-building/planning-scheme-strategies-tools/planning-scheme-new/13289-access-the-toowoomba-regional-planning-scheme-9>

Queensland Government 2017, State Planning Policy, July 2017, Department of Infrastructure, Local Government Planning, Brisbane, Australia

Department of Energy and Water Supply (DEWS), “Planning Guidelines for Water Supply and Sewerage – April 2010

Austroads Ltd 2020, Guide to Traffic Management Part 12: Traffic Impacts of Developments

Institute of Public Works Engineering Australasia, Queensland, 2017, Queensland Urban Drainage Manual –Fourth Edition, 2016, Institute of Public Works Engineering Australasia, Queensland

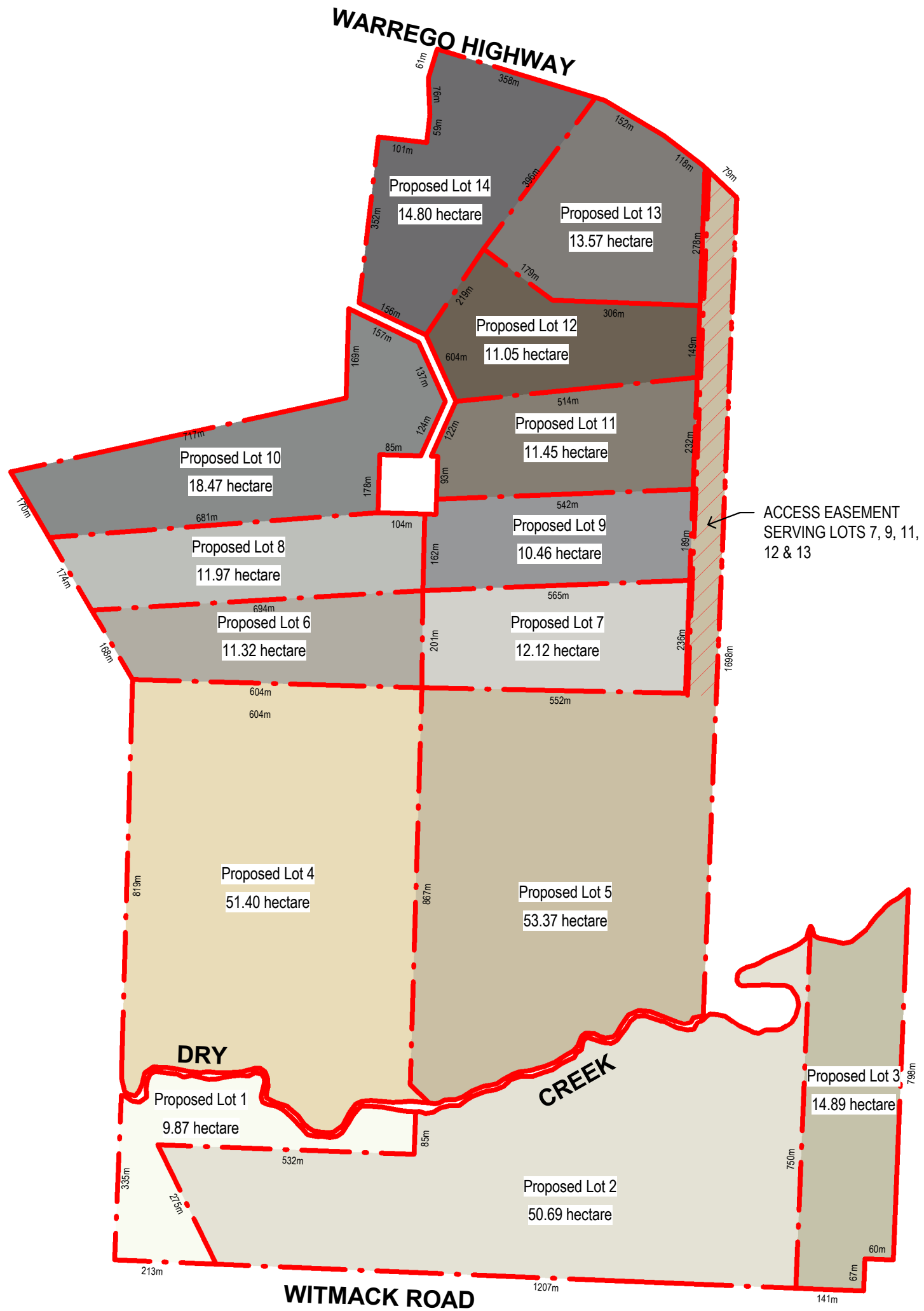
Water by Design 2010, MUSIC Modelling Guidelines, SEQ Healthy Waterways Partnership, Brisbane, Qld, ISBN 978-0-9806278-4-8

