



## Agronomy Report

Proposed Bio-fertiliser Facility

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Prepared for BYV Organics

09 December 2025

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Date	Revision	Name	Title
09/12/25	0.4	Rusty Mark	BYV Organics – Project Director
09/12/25	0.4	Matthew Taylor	Planning Insights – Director
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# 1. Introduction

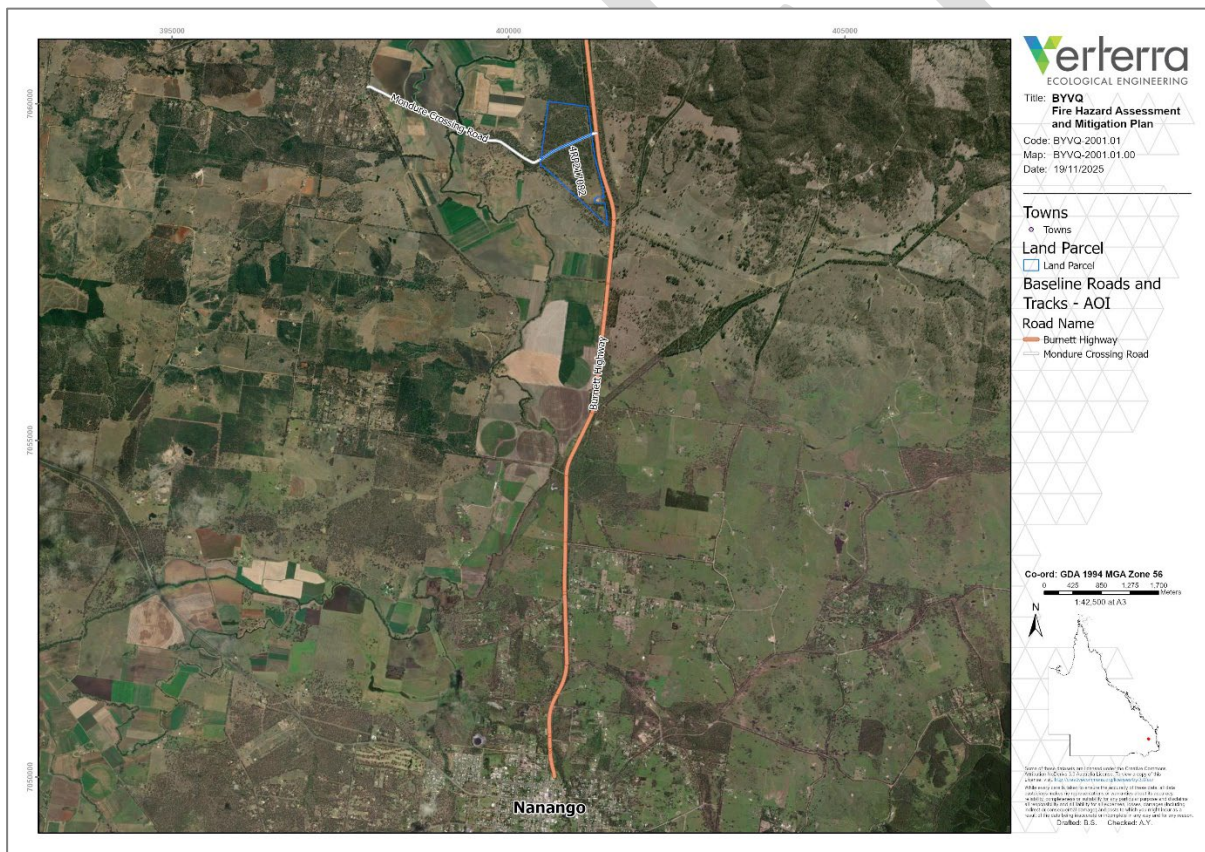
## 1.1 Project background

The proposed development is to undertake a small-scale facility designed for drying biosolids by means of energy from waste technology (Xetrov) processing non-recyclable waste diverted from landfill. The heat and electricity generated from the thermal treatment of the waste will be used to dry partially dewatered biosolids, in the form of sludge. The dried biosolids will then be blended (either as part of the drying process or post drying) with mineral fertiliser and pelletised to produce a high value pelletised hybrid organic/ mineral fertiliser product for use in agricultural operations.

## 1.2 Property details

The property is located approximately 10 km north of Nanango at the intersection of the Burnett Highway and Mondure Crossing Road (Figure 1).

**Figure 1: Property location**



The proposed development is located on the northern part of lot 4RP217082 (“Northern Area”) (Figure 2).

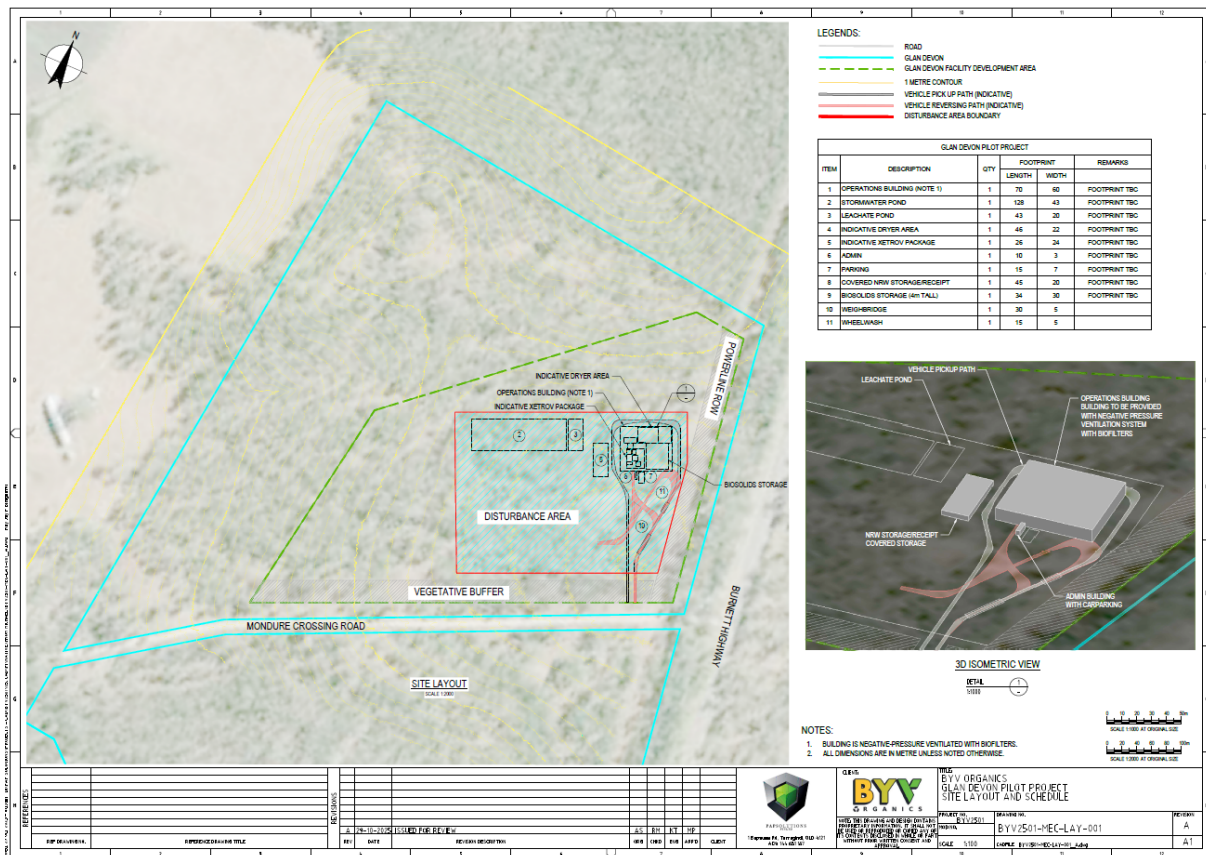
**Figure 2: Disturbance area within lot 4RP217082**



The property is currently under low intensity native vegetation grazing, although no water points were noted in the Northern Area.

The proposed facility layout is presented in Figure 3.

**Figure 3: Proposed site layout**



### 1.3 Climate

The property typically receives rainfall between October and March, with a mean annual rainfall of 772 mm (SILO Long Paddock -26.60\_152.00).

### 1.4 Objective

The purpose of this assessment is to characterise the soil and landscape resources within the project footprint to evaluate agricultural land suitability.

The objectives are to:

- Review existing desktop information for the project footprint
- Describe soil physical and chemical characteristics
- Assess land suitability for potential agricultural uses (including cropping and grazing)
- Identify any factors limiting agricultural productivity, such as sodicity, salinity, or erosion potential.

The assessment includes:

- Methods and results of the soil sampling (soil profiles to 1 m depth)
- Mapping of soil sampling locations, soil units, and land capability classes
- Summary of physical and chemical soil properties relevant to agricultural use
- Discussion of the Project area’s suitability relative to surrounding agricultural land.

## 2. Method

### 2.1 Desktop assessment

The desktop assessment reviewed available government mapping with reference to the following legislation:

- *QLD Planning Act 2016*
- *QLD Regional Planning Interests Act 2014 (RPI Act)*
  - Subordinate legislation *Regional Planning Interests Regulation 2014*
- *QLD Stock Route Management Act 2002 (SRN Act)*
- State Planning Policy (SPP)
- South Burnett Regional Council Planning Scheme

Existing land mapping:

- ASRIS soil mapping
- 1m contours
- Strategic cropping area (SCA)
- Agricultural land classification (ALC)
- Stock route network.

### 2.2 Fieldwork

#### 2.2.1 Soil sampling

Soil sampling was conducted at two locations during a site visit on 17 October 2025. The first location was within the project footprint, while the second was situated in the flatter southern section and served as a reference site / additional data point for comparison.

Soil cores were extracted to a maximum depth of 100 cm below ground level (bgl) using a Landcruiser-mounted hydraulic hammer-powered soil sampler. From each core, one topsoil sample (0–10 cm bgl) and one subsoil sample (40–50 cm bgl) were collected and submitted for laboratory analysis.

#### 2.2.2 Site assessment

During a follow-up site visit on 30 October 2025, an on-ground site assessment was undertaken for the project footprint area to support the soil analysis and land assessment. This included collecting landform and soil field data (i.e., texture, slope, surface conditions, etc.).

