



BEGA URBAN LAND RELEASE PLANNING PROPOSAL

AGRICULTURE ASSESSMENT &
LAND USE CONFLICT RISK ASSESSMENT

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1. INTRODUCTION

1.1 OVERVIEW

Minesoils Pty Ltd (Minesoils) was engaged by ADW Johnson Pty Ltd on behalf of Bega Valley Shire Council to conduct an agricultural impact assessment and a land use conflict risk assessment (LUCRA) to inform a planning proposal for the Bega Urban Land Release Planning Proposal (herein referred to as 'the Project'), located immediately south of Bega, New South Wales (refer **Figure 1**).

1.2 THE PROJECT

The aim of the Project is to rezone land for new urban neighbourhoods that will provide for diversity of housing choice and meet demand for existing and emerging residential accommodation types in the Bega Valley Shire.

The Project will implement the amendments to the Bega Valley Local Environmental Plan 2013 to facilitate development of land within the identified new neighbourhoods within the Bega urban release areas including:

- Rezoning of the identified land release areas in Bega to designate which parts of the areas are for development of low and medium density housing and which parts are for recreation, environmental protection, commercial, industrial or community use.
- Implementation of associated development standards such as lot size, floor space ratio, height of buildings, heritage conservation areas and any required local clauses.

The objectives of the Project are to:

- Accelerate the development of urban release areas in Bega to meet current and future housing needs
- Address house price increases associated with supply shortfalls in the area
- Achieve a resilient shire by planning for growth in a way that protects our natural systems, prepares for natural hazards and creates liveable and connected places
- Ensure future homes are diverse, affordable and appropriate
- Implement the recommendations of the Bega Structure Plan
- Achieve the objectives of the Bega Valley Shire Residential Land and Affordable Housing Strategies.

1.3 THE STUDY AREA

The area subject to the Project covers 217 ha (hereafter referred to as the Study Area) and consists of three precincts identified as being suitable for residential, commercial, retail and open space requirements:

- Bega Eastern Precinct (covering 114 ha) is bounded by the Princes Highway along its western boundary, and low - lying rural production land which is flood affected to its east. There is established detached residential development to the north of the Bega study area (East) and the new Bega – South East Regional Hospital.
- Bega Central Precinct (covering 18 ha) to the north-west of the eastern precinct, currently contains a combination of light industry, commercial and rural residential land uses and has been identified for its development opportunities for uses which are complimentary to the regional hospital and light industry.
- Bega Western Precinct (covering 85 ha) to the is bounded by the Princes Highway to the east and the Bega River to the west and is largely undeveloped, with some pockets of large lot residential development and historic rural living / industries on large parcels.

The Study Area and the above listed precincts are shown on **Figure 2**.

The Study Area has predominantly been historically utilised for agricultural practices with evidence of broad native vegetation modification resulting from extensive clearing and agricultural land use.



1.4 SCOPE OF WORK

The Minesoils scope of work has been designed to address agriculture related Project considerations and the Department of Primary Industries (DPI) – Agriculture recommended project assessment requirements. The Minesoils scope of works consists of the following items:

1. An agricultural assessment that considers the agricultural productive value of the land, as well as anticipated impacts to agricultural resources, enterprises and industry as a result of the project, including potential impacts on the dairy farming operations occurring to the east of the Project.
2. A Land Use Conflict Risk Assessment (LUCRA) in accordance with the NSW Department of Primary Industries (2011) *Land and Use Conflict Risk Assessment Guide* that considers any potential land use conflicts between proposed urban zones and adjoining rural zoned land.