Software Used

AutoCAD

9. APPENDICES

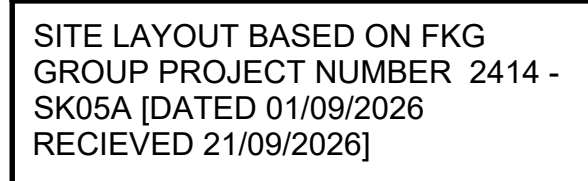
APPENDIX A. LOT RECONFIGURATION - PROPOSED (FKG GROUP DRAWING: 2414-SK05C)



GOWRIE MTN
Lot Reconfiguration - Proposed
 2414-SK05C

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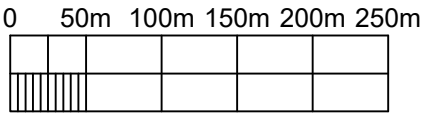
APPENDIX B. PRELIMINARY ALLOTMENT LAYOUT
(KEHOE MYERS DRAWING: C2526128-PR01)



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DATUM
PSM
SURVEYOR_INFORMATION

DRAWING ISSUE			
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P1	24.09.26	FOR APPROVAL	PJS
P2	01.10.26	FOR APPROVAL	PJS



SCALE 1:5,000 @ A1
SCALE 1:10,000 @ A3

DATE 01.10.26 10:20 AM

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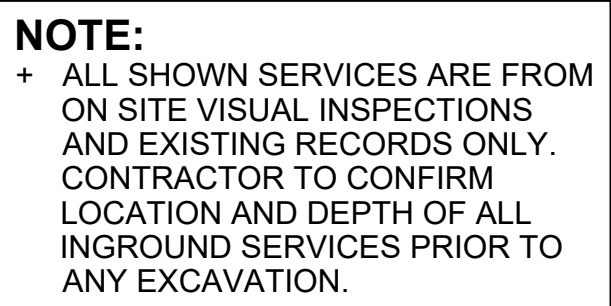
PROJECT
GOWRIE MOUNTAIN LOT
RECONFIGURATION

DRAWING TITLE

**PRELIMINARY ALLOTMENT
LAYOUT**

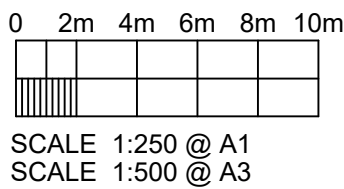
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APPROVED		DRAWING NUMBER	PR01
DATE		ISSUE	P2

APPENDIX C. EXISTING BAL INVESTIGATION
(KEHOE MYERS DRAWING: C2526128-PR02)



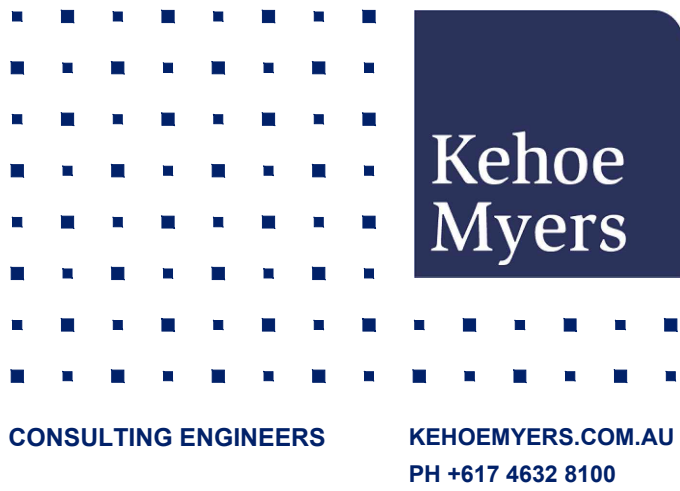
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P1	24.09.26	FOR APPROVAL	PJS
P2	01.10.26	FOR APPROVAL	PJS



DATE 01.10.26 10:21 AM

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CLIENT
FK GARDNER & SONS PTY LTD

PROJECT
GOWRIE MOUNTAIN LOT
RECONFIGURATION

DRAWING TITLE

PRELIMINARY BAL INVESTIGATION

DESIGN	<i>TB/MDP</i>	ORIGINAL SIZE	A1
DRAWN	<i>TB/MDP</i>	PROJECT NUMBER	C2526128
CHECKED	<i>PJS/MS</i>		
APPROVED		DRAWING NUMBER	PR02
DATE		ISSUE	P2

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