## 2.3 Land assessment

Land suitability and Agricultural Land Class (ALC) assessments at the project site have been conducted based upon the *Guidelines for Agricultural Land Evaluation in Queensland* (DSITI & DNRM, 2015), *Regional Land Suitability Frameworks for Queensland* (DSITI & DNRM, 2013) and a technical paper on land suitability for beef cattle grazing (Short 2023).

### 2.3.1 Agricultural land classification (ACL)

Agricultural Land Classes (ALCs) are based on a simple hierarchical scheme that is applicable across Queensland. It allows the interpreted land evaluation data to identify land suitable for sustainable agricultural use and to guide land-use planning to minimise degradation. Descriptions of ALCs are presented in Table 1.

**Table 1: Agricultural Land Class descriptions**

Agricultural Land Class	Land Suitability (Grazing)	Land Suitability (Cropping)	Description
A	-	-	Crop land - land that is suitable for a wide range of current and potential crops with nil to moderate limitations to production.
A1	1-3	1-3	Suitable for a wide range of current and potential broadacre and horticultural crops.
A2	1-3	1-3	Suitable for a wide range of current and potential horticultural crops only.
B	1-3	3-4	Limited crop land - land that is suitable for a narrow range of crops. The land is suitable for sown pastures and may be suitable for a wider range of crops
C	-	-	Pastureland - land that is suitable only for improved or native pastures due to limitations that preclude continuous cultivation for crop production. Some areas may tolerate a short period of ground disturbance for pasture establishment.
C1	3-4	4-5	Suitable for grazing sown pastures requiring ground disturbance for establishment; or native pastures on higher fertility soils
C2	3-4	4-5	Suitable for grazing native pastures, with or without the introduction of pasture species, and with lower fertility soils than C1.
C3	4-5	4-5	Suitable for light grazing of native pastures in accessible areas and includes steep land more suited to forestry or catchment protection

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Agricultural Land Class	Land Suitability (Grazing)	Land Suitability (Cropping)	Description
D	5	5	Non-agricultural land - land not suitable for agricultural use, including land alienated from agricultural use.
A/C A/D B/C C/D	-	-	Land that is a combination of class A, B, C or D where it is not possible to delineate the land class at the map scale. The dominant class is the first code in the sequence and is assumed to be >50% of the area, but <70%.

### 2.3.2 Soil analysis

Samples were submitted to Nutrient Advantage, a National Association of Testing Authorities (NATA) accredited laboratory, for analytes of agronomic importance. Appendix 1: Soil cores

**Figure 8: Soil core from proposed disturbance footprint**



**Figure 9: Soil core from lowland/flood plain of property**



Appendix 2: Soil analytes contains the full list of parameters assessed.

An assessment of soil fertility and potential for erosion was done. Assessments used physical descriptions of the landform and soil profile, along with laboratory results. Laboratory results were analysed and used to describe the soil types against the following guidelines:

- *The Australian Soil Classification: Third Edition* — the ‘grey book’ (Isbell & NCST 2021); and
- *Soil Physical Measurement and Interpretation for Land Evaluation* — the ‘brown book’ (McKenzie et al. 2002).

### 2.3.3 Land suitability

#### 2.3.3.1 Land Suitability Class

The suitability framework applied for this assessment is based on five land suitability classes nominated in the DNRME Guidelines and presented below:

- Class 1 – Suitable land with negligible limitations
- Class 2 – Suitable land with minor limitations
- Class 3 – Suitable land with moderate limitations
- Class 4 – Unsuitable land with severe limitations
- Class 5 – Unsuitable land with extreme limitations .

These classes are used to describe an area of land in terms of suitability for a specified land use (crop x management method combination) which allows optimum, sustainable production with current technology while minimising degradation to the land resource in the short, medium or long-term.

The suitability class of any mapped polygon is determined by the most severe suitability parameter that applies to that polygon. Classes 1, 2 and 3 are considered *suitable* for the specified land use. Classes 4 and 5 are considered unsuitable for the specified land use. Decreasing land suitability class reflects the need for increased inputs rather than decreased potential production.

#### 2.3.3.2 Limitations and land management groups

The Suitability framework for the Inland Burnett region (DSITI & DNRM, 2013) assigns specific limitations for the Project area. Thirteen limitations are assessed across three crop groups (A, B, and C) based on each crop’s sensitivity to a given limitation (see framework for details).

Nine limitations (five included in suitability framework) have also been assessed based on their impact to beef cattle grazing (Short 2023).

### 2.3.4 Forage carrying capacity

Long Paddock (QLD Govt) has a prototype long term carrying capacity prototype reporting tool providing an indication of the number of livestock the property can carry in the long term without reducing the land condition. Outputs are indicative only and not valuations of the land.

The report utilises the Grazing Land Management land type mapping (Feb 2019).

Report generates:

- Land types (typically vegetation type)

- LTCC (AE) by differing land conditions
  - Long term carrying capacity (adult equivalent)
- Foliage projective cover (FPC)
  - Differentiates between woody and non-woody vegetation.
  - Similar to tree basal area.

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### 3. Results

#### 3.1 Desktop assessment

##### 3.1.1 Soil mapping

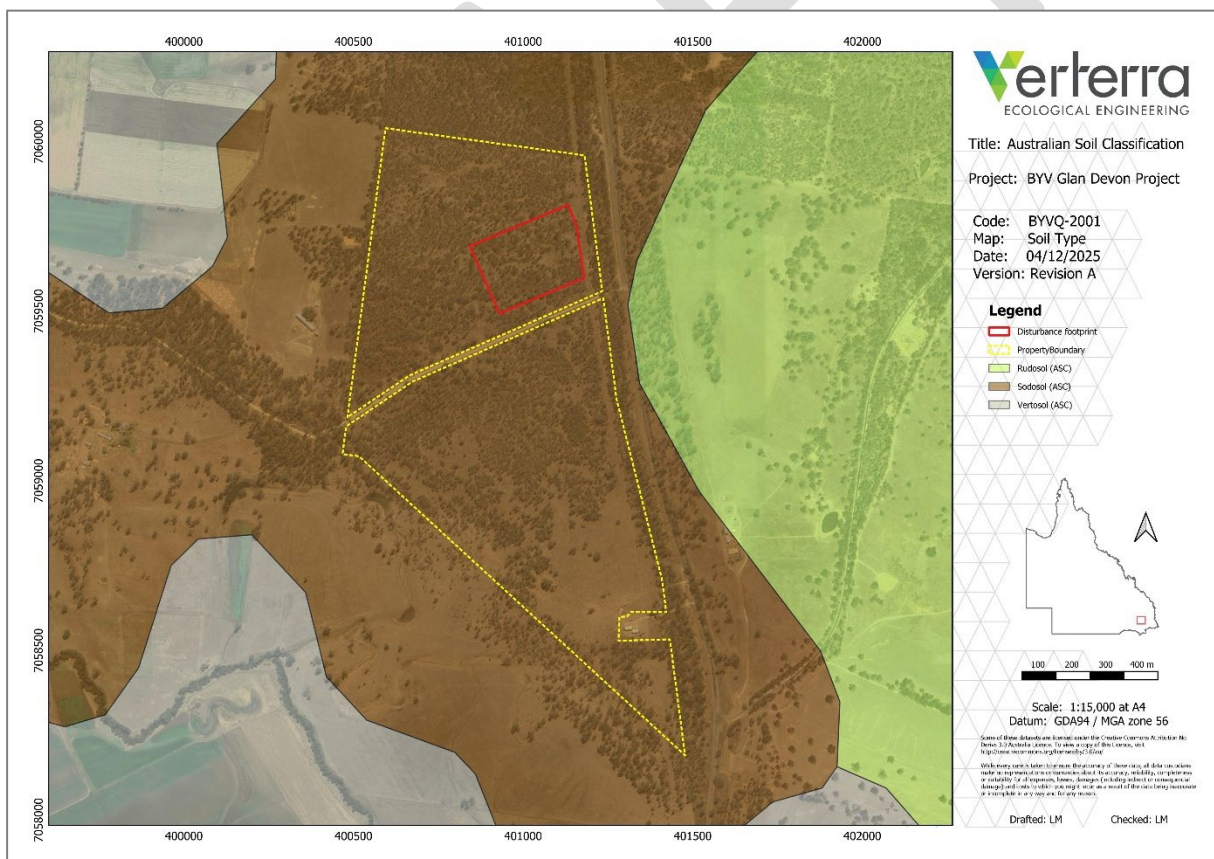
The best available soil mapping (1:2,000,000) suggests an Australian soil classification (ASC) of Sodosol (Figure 4). Further, that the land is

*Undulating to low hilly terrain on sedimentary and metamorphic rocks. Variable depth texture contrast soils with brown or yellowish brown clay subsoils (solodics, solodized solonetz, soloths); some stony lithosols and brown/ grey cracking clays.*

This soil type typically has the following characteristics:

- Well-drained
- Moderately permeable
- Hardsetting surface conditions
- ~1% surface rock outcrop.

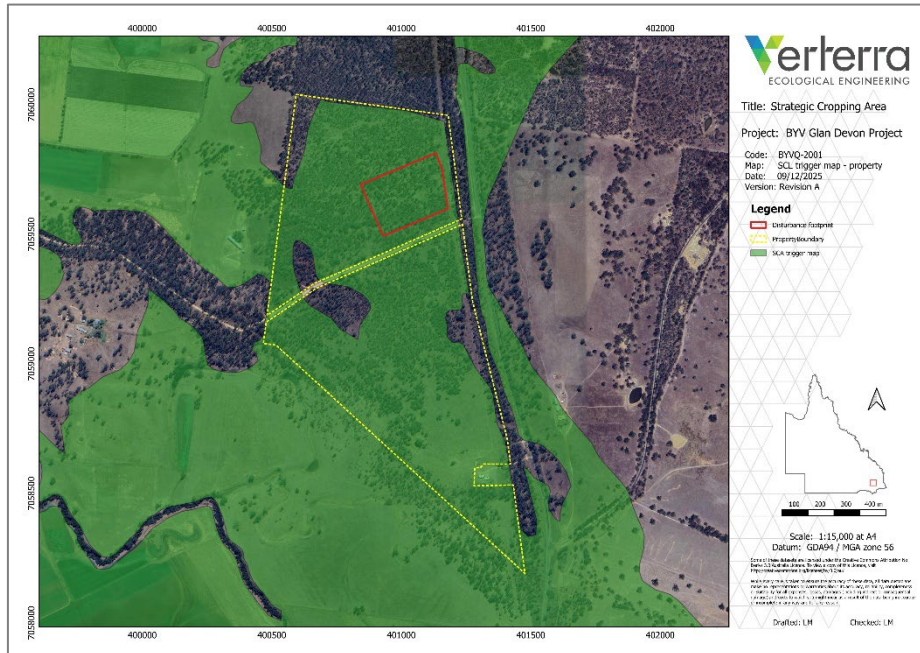
**Figure 4: Australian soil classification (ASC) mapping**



### 3.1.2 Strategic cropping land (SCL) mapping

As shown in Figure 5, the project footprint is located on land that has been designated as Strategic cropping land (SCL).