1.5 ASSESSMENT APPROACH

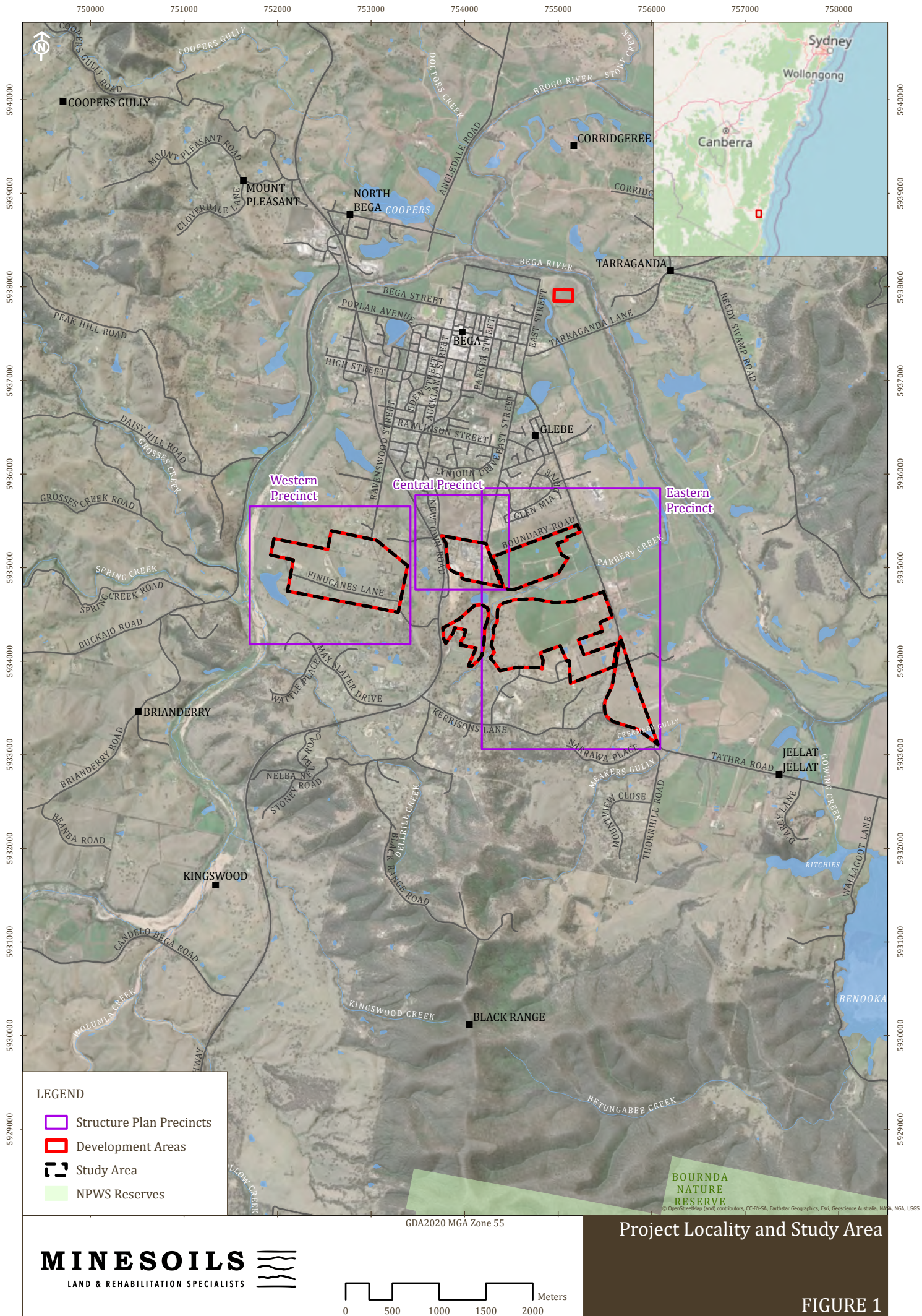
An agricultural assessment and LUCRA must be to a level of assessment which is proportionate to the agricultural capability and activities of the land and the anticipated impacts of the Project. Minesoils approach includes the level of detail as described in **Table 1**, which Minesoils considers appropriate and justified based on the scale of the Project and the impacts anticipated. This approach informs the report structure.