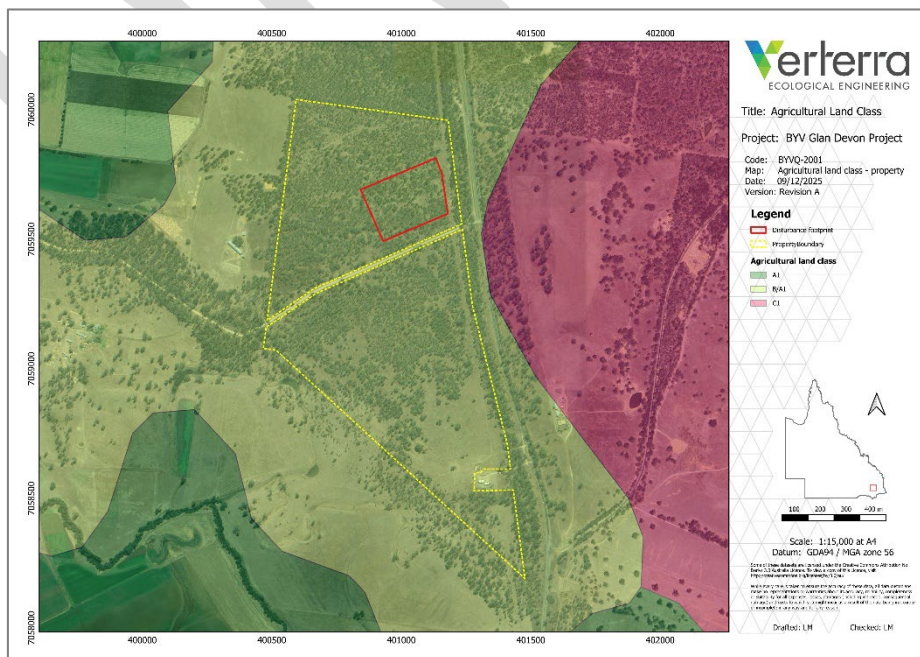
**Figure 5: Strategic cropping land mapping**



### 3.1.3 Agricultural land classification (ACL) mapping

The 1: 250,000 agricultural land classification mapping (Figure 6) presents the property as Class B/A1 (limited crop land) (refer to Section 2.3.1).

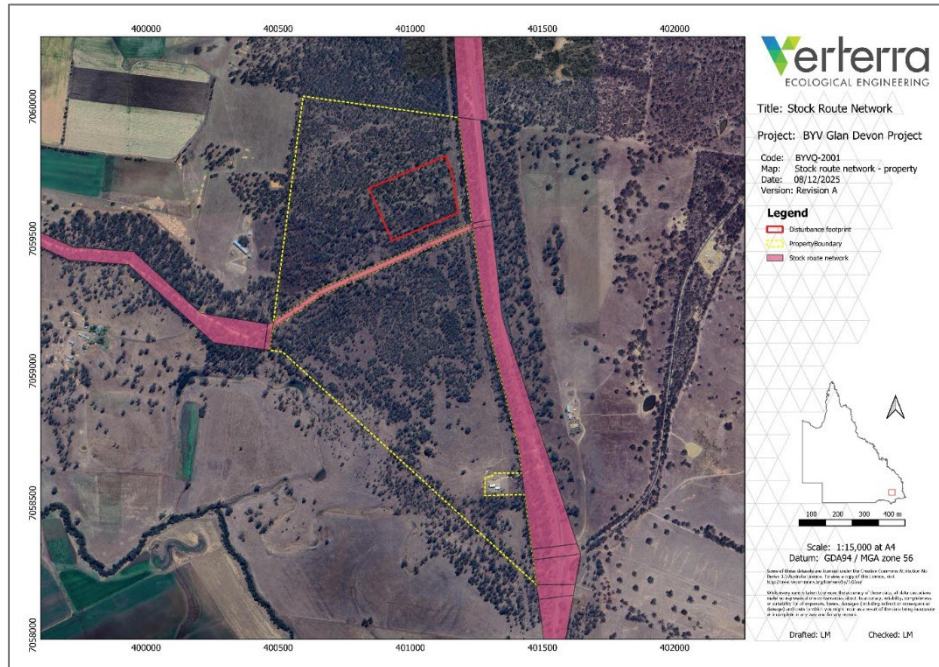
**Figure 6: Agricultural land classification mapping**



### 3.1.4 Stock route network

Available stock route mapping indicates a stock route to the east and south of the Northern Area (Figure 7).

**Figure 7: Stock route network**



## 3.2 Land assessment

### 3.2.1 Soil types

The site consists primarily of clayey, texture-contrast (duplex) soils with a light, rocky topsoil and sodic clay subsoil. The soils show unbalanced cations, low fertility, and deficiencies in several plant-available nutrients. The project footprint soil classifies as a Sodosol under the Australian Soil Classification (Isbell, 2021).

A summary of the topsoil and subsoil analysis is in the following sections (3.2.1.1–3.2.1.2). Full laboratory analyses are presented in Appendix 3: Laboratory results.

#### 3.2.1.1 Topsoil

The footprint topsoil is a sandy clay loam (68% sand, 18% silt, 14% clay), slightly heavier than the reference site's sandy loam. Both sites are slightly acidic (pH 6.2–6.4) and non-saline, with the footprint marginally higher in salinity (ECe 0.67 dS/m).

Cation exchange capacity is very low (4.8–6.4 meq/100 g), indicating limited buffering capacity. Both soils are non-sodic (ESP < 2.1%) and stable but exhibit low Ca:Mg ratios (1.2–1.9), indicating cation imbalance.

Organic carbon is moderate (1.3–2.1%), but plant-available macronutrients nitrate (2.4–3.2 mg/kg), phosphate (7.2–8.3 mg/kg), and sulfate (2.8–3.9 mg/kg) are deficient. Available potassium is high at the footprint (470 mg/kg) and moderate at the reference (250 mg/kg). Boron deficiency is also present at both sites.

### 3.2.1.2 Subsoil

The footprint subsoil is a medium-heavy clay (39% sand, 10% silt, 52% clay), heavier than the reference site’s clay loam. Both have neutral pH (6.8–7.1).

The footprint subsoil is strongly sodic (ESP 33.5%) and moderately saline (ECe 4.73 dS/m), contrasting with the non-sodic, non-saline reference site subsoil. Calcium is severely depleted at the footprint (0.051 meq/100g), producing an extremely low Ca:Mg ratio (0.004).

High sodicity and moderate salinity at the footprint create substantial erosion and dispersion risk, requiring management during disturbance.

### 3.2.2 Strategic cropping area (SCA)

Table 2 assesses the project footprint against Schedule 3 Part 2 (Criteria for Land) of the Regional Planning Interests Regulation 2014.

**Table 2: Strategic cropping area (SCA) criteria against the RPI Regulation**

Criterion	Parameter	Requirements	Project footprint
1	Slope	5% or less	Meets criteria
2	Rockiness	20% or less	Meets criteria
3	Gilgai density	Average density of gilgai with depressions >500mm: <50% of land surface	Meets criteria
4	Soil depth	600mm or more	Meets criteria
5	Drainage	Favourable drainage	Meets criteria
6	Soil pH (at 300mm and 600mm depth)	Rigid soils: 5.1 to 8.9 Non-rigid soils: >5.0	Meets criteria
7	Salinity (at 600mm depth or shallower)	Electrical conductivity: <0.56 dS/m	Meets criteria
8	Soil water storage	100mm or more	Meets criteria

This assessment indicates that the land meets the criteria as strategic cropping land.

### 3.2.3 Land suitability assessment

This analysis evaluated land suitability for various land uses by scoring the 17 site limitations. The overall suitability of each group was determined by the lowest site class among all 17 limitations.

No land management groups were identified as Suitability Class 1 - *Land suitable for all agricultural and pastoral uses*. The absence of Class 1 within the project site indicates that each land use has at least one limitation scoring 2 or higher (minor to extreme limitations).

The average land suitability score across all land uses was 4, with grazing scoring better for than cropping. All cropping groups scored 4–5, indicating severe to extreme limitations. Grazing scored 4, indicating severe limitations. The main limiting factors of the site were wetness / waterlogging (W1, W2 & W3), rockiness (R), soil salinity (Sa) and subsoil erosion (Eb).

All land management groups assessed are presented in Appendix 4: .

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**Table 3: Land suitability summary**

Limitation	Code	Land management groups										
		Group A	Group B	Group C	Group D	Group E	Group F	Group G	Group H	Group I	Group J	Grazing
Frost	Cf	1	2	3	5	3	-	-	-	-	-	-
Water erosion	Ea	1	2	2	3	3	-	-	-	-	-	1
Flooding	F	1	1	1	1	1	-	-	-	-	-	-
Furrow irrigation	If	4	-	-	-	-	-	-	-	-	-	-
Soil water availability	M	1	1	1	2	3	2	3	3	-	-	1
Soil depth	Pd	1	1	1	1	-	-	-	-	-	-	-
Soil adhesiveness	Pa	1	1	2	2	5	-	-	-	-	-	-
Soil surface condition	Ps	1	1	1	1	1	1	1	1	1	1	1
Rockiness	R	1	2	2	3	4	4	4	5	5	5	1
Soil salinity	Sa	1	-	-	-	-	-	-	-	-	-	3
Microrelief	Tm	1	-	-	-	-	-	-	-	-	-	1
Slope	Ts	1	1	1	1	-	-	-	-	-	-	1
Wetness to 1m	W1	3	4	-	-	-	-	-	-	-	-	-
Wetness to 0.5m	W2	4	2	1	3	4	-	-	-	-	-	-
Wetness to 1.5m	W3	2	3	4	5	-	-	-	-	-	-	-
Nutrient deficiency	Nd	-	-	-	-	-	-	-	-	-	-	4
Nutrient availability and toxicity	Nr	-	-	-	-	-	-	-	-	-	-	2
Subsoil erosion	Eb	-	-	-	-	-	-	-	-	-	-	4
Potentially acid forming materials	D	-	-	-	-	-	-	-	-	-	-	1
<b>Overall</b>		<b>4</b>	<b>4</b>	<b>4</b>	<b>5</b>	<b>5</b>	<b>4</b>	<b>4</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>4</b>

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### 3.2.4 Agricultural land classification (ACL)

Based on the land suitability assessment and related information, the project's Agricultural Land Class is identified as C2.

*Suitable for grazing native pastures, with or without the introduction of pasture species, and with lower fertility soils than C1. (Refer to Section 2.3.1)*

### 3.2.5 Forage report

The (prototype) forage report indicates the following:

- Land condition
  - C condition (<https://futurebeef.com.au/resources/land-condition/>)
- LTCC (AE)
  - 10
  - ~11.6ha/AE
- Land types (veg)
  - IB13 - Mixed open forests on duplex and loam IB
- Foliage projective cover (FPC)
  - 30-50%

Noting that this is for the whole property, the Long Paddock report suggests land with a low long term carrying capacity.

## 4. Conclusions

Desktop assessment of the site indicated the proposed location to trigger the Strategic Cropping Land and be assigned as Agricultural Land Classification A land under overlay mapping 8 and class B/A1 under State mapping.

Field assessment under the guidance of the *Regional Land Suitability Frameworks for Queensland* (DSITI & DNRM, 2013) and *Guidelines for Agricultural Land Evaluation in Queensland* (DSITI & DNRM, 2015), indicated that the land has severe to extreme limitations to successfully establishing all cropping options assessed (Table 3 and Appendix 4: Land suitability assessment – land use). Additionally, the land was assessed as being severely limited to the establishment of successful grazing.

Forage reports generated by Long Paddock indicated that that proposed site has a *Mixed open forests on duplex and loam ironbark* (IB13) land type and has been determined to be in a class equivalent to Condition C. This report indicates a low number of livestock that the land can sustainably support over the long term: 7 LTCC (AE). Noting that this would be across the full property and not only the proportion of IB13 impacted by the proposed facility

Based on the ground truthing undertaken at the property, the proposed facility site is not considered to be high value agricultural land. Therefore, with land suitability identified for grazing native pastures only and based on a maximum footprint area of 6.46ha, the proposed facility results in minimal impact to agricultural productivity of the block.

Consideration should be given to the surrounding agricultural community, including the directly adjoining agricultural land. Verterra understands that the facility has been designed to ensure that no water will leave the site, thereby protecting natural waterway values, soil and vegetation resources, and the productivity of neighbouring agricultural land. It is also understood that all entering vehicles will be required to comply with biosecurity protocols to safeguard surrounding agricultural enterprises.

The south and east of the Northern Area are bordered by designated stock routes. The facility layout and infrastructure will be designed to accommodate and protect the continued function of these stock routes.

Soil analyses indicated a risk of dispersive soil, which should be mitigated during construction.

## References

- DNRME. (2013). *Regional Land Suitability Frameworks*. Department of Natural Resources and Mines and the Department of Science, Information Technology, Innovation and the Arts.
- DSITI. (2015). *Guidelines for Agricultural Land Evaluation in Queensland, Second Edition*. Department of Science, Information Technology and Innovation (DSITI) and the Department of Natural Resources and Mines (DNRM).
- Short TA. (2023). *Rehabilitated mined land suitability for beef cattle grazing in the Bowen Basin: Technical Paper 1*. Brisbane: Queensland Mine Rehabilitation Commissioner, Queensland Government.

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## Appendix 1: Soil cores

**Figure 8: Soil core from proposed disturbance footprint**



**Figure 9: Soil core from lowland/flood plain of property**



## Appendix 2: Soil analytes

Testing methods had consideration for *Soil Chemical Methods: Australasia* — the ‘green book’ (Rayment & Lyons 2010).

**Table 4: Soil analysis suite**

Parameter	Units	Method	Topsoil	Subsoil
<b>Physico-Chemical</b>				
Moisture content @ 105	%	R&L 2B1	✓	✓
pH 1:5 (Water)	pH	R&L 4A1	✓	✓
pH 1:5 (CaCl)	pH	R&L 4B1	✓	✓
Electrical conductivity 1:5	µS/cm	R&L 3A1	✓	✓
Texture (soil triangle)	NA	Aust Soil Triangle	✓	✓
Field texture & colour	NA	Northcote 79	✓	✓
Particle size analysis	%	Hydrometer &/or sieving	✓	✓
<b>Exchangeable Cations</b>				
Exchangeable cations (Ca, Mg, K, Na) & cation exchange capacity	cmol/kg	R&L 15A1/D3/E1	✓	✓
Exchangeable aluminium	cmol/kg	R&L 15G1	✓	✓
<b>Anions and Carbonates</b>				
Total carbonate	%	R&L 19A1	✓	✓
Chloride	mg/kg	R&L 5A2	✓	✓
<b>Nutrients and carbon</b>				
Ammonia (1:5 extract)	mg/kg	R&L 7C2b	✓	✓
Nitrite + nitrate (1:5 extract)	mg/kg	R&L 7B1/7C2b	✓	✓
Total nitrogen	mg/kg	R&L 7A5 (LECO)	✓	✓
Available phosphorus - Colwell	mg/kg	R&L 9B1/9B2/9A3a	✓	✓
Phosphorus Buffer Index (PBI)	Index	R&L 9I2b	✓	
Available potassium – Colwell	mg/kg	R&L 18A1	✓	
Sulphate – MCP/KCL	mg/kg	R&L 10B3/10D1	✓	✓
Organic carbon (W&B)	%	R&L 6A1	✓	✓
Organic matter (calc)	%	R&L 6A1	✓	
<b>Trace Elements</b>				
Boron – CaCl <sub>2</sub> extractable	mg/kg	R&L 12C1/C2	✓	
Zinc	mg/kg	R&L 12A1	✓	
Iron	mg/kg	R&L 12A1	✓	
Copper	mg/kg	R&L 12A1	✓	
Manganese	mg/kg	R&L 12A1	✓	

### Appendix 3: Laboratory results

- BYV\_footprint\_0to10cm
- BYV\_footprint\_40to50cm
- BYV\_flats\_0to10cm
- BYV\_flats\_40to50cm

DRAFT

**Report Number:** 812310

Verterra  
L14/97 Creek Street  
BRISBANE  
QLD 4000



Report Authorised  
Paul Kennelly  
Laboratory Manager

NATA Accredited Laboratory  
Number: 11958

<b>Sample Number:</b>	130930021	<b>Testing Period:</b>	21/10/2025 to 28/10/2025	<b>Date Sampled:</b>	17-Oct-2025
<b>Sample Name:</b>	BYV_Sample2_1a	<b>Test Code:</b>	GR-CT156	<b>Date Received:</b>	20-Oct-2025
<b>Purchase Order:</b>		Verterra Topsoil (GRAVEL)		<b>Date of Report:</b>	28-Oct-2025
<b>Grower Name:</b>	Glan Devon			<b>Sample Depth:</b>	0 to 10 cm
<b>Paddock Name:</b>	Glan Devon				

Analyte	Result	Units	Method Code
Available Potassium ^	160	mg/kg	04-026-ICP8
Calcium % of Cations	59	%	04-026-ICP8
Grass Tetany Risk Index ^	0.093		04-026-ICP8
Magnesium % of Cations	30	%	04-026-ICP8
Organic Matter (Carbon * 1.72) ^	2.3	%	04-054-WCALC
Potassium % of Cations	8.3	%	04-026-ICP8
pH (1:5 CaCl2)	5.4		04-031-PH
Organic Carbon (W&B)	1.33	%	04-018-UV1
Nitrate Nitrogen	3.2	mg/kg	04-063-FIA3
Ammonium Nitrogen	6.0	mg/kg	04-063-FIA3
Total Nitrogen (Combustion)	0.17	%	04-086-TN
Sulphur (KCl40)	2.8	mg/kg	04-021-ICP2
Phosphorus (Colwell)	8.3	mg/kg	04-013-COL_P
Phosphorus Buffer Index (PBI-Col)	120		04-020-ICP17
Potassium (Colwell)	250	mg/kg	04-044-COL_K
Potassium (Amm-acet.)	0.40	cmol(+)/kg	04-026-ICP8
Calcium (Amm-acet.)	2.8	cmol(+)/kg	04-026-ICP8
Magnesium (Amm-acet.)	1.5	cmol(+)/kg	04-026-ICP8
Sodium (Amm-acet.)	0.10	cmol(+)/kg	04-026-ICP8
Aluminium (KCl)	<9.0	mg/kg	04-027-ICP9
Aluminium (KCl)	<0.10	cmol(+)/kg	04-027-ICP9
Cation Exchange Capacity (Amm-acet.)	4.78	cmol(+)/kg	04-026-ICP8
Sodium % of cations	2.2	%	04-026-ICP8
Aluminium % of Cations	<1	%	04-026-ICP8
Calcium/Magnesium Ratio	1.9		04-026-ICP8
pH (1:5 Water)	6.4		04-031-PH
Electrical Conductivity (1:5 water)	0.04	dS/m	04-031-PH
Chloride	10	mg/kg	04-063-FIA3

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**Report Number:** 812310

<b>Sample Number:</b> 130930021	<b>Testing Period:</b> 21/10/2025 to 28/10/2025	<b>Date Sampled:</b> 17-Oct-2025
<b>Sample Name:</b> BYV_Sample2_1a	<b>Test Code:</b> GR-CT156	<b>Date Received:</b> 20-Oct-2025
<b>Purchase Order:</b>	Veterra Topsoil (GRAVEL)	<b>Date of Report:</b> 28-Oct-2025
<b>Grower Name:</b> Glan Devon		<b>Sample Depth:</b> 0 to 10 cm
<b>Paddock Name:</b> Glan Devon		

Analyte	Result	Units	Method Code
Copper (DTPA)	0.64	mg/kg	04-024-ICP6
Zinc (DTPA)	7.6	mg/kg	04-024-ICP6
Manganese (DTPA)	89	mg/kg	04-024-ICP6
Iron (DTPA)	69	mg/kg	04-024-ICP6
Boron (Hot CaCl2)	0.28	mg/kg	04-025-ICP7
Phosphorus Environmental Risk Index ^	0.07		04-020-ICP17
Sand (Coarse) ^	67.4	%	04-001-SANSILCLAY
Sand (Fine) ^	12.4	%	04-001-SANSILCLAY
Gravel (>2mm) ^	7.9	%	04-088-GRAVEL
Silt ^	10.1	%	04-001-SANSILCLAY
Clay ^	10.1	%	04-001-SANSILCLAY
Texture (Calculated) ^			04-001-SANSILCLAY
Total Aluminium ^	2.2	%	04-085-ICP28
Total Calcium ^	0.093	%	04-085-ICP28
Total Copper ^	30	mg/kg	04-085-ICP28
Total Iron ^	150000	mg/kg	04-085-ICP28
Total Potassium ^	0.092	%	04-085-ICP28
Total Magnesium ^	0.053	%	04-085-ICP28
Total Manganese ^	5300	mg/kg	04-085-ICP28
Total Sodium ^	0.0053	%	04-085-ICP28
Total Phosphorus ^	0.088	%	04-085-ICP28
Total Sulphur ^	0.012	%	04-085-ICP28
Total Zinc ^	56	mg/kg	04-085-ICP28
Total Nickel ^	53	mg/kg	04-085-ICP28

Sample condition on receipt      Suitable for testing.