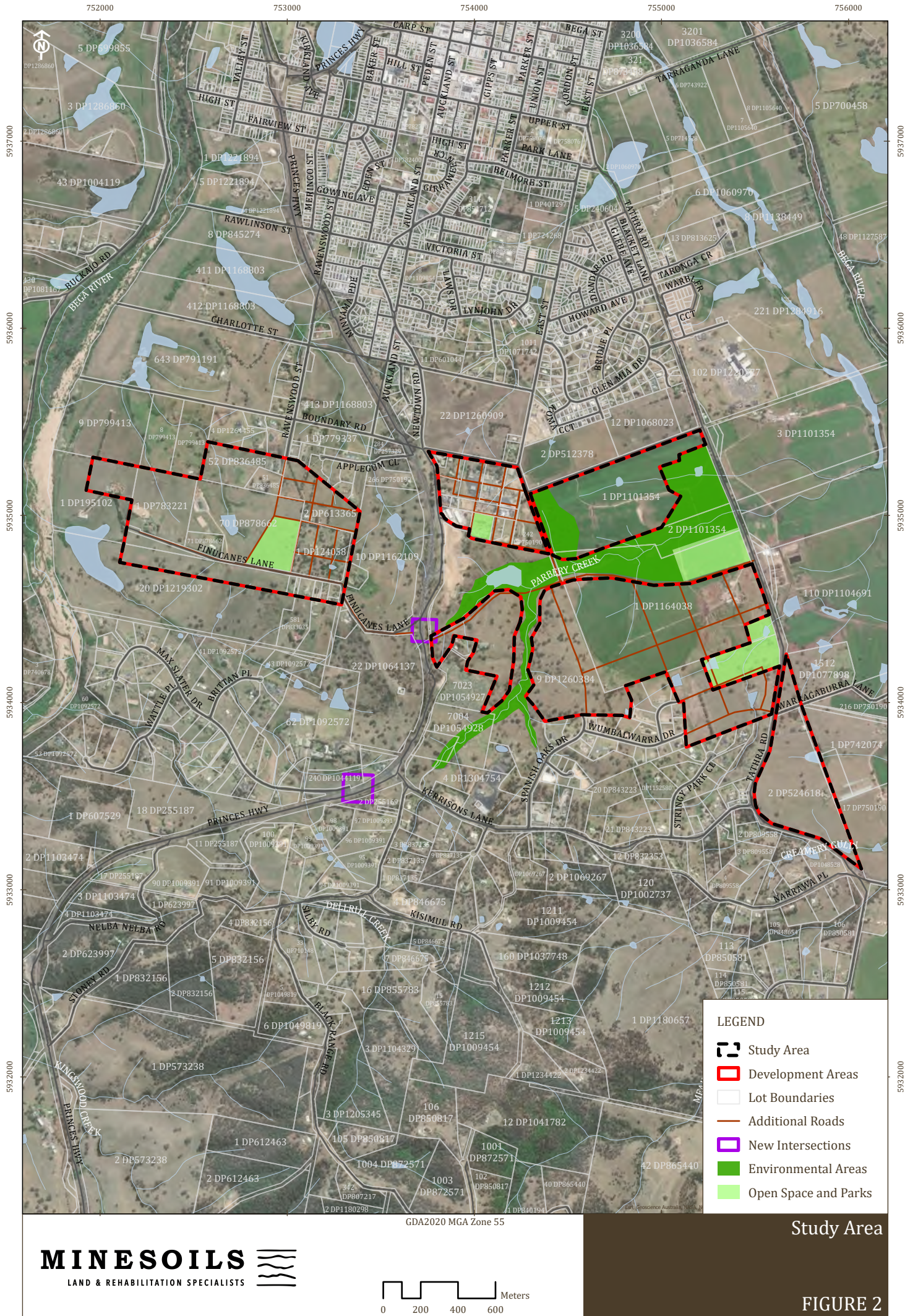
Direct consultation to inform this assessment was undertaken with land managers regarding current and historical management of land and agricultural practices on the Study Area and its surrounds, and the potential effects on current enterprises, neighbouring properties, local industries and support services as a result to changes to agricultural land use in the Study Area.

Table 1: Assessment Approach

Assessment	Content and form	Section Addressed
Project description	Description of the project and purpose of report, and includes a map of the Project locality and Study Area.	1
Regional context	Description of the regional context, including climate and rainfall, regional landform, regional land use including significant agricultural industries and/or infrastructure.	2
Site characteristics and land use description	Description of the nature and location of agricultural land with the potential to be impacted by the development. Description of the current agricultural status and productivity of the proposed development area and surrounding locality including regional mapping of soil data.	3
LUCRA assessment	Conduct an assessment of potential land use conflicts, including completion of an assessment in accordance with the Department of Industries' <i>Land Use Conflict Risk Assessment Guide</i> .	4 (Appendix 1)
Impacts on agricultural land	Identify and description of the nature, duration and consequence of potential impacts on agricultural land subject to Project at the level of the Project site and in the wider region.	5







2 REGIONAL CONTEXT

2.1 CLIMATE AND RAINFALL

The Study Area lies within the South East and Tablelands region of NSW. The topography of the region results in a large range of climates. It is relatively wet close to the coast and Snowy Mountains, and drier inland. It is hot in summer in northern inland areas and very cold in winter in the Snowy Mountains. Milder conditions are found along the coast, with cooler temperatures in summer and warmer temperatures in winter (NSW Office of Environment and Heritage, 2014).

The region experiences a distinct seasonal variation in temperature. In summer, average daily maximum temperatures range from over 30°C in the north-west to below 18°C in the Snowy Mountains. Temperature extremes, both hot and cold, occur infrequently but can impact agriculture (NSW Office of Environment and Heritage, 2014).