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Report Number: 812208

Verterra  
L14/97 Creek Street  
BRISBANE  
QLD 4000



Report Authorised  
Paul Kennelly  
Laboratory Manager

NATA Accredited Laboratory  
Number: 11958

<b>Sample Number:</b>	130930020	<b>Testing Period:</b>	21/10/2025 to 27/10/2025	<b>Date Sampled:</b>	17-Oct-2025
<b>Sample Name:</b>	BYV_Sample2_1b	<b>Test Code:</b>	GR-CT157	<b>Date Received:</b>	20-Oct-2025
<b>Purchase Order:</b>		Verterra Subsoil (GRAVEL)		<b>Date of Report:</b>	27-Oct-2025
<b>Grower Name:</b>	Glan Devon			<b>Sample Depth:</b>	40 to 50 cm
<b>Paddock Name:</b>	Glan Devon				

Analyte	Result	Units	Method Code
Available Potassium ^	38	mg/kg	04-026-ICP8
Calcium % of Cations	28	%	04-026-ICP8
Grass Tetany Risk Index ^	0.018		04-026-ICP8
Magnesium % of Cations	64	%	04-026-ICP8
Potassium % of Cations	1.7	%	04-026-ICP8
pH (1:5 CaCl <sub>2</sub> )	6.0		04-031-PH
Potassium (Amm-acet.)	0.096	cmol(+)/kg	04-026-ICP8
Calcium (Amm-acet.)	1.6	cmol(+)/kg	04-026-ICP8
Magnesium (Amm-acet.)	3.6	cmol(+)/kg	04-026-ICP8
Sodium (Amm-acet.)	0.34	cmol(+)/kg	04-026-ICP8
Aluminium (KCl)	<9.0	mg/kg	04-027-ICP9
Aluminium (KCl)	<0.10	cmol(+)/kg	04-027-ICP9
Cation Exchange Capacity (Amm-acet.)	5.69	cmol(+)/kg	04-026-ICP8
Sodium % of cations	5.9	%	04-026-ICP8
Aluminium % of Cations	<1	%	04-026-ICP8
Calcium/Magnesium Ratio	0.44		04-026-ICP8
pH (1:5 Water)	7.1		04-031-PH
Electrical Conductivity (1:5 water)	0.03	dS/m	04-031-PH
Sand (Coarse) ^	47.6	%	04-001-SANSILCLAY
Sand (Fine) ^	12.5	%	04-001-SANSILCLAY
Gravel (>2mm) ^	6.8	%	04-088-GRAVEL
Silt ^	12.5	%	04-001-SANSILCLAY
Clay ^	27.4	%	04-001-SANSILCLAY
Texture (Calculated) ^			04-001-SANSILCLAY

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**Report Number:** 812208

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Report Number: 812311

Verterra  
L14/97 Creek Street  
BRISBANE  
QLD 4000



Report Authorised  
Paul Kennelly  
Laboratory Manager

NATA Accredited Laboratory  
Number: 11958

<b>Sample Number:</b>	130930023	<b>Testing Period:</b>	21/10/2025 to 28/10/2025	<b>Date Sampled:</b>	17-Oct-2025
<b>Sample Name:</b>	BYV_Footprint_1a	<b>Test Code:</b>	GR-CT156	<b>Date Received:</b>	20-Oct-2025
<b>Purchase Order:</b>		Verterra Topsoil (GRAVEL)		<b>Date of Report:</b>	28-Oct-2025
<b>Grower Name:</b>	Glan Devon			<b>Sample Depth:</b>	0 to 10 cm
<b>Paddock Name:</b>	Glan Devon				

Analyte	Result	Units	Method Code
Available Potassium ^	360	mg/kg	04-026-ICP8
Calcium % of Cations	45	%	04-026-ICP8
Grass Tetany Risk Index ^	0.18		04-026-ICP8
Magnesium % of Cations	38	%	04-026-ICP8
Organic Matter (Carbon * 1.72) ^	3.7	%	04-054-WCALC
Potassium % of Cations	15	%	04-026-ICP8
pH (1:5 CaCl2)	5.1		04-031-PH
Organic Carbon (W&B)	2.14	%	04-018-UV1
Nitrate Nitrogen	2.4	mg/kg	04-063-FIA3
Ammonium Nitrogen	3.6	mg/kg	04-063-FIA3
Total Nitrogen (Combustion)	0.17	%	04-086-TN
Sulphur (KCl40)	3.9	mg/kg	04-021-ICP2
Phosphorus (Colwell)	7.2	mg/kg	04-013-COL_P
Phosphorus Buffer Index (PBI-Col)	79		04-020-ICP17
Potassium (Colwell)	470	mg/kg	04-044-COL_K
Potassium (Amm-acet.)	0.93	cmol(+)/kg	04-026-ICP8
Calcium (Amm-acet.)	2.8	cmol(+)/kg	04-026-ICP8
Magnesium (Amm-acet.)	2.4	cmol(+)/kg	04-026-ICP8
Sodium (Amm-acet.)	0.12	cmol(+)/kg	04-026-ICP8
Aluminium (KCl)	<9.0	mg/kg	04-027-ICP9
Aluminium (KCl)	<0.10	cmol(+)/kg	04-027-ICP9
Cation Exchange Capacity (Amm-acet.)	6.25	cmol(+)/kg	04-026-ICP8
Sodium % of cations	2.0	%	04-026-ICP8
Aluminium % of Cations	<1	%	04-026-ICP8
Calcium/Magnesium Ratio	1.2		04-026-ICP8
pH (1:5 Water)	6.2		04-031-PH
Electrical Conductivity (1:5 water)	0.07	dS/m	04-031-PH
Chloride	33	mg/kg	04-063-FIA3

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Report Number: 812311

<b>Sample Number:</b> 130930023	<b>Testing Period:</b> 21/10/2025 to 28/10/2025	<b>Date Sampled:</b> 17-Oct-2025
<b>Sample Name:</b> BYV_Footprint_1a	<b>Test Code:</b> GR-CT156	<b>Date Received:</b> 20-Oct-2025
<b>Purchase Order:</b>	Veterra Topsoil (GRAVEL)	<b>Date of Report:</b> 28-Oct-2025
<b>Grower Name:</b> Glan Devon		<b>Sample Depth:</b> 0 to 10 cm
<b>Paddock Name:</b> Glan Devon		

Analyte	Result	Units	Method Code
Copper (DTPA)	0.81	mg/kg	04-024-ICP6
Zinc (DTPA)	5.5	mg/kg	04-024-ICP6
Manganese (DTPA)	100	mg/kg	04-024-ICP6
Iron (DTPA)	74	mg/kg	04-024-ICP6
Boron (Hot CaCl2)	0.78	mg/kg	04-025-ICP7
Phosphorus Environmental Risk Index ^	0.09		04-020-ICP17
Sand (Coarse) ^	45.7	%	04-001-SANSILCLAY
Sand (Fine) ^	22.4	%	04-001-SANSILCLAY
Gravel (>2mm) ^	13.4	%	04-088-GRAVEL
Silt ^	17.9	%	04-001-SANSILCLAY
Clay ^	14.0	%	04-001-SANSILCLAY
Texture (Calculated) ^			04-001-SANSILCLAY
Total Aluminium ^	1.8	%	04-085-ICP28
Total Calcium ^	0.099	%	04-085-ICP28
Total Copper ^	19	mg/kg	04-085-ICP28
Total Iron ^	90000	mg/kg	04-085-ICP28
Total Potassium ^	0.15	%	04-085-ICP28
Total Magnesium ^	0.083	%	04-085-ICP28
Total Manganese ^	3300	mg/kg	04-085-ICP28
Total Sodium ^	0.0067	%	04-085-ICP28
Total Phosphorus ^	0.059	%	04-085-ICP28
Total Sulphur ^	0.018	%	04-085-ICP28
Total Zinc ^	29	mg/kg	04-085-ICP28
Total Nickel ^	36	mg/kg	04-085-ICP28

Sample condition on receipt    Suitable for testing.

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Report Number: 812232

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Report Authorised  
Paul Kennelly  
Laboratory Manager

NATA Accredited Laboratory  
Number: 11958

<b>Sample Number:</b> 130930022	<b>Testing Period:</b> 21/10/2025 to 27/10/2025	<b>Date Sampled:</b> 17-Oct-2025
<b>Sample Name:</b> BYV_Footprint_1b	<b>Test Code:</b> GR-CT157	<b>Date Received:</b> 20-Oct-2025
<b>Purchase Order:</b>	Veterra Subsoil (GRAVEL)	<b>Date of Report:</b> 27-Oct-2025
<b>Grower Name:</b> Glan Devon		<b>Sample Depth:</b> 40 to 50 cm
<b>Paddock Name:</b> Glan Devon		

Analyte	Result	Units	Method Code
Available Potassium ^	57	mg/kg	04-026-ICP8
Calcium % of Cations	0.28	%	04-026-ICP8
Grass Tetany Risk Index ^	0.012		04-026-ICP8
Magnesium % of Cations	64	%	04-026-ICP8
Potassium % of Cations	0.80	%	04-026-ICP8
pH (1:5 CaCl <sub>2</sub> )	6.0		04-031-PH
Potassium (Amm-acet.)	0.14	cmol(+)/kg	04-026-ICP8
Calcium (Amm-acet.)	0.051	cmol(+)/kg	04-026-ICP8
Magnesium (Amm-acet.)	12	cmol(+)/kg	04-026-ICP8
Sodium (Amm-acet.)	6.2	cmol(+)/kg	04-026-ICP8
Aluminium (KCl)	<9.0	mg/kg	04-027-ICP9
Aluminium (KCl)	<0.10	cmol(+)/kg	04-027-ICP9
Cation Exchange Capacity (Amm-acet.)	18.0	cmol(+)/kg	04-026-ICP8
Sodium % of cations	35	%	04-026-ICP8
Aluminium % of Cations	<1	%	04-026-ICP8
Calcium/Magnesium Ratio	0.0043		04-026-ICP8
pH (1:5 Water)	6.8		04-031-PH
Electrical Conductivity (1:5 water)	0.63	dS/m	04-031-PH
Sand (Coarse) ^	23.2	%	04-001-SANSILCLAY
Sand (Fine) ^	15.4	%	04-001-SANSILCLAY
Gravel (>2mm) ^	9.8	%	04-088-GRAVEL
Silt ^	9.8	%	04-001-SANSILCLAY
Clay ^	51.6	%	04-001-SANSILCLAY
Texture (Calculated) ^			04-001-SANSILCLAY

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**Report Number:** 812232

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## Appendix 4: Land suitability assessment – land use

Asparagus-Spray Irrigated	Peanut-Spray Irrigated
Avocado-Spray Irrigated	Pecan-Spray Irrigated
Barley-Dryland	Pineapple-Spray Irrigated
Beans-Spray Irrigated	Potato-Furrow Irrigated
Brassicaceae-Trickle Irrigated	Potato-Spray Irrigated
Capsicum-Trickle Irrigated	Radiata pine-Dryland/rainfed
Chickpea-Furrow Irrigated	Safflower-Furrow Irrigated
Chickpea-Spray Irrigated	Safflower-Spray Irrigated
Citrus-Spray Irrigated	Sorghum (cereal)-Dryland
Cotton-Furrow Irrigated	Sorghum (cereal)-Furrow Irrigated
Cucurbit-Furrow Irrigated	Sorghum (cereal)-Spray Irrigated
Cucurbit-Spray Irrigated	Sorghum (forage)-Dryland
Grapes-Trickle Irrigated	Sorghum (forage)-Furrow Irrigated
Improved Pasture-Spray Irrigated	Sorghum (forage)-Spray Irrigated
Lucerne-Dryland	Soya Bean-Dryland
Lucerne-Spray Irrigated	Soya Bean-Furrow Irrigated
Lychee-Spray Irrigated	Soya Bean-Spray Irrigated
Macadamia-Spray Irrigated	Stone Fruit-Spray Irrigated
Maize-Furrow Irrigated	Sugarcane-Furrow Irrigated
Maize-Spray Irrigated	Sugarcane-Spray Irrigated
Mango-Spray Irrigated	Sunflower-Dryland
Mungbean-Dryland	Sunflower-Furrow Irrigated
Mungbean-Furrow Irrigated	Sunflower-Spray Irrigated
Mungbean-Spray Irrigated	Sweet Corn-Spray Irrigated
Navy Bean-Dryland	Sweet Potato-Spray Irrigated
Navy Bean-Furrow Irrigated	Tomato-Trickle Irrigated
Navy Bean-Spray Irrigated	Wheat-Dryland
Peanut-Dryland	Zucchini-Trickle Irrigated
Peanut-Furrow Irrigated	

## Appendix 5: Long Paddock forage report

- ForageCarryingCapacityReport\_glandevon\_15Aug2025

DRAFT

## Summary of estimated LTCC (fully watered)

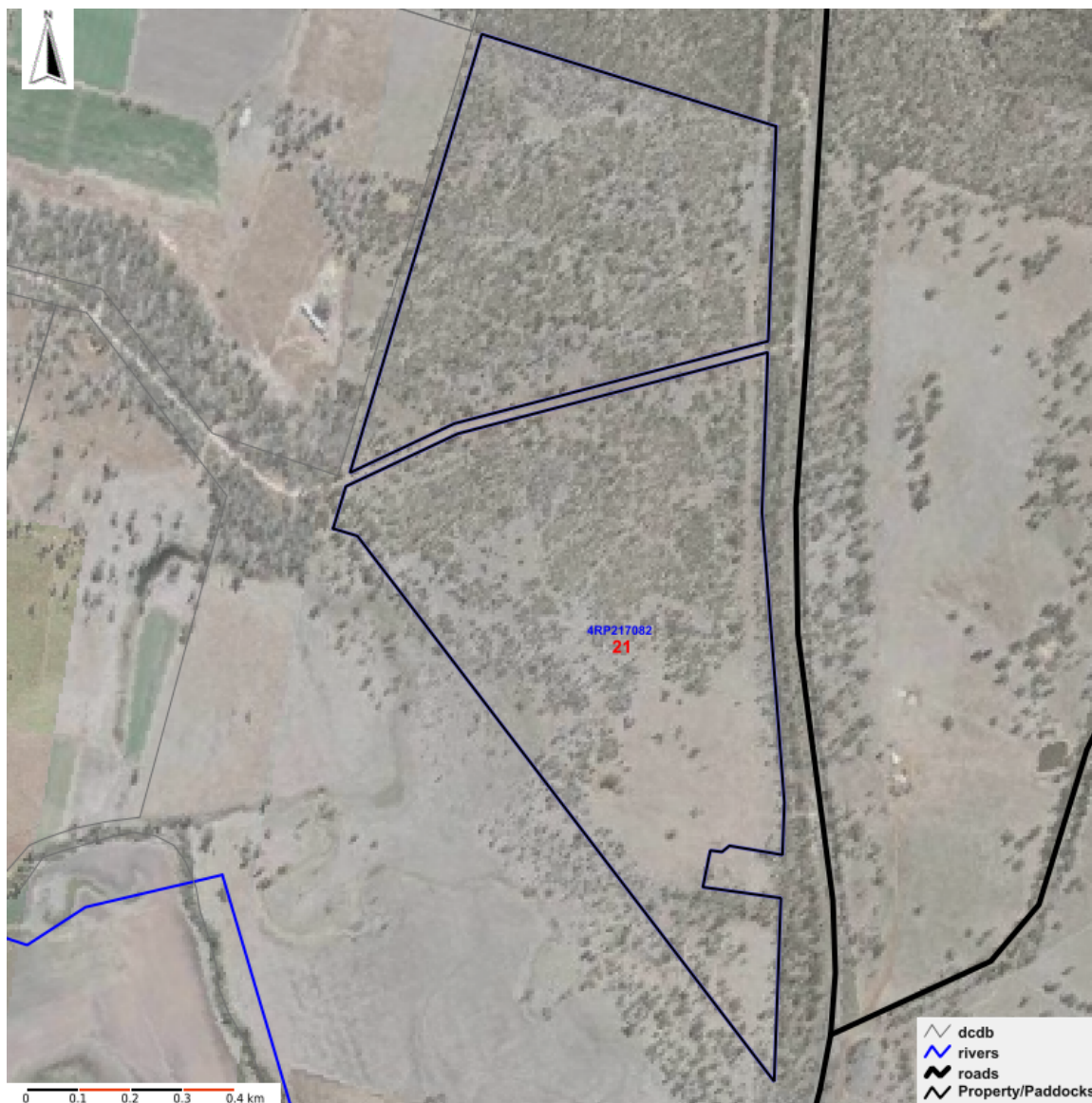
Land condition	LTCC (AE)	LTCC (Ha/AE)
A	21 ( 17 to 26)	4.7 (3.7 to 5.7)
B	16	6.2
C	10	11.6
D	4	23.3
User defined condition	N/A	N/A

Estimated long-term average feral animal and kangaroo equivalents for selected property or areas: 0 AE

## Location map



## Estimated LTCC (AE) for selected areas under best ('A') land condition



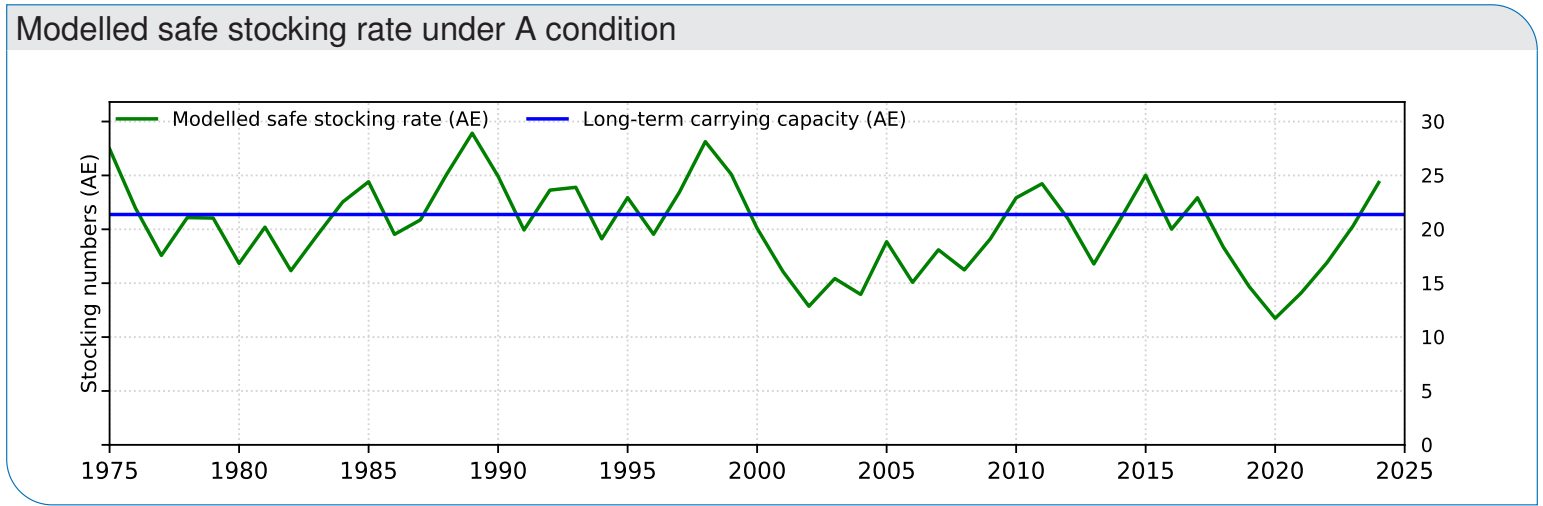
## About the report

This report presents the estimated "long-term carrying capacity" (LTCC) for the property of interest. LTCC in this report refers to "number of livestock that a paddock or property can support over a long period (decades) without causing land degradation". The purpose of the report is to provide an objectively estimated LTCC for the property which can be used as a starting point for discussion and to add input for further analysis (i.e. use spreadsheet supplied along with this report to improve the LTCC estimates).