Rainfall varies considerably across the South East and Tablelands Region. This variability is due to the complex interactions between weather patterns in the region, the influence of larger-scale climate patterns such as El Niño Southern Oscillation, the topography of the Snowy Mountains and Great Dividing Range and the influence of sea surface temperature near the coast (NSW Office of Environment and Heritage, 2014).

At the scale of the Bega Valley Shire, the climate is temperate with strong seasonality and exposure to a range of climate factors. There is slightly higher rainfall in the northern and southern part of the Shire, and slightly lower values in between. The rainfall is distributed approximately evenly across the four seasons, with largest rainfall totals in the summer (Bega Valley Shire, 2024). The climate is generally suitable for a range of agricultural enterprises including permanent and annual horticulture, cropping enterprises, and improved perennial and native pastures.

The closest Bureau of Meteorology (BOM) weather station to the Study Area is the Bega Automatic Weather Station (AWS) (069139). This station is considered representative of the Study Area and has a data range from 1992 to present (BOM, 2024). The average maximum temperature at the Bega AWS ranges from 27.2°C in January, down to 16.6°C in July, while average minimum temperatures range from 15.2°C in January, down to 2.4°C in July.

The annual average rainfall is 668.5 mm, with the highest average rainfall of 82.5 mm falling in February, and the lowest average rainfall of 33.9 mm falling in August. Rain generally falls over approximately 63 days.

2.2 REGIONAL LANDFORM

The South East and Tablelands Region spans the coastline from Durras Lake near Batemans Bay to the Victorian border. The south-eastern corner of NSW is home to Australia's highest summits, including Mount Kosciuszko and Mount Townsend, and the headwaters of the Snowy, Murray, Murrumbidgee and Lachlan rivers. Well known for its beaches, the South East and Tablelands Region includes enclosed beach compartments as well as large coastal embayments such as Batemans Bay.

The Study Area lies within the South East Corner sub-region. This bioregion covers the eastern fall from the Great Dividing Range across the Great Escarpment to the coast. The topography runs from plateau above the escarpment across steep hills toward the coast with short, active streams. Altitude and rainfall affects the vegetation patterns across the bioregion (NSW Department of Environment and Heritage, 2003).

The most prominent feature of the region is the Great Escarpment, a line of steep hills and gorges on the coastal side of the Great Divide that is formed by headward erosion of streams into the continental flexure created at the time of rifting of the Tasman Sea. Most streams have their headwaters at the escarpment but some begin on the plateau above it and flow parallel to the coast for some distance before crossing the escarpment in a gorge with



waterfalls. More detailed patterns of stream direction relate to smaller joints and faults in the bedrock and both dendritic and rectangular drainage patterns are present (NSW Department of Environment and Heritage, 2003).

The coastline is a mixture of rocky cliffs and small sand barriers built across the mouths of most streams. Unlike the north coast only one phase of barrier development is apparent and soils formed in the dunes are podsol profiles but these only have minimal profile development. Sediments in the estuaries are mainly sand (NSW Department of Environment and Heritage, 2003).

Within the Bega Valley, the Bega River is a barrier river estuary with an intermittently open entrance. The estuary enters the ocean at Mogareeka Inlet. The main tributaries for Bega River are Brogo River, Upper Brogo River, Bemboka River and Tantawangalo Creek. The area is popular for recreational activities such as fishing and boating.

With regard for the broader geological context, the Project is located within the Permo-Triassic Sydney Basin which formed in the Late Carboniferous – Early Permian due to igneous rifting and crustal thinning, which resulted in the deposition of Permian and Triassic aged sedimentary sequences. Most of the bioregion is underlain by folded and metamorphosed Ordovician to Devonian sedimentary rocks that have been intruded by several granite bodies (NSW Department of Environment and Heritage, 2003).

Soils vary with bedrock type and slope position and texture contrast profiles dominate. Metamorphic rocks weather to clay and granites weather to a mixture of sand and clay. Metamorphic rocks generally form steeper slopes and thus the soils on them are thin and stony and form a texture contrast profile with thin topsoil of fine sandy loam. The clay subsoil resists the penetration of water and most profiles, especially in lower slope positions, have a strongly bleached zone in the topsoil caused by lateral throughflow. Soils on granites are generally coarser, deeper and better drained and deliver more sandy sediment to the valley floors and the coastline (NSW Department of Environment and Heritage, 2003).