In this report, the LTCC is measured as the total adult equivalents (AEs; 450 kg cattle consuming 8kg DM/day) that can be safely carried for a paddock or property and is also shown as hectares required per AE unit. The calculation of the LTCC is based on a number of factors, including: the long-term median annual pasture growth; the safe utilisation rate of the pastures; the distance to watering points; topography and tree density. Pasture growth is calculated from the GRASP model using parameters for grazing land management (GLM) land types, the tree density on the property and the historical climate data for the property of interest (sourced from the SILO climate database - <https://www.longpaddock.qld.gov.au/silo/>). The report considers the grazing systems to be of a 'continuous' style comprising native pastures (with no introduced legumes or supplementation usage) and that pastures are 'fully rundown' following clearing.

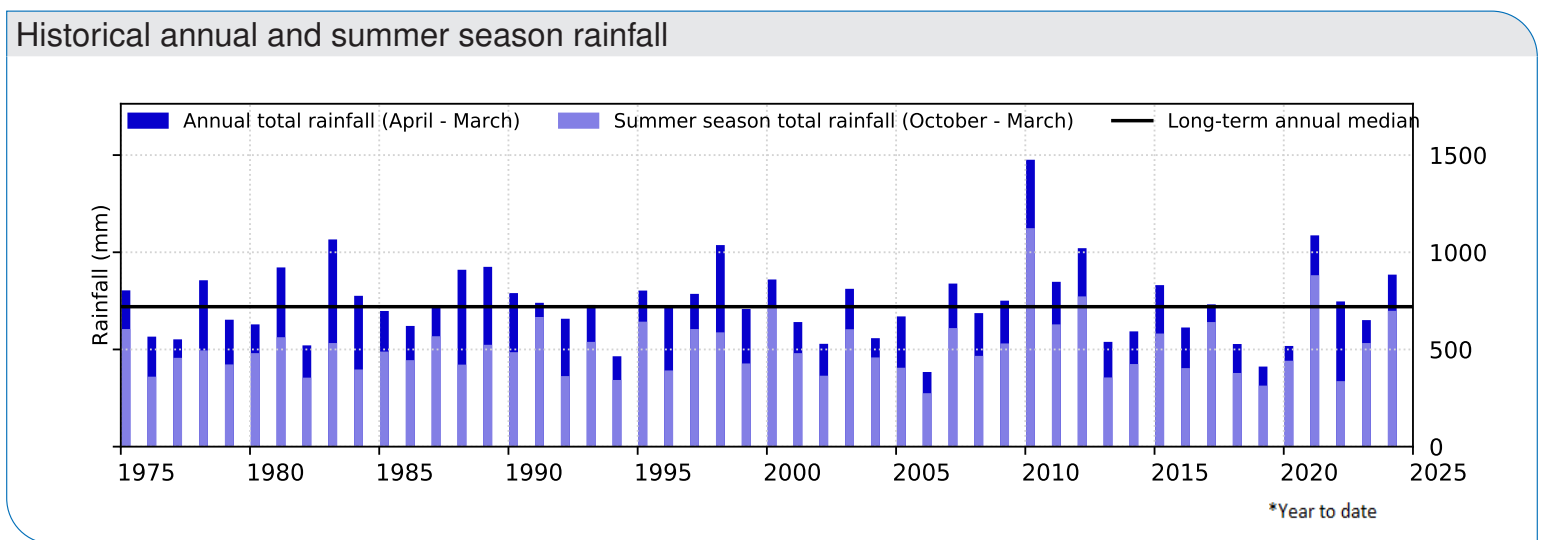
Pasture utilisation by livestock is set at a rate that is not likely to cause long-term property degradation and to allow recovery after drought. For Mulga land types, livestock consumption of "topfeed" (i.e. feeding mulga leaves) is considered in the calculation of the LTCC. Introduced pasture species such as buffel grass will show an improved pasture response output if the buffel grass option is selected at request. However, stylos, pasture irrigation and fertiliser application are not considered in the pasture growth calculation. It is assumed that livestock have full water access adjacent to pastures. The annual feed intake for an AE is set as 2920 kg/year.

Note: Values given for the LTCC are an indication only, significant management of property grazing pressure is still required on a season-to-season basis (i.e. forage budgeting).



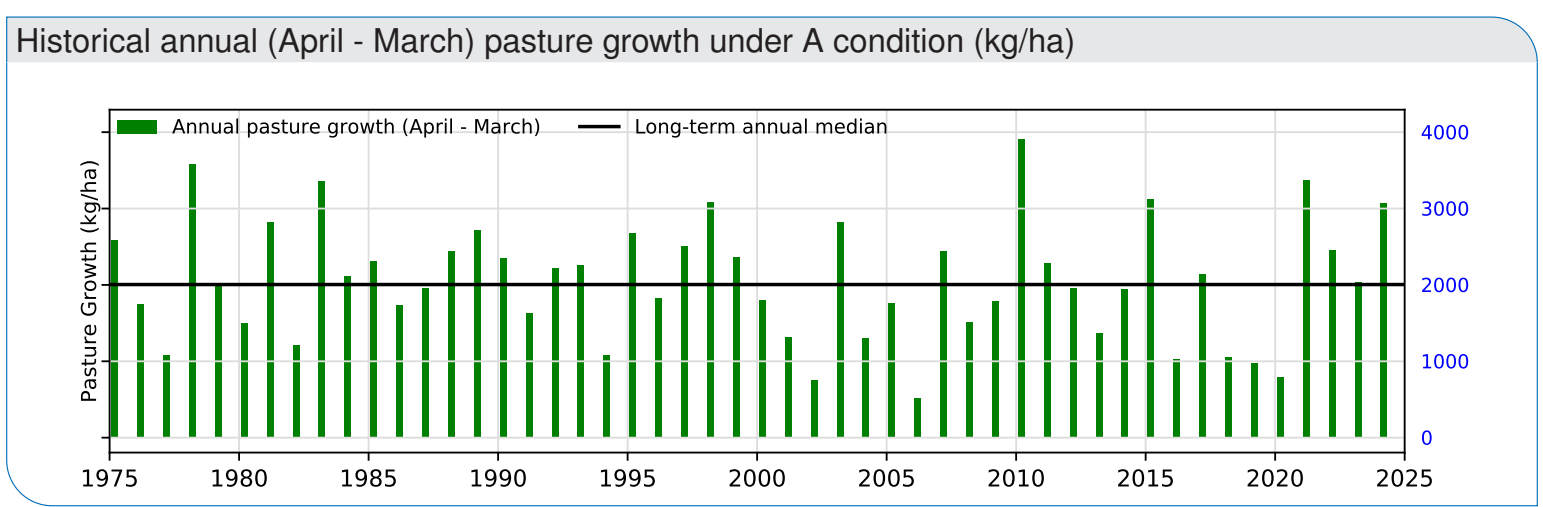
### About the modelled safe stocking rate graph

The above graph shows the modelled historical annual (Apr-Mar) safe stocking rates for the property. The safe stocking rate calculations are based on a number of factors including: the modelled LTCC; the safe utilisation rate defined for each land type; and a set of rules to increase/decrease the stocking rate in response to changing climate.



### About the historical annual and summer season rainfall graph

The historical annual and summer season rainfall graph for the requested property is derived from the SILO database (<https://www.longpaddock.qld.gov.au/silo/>). Summer season rainfall is defined as rainfall during October to March. The long-term median rainfall is for a period from 1975 to the current year. The high year to year variability is a normal characteristic of Queensland rainfall.



### About the historical annual pasture growth graph

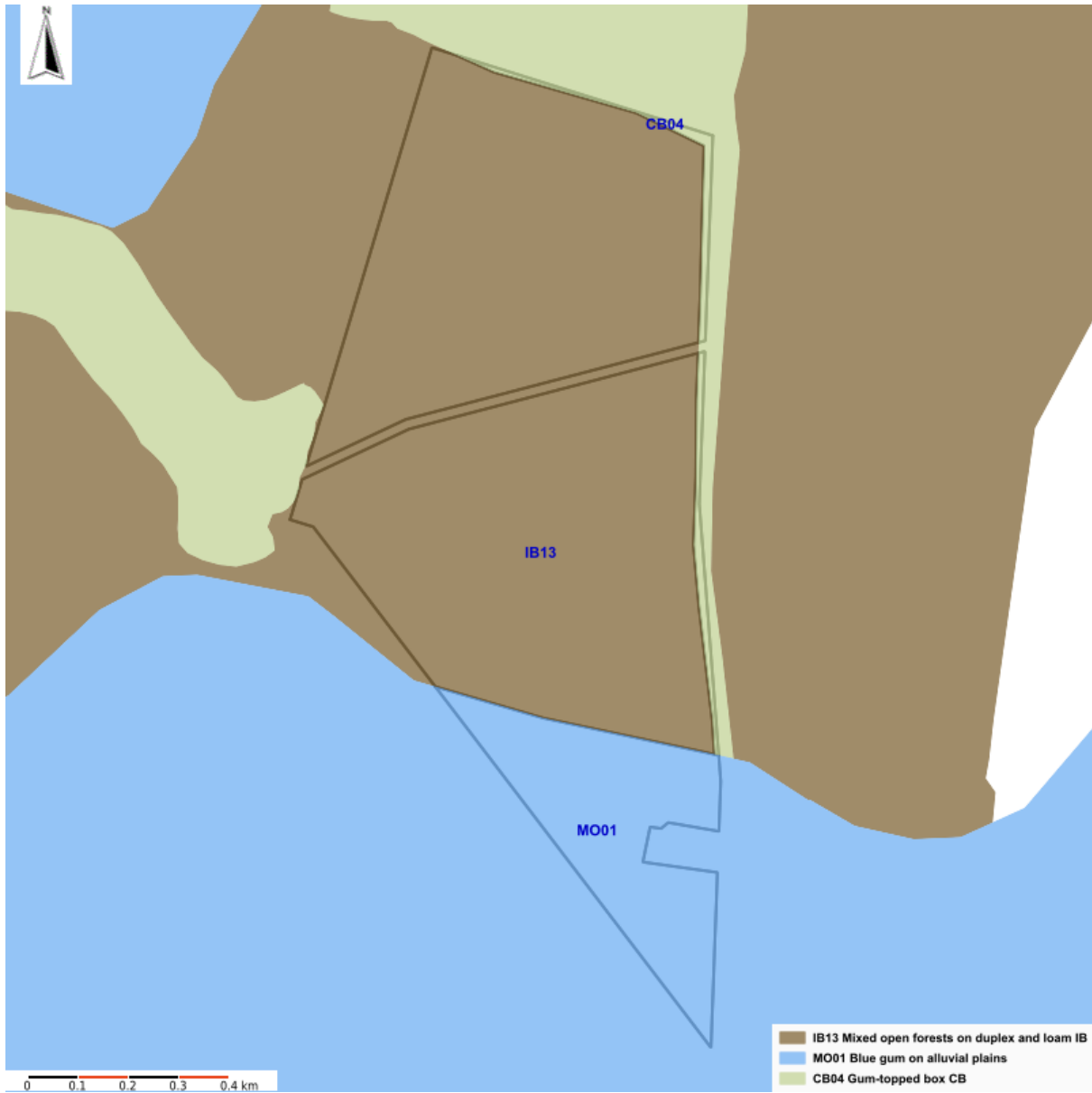
The historical annual pasture growth (April - March) is an area-weighted average across the property for each land type and foliage projective cover (FPC) level. The long-term median annual pasture growth is for a period from 1975 to the current year. The overall rainfall use efficiency for this property is approximately 2.8 kg DM/ha/mm rainfall.



## Long-term carrying capacity summary for paddocks/land parcels

Paddock name	Total area (ha)	Area considered not grazed (ha)	LTCC (AE)				LTCC (Ha/AE)			
			A	B	C	D	A	B	C	D
4RP217082	99.6	0.0	21	16	10	4	4.7	6.2	10.4	23.3
Total/mean	99.6	0.0	21	16	10	4	4.7	6.2	10.4	23.3

Property land types

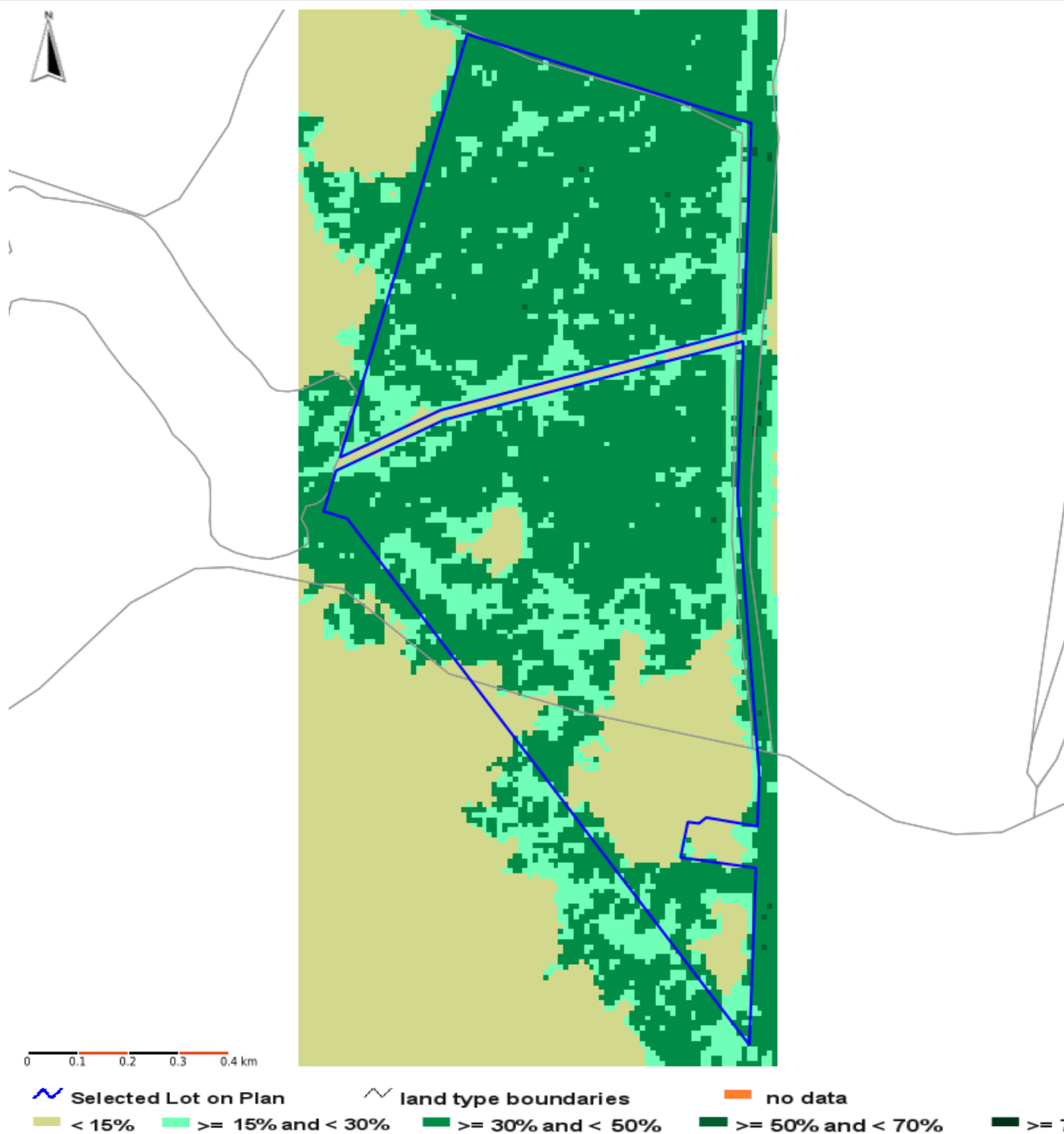


Summary of the land types and corresponding long-term carrying capacity

Land type code and name	Land type area (ha)	Percent area FPC<15	LTCC (AE)				LTCC (Ha/AE)		Median growth* (kg/ha/year)
			A	B	C	D	A		
IB13 - Mixed open forests on duplex and loam IB	82.7	6.6	15	11	7	3	5.5	1,784	
MO01 - Blue gum on alluvial plains	15.1	58.1	6	5	3	1	2.5	3,390	
CB04 - Gum-topped box CB	1.7	0.0	0	0	0	0	13.5	700	
Total/mean	100	N/A	21	16	10	4	4.7	2,009	

\* Growth in any land type may be strongly impacted by local tree density.

Estimated foliage projective cover (FPC)



About the foliage projective cover (FPC) map

The map presents estimated FPC information obtained from satellite data (2022) for the selected paddocks/land parcels (for more information see FORAGE FPC report). The map shows both the different classes of FPC and the land type information for the area selected. Areas with greater than 15 percent FPC are classed as woody vegetation cover, whereas areas with less than 15 percent FPC are classed as non-woody vegetation cover. Users may be more familiar with tree density being expressed as tree basal area (TBA). As a guide, for mature tree communities, FPC thresholds of 15, 30 and 70 percent equate to tree basal area of approximately 6, 12 and 32 m<sup>2</sup>/ha respectively.

Disclaimer

Limitation of liability: the State of Queensland, as represented by the Department of the Environment, Tourism, Science and Innovation (DETSI) gives no warranty in relation to the data (including without limitation, accuracy, reliability, completeness or fitness for a particular purpose). To the maximum extent permitted by applicable law, in no event shall DETSI be liable for any special, incidental, indirect, or consequential damages whatsoever (including, but not limited to, damages for loss of profits or confidential or other information, for business interruption, for personal injury, for loss of privacy, for failure to meet any duty including of good faith or of reasonable care, for negligence, and for any other pecuniary or other loss whatsoever including, without limitation, legal costs on a solicitor own client basis) arising out of, or in any way related to, the use of or inability to use the data. ©The State of Queensland, 2025.



## Notes and information

### Please Note:

- The LTCC report is currently in a prototype stage, with ongoing refinements being made.
- The report is designed as a starting point for discussion regarding the number of livestock a property can carry in the long-term (decades), without reducing land condition.
- The report is not designed as a tool to set valuations and the information in the LTCC report is indicative only.
- The current report considers the grazing systems to be of a 'continuous' style comprising native pastures (with no introduced legumes or supplementation usage) and that pastures are 'fully rundown' following clearing. Several land types will show an improved pasture response if the 'buffel grass' option is selected when the report was requested. LTCC estimates for certain land type(s) on a property will be listed if considered inaccurate for reasons such as flooding or a limited understanding of the grazing system. The property/area selected is considered fully watered (i.e. stock [cattle] access within 3km).
- A dynamic property mapping tool (MyFORAGE: <https://longpaddock.qld.gov.au/forage/myforage/>) is available so that the user can change land types (if considered incorrect) and can also include information (such as buffel pastures and distance to water) that may be made more specific at the property location.
- As the LTCC report is a desktop analysis (and an estimation), on-ground assessment is recommended/necessary for best awareness and accuracy.

### Information relating to the Long-term carrying capacity report:

- The LTCC report uses the current version of Grazing Land Management (GLM) land type mapping (updated February 2019) and the approximate area of each land type with the selected area. Land types are areas of grazing land with similar soil, vegetation and capacity to produce useful feed. For further information on GLM land types, go to <https://futurebeef.com.au/resources/land-types-of-queensland/>.
- Land condition is a measure of the health of grazing lands and directly related to carrying capacity, livestock production and profitability of a grazing enterprise. For more information on land condition, see <https://futurebeef.com.au/resources/land-condition/>.