2.3 AGRICULTURAL LAND USE

2.3.1 REGIONAL HISTORY

The Aboriginal people of the South East Corner Bioregion referred to themselves as “Katungal” which distinguished them from those who occupied the inland and mountain areas (HO and DUAP 1996). In the early 1800s, explorers, and subsequently, early settlers began to encroach on the homelands of the Aboriginal people.

The 1820s saw the advent of the agricultural era with the arrival of cattlemen and their stock, and the 1830s and 40s marked the start of increasingly permanent European settlement in the bioregion (HO and DUAP 1996). In these early years of European settlement, the pastoral industry developed slowly. While beef cattle and sheep farming was the original intent of many landholders in the region, dairy farming soon surpassed these ventures as the principal agricultural industry of the area. By the twentieth century, the Bega Valley was the dominant milk and cheese producer of southern NSW and Canberra (HO and DUAP 1996). The dairying industry in the area was not achieved without vast clearing of the natural woodland that covered the region previously.

The dairy industry is increasingly more competitive with farm incomes under pressure from milk pricing competition, increasing input costs and slowing productivity growth in recent times. Dairy farmers in the South East and Tablelands Region have responded by consolidating farms through increasing farm size and milk output.

In the past two decades a large number of dairy farms have been converted to beef production. Beef and dairy cattle defines the rural character of the region, contributes significantly to the economy and facilitates the ongoing management of rural resource lands.



2.3.2 REGIONALLY DOMINANT AGRICULTURAL ENTERPRISES

The South East and Tablelands region is a productive agricultural area in NSW, and the region's economy is dominated agriculture as one of the main economic industries. However, the region benefits from a growing population and industry diversification beyond agriculture to include tourism, healthcare, power generation and an emerging manufacturing sector. This means the local economy is buffered from cyclical downturns in agriculture. It offers diversity in job opportunities, and therefore has a low unemployment rate.

The most important commodities in the South East and Tablelands region are meat and dairy cattle, wool, and sheep and lambs. In the Region there are specialisations in sheep and beef farming, as well as sheep-beef and grain-sheep or grain-beef farming. These industries dominate the regional productivity and employment in the region (DPI, 2020).

Beef and dairy cattle are grazed on a large scale, with some beef cattle production on smaller properties, usually in peri-urban areas. In recent times, beef prices have increased along with global demand for protein. Beef farming often occurs in mixed farming systems with cropping or wool, enabling economies of scale through grazing rotation, feed production and storage (DPI, 2020).

Across much of the region soils are best suited for permanent pastures and hence grazing enterprises. Factors in favour of cattle grazing and the region's beef and dairy industries include the:

- Suitability of the climate, pasture types and landscape.
- Available service suppliers (eg, produce merchants, contractors).
- Proximity to infrastructure (dairy production, abattoirs, saleyards, transport etc) and a range of markets.
- Potential for higher returns from group marketing activities.
- Good international and domestic market prospects and the opportunity for professional beef and dairy producers to increase productivity and become more competitive.

As with cattle, sheep grazing for meat and wool is usually a large-scale enterprise although some smaller properties can also contribute to regional production. Sheep and wool growing properties are the most common enterprise, making up 32% of all farms in the region and 25% of all sheep properties in NSW. Wool production is the most prominent industry in terms of number of enterprises and is the second highest value commodity in the region after beef. The southern tablelands region is known for 'superfine', 'ultrafine' and fine-medium wool production from merino sheep. Wool from the region is sought after as an exclusive fibre globally. Wool growing is a specialised industry with a specific set of biophysical (land and climate) and on-farm management requirements (animal husbandry, wool production and value adding). Typically, wool growing involves producing lambs for meat as part of the enterprise, however moving wool to lamb enterprises is a longer term trend as wool prices continue to fluctuate (DPI, 2020).

2.3.3 AGRICULTURE IN BEGA VALLEY SHIRE

The Bega Valley Shire Local Government Area (LGA) is located at the south-eastern extremity of coastal NSW, Australia. The LGA is predominantly rural, with many townships and villages. The town of Bega is set in a valley at the junction of the Bega and Brogo Rivers and surrounded by dairy country.

Land use in the LGA primarily for conservation with some timber production. The next biggest land use is agriculture, particularly dairy farming. Fishing, oyster harvesting, tourism and retail are also important industries.

The LGA covers 6,040 square kilometres. Of this, the area of land mainly used for agricultural purposes in the LGA is 77,199 ha as of the last agricultural census (ABS, 2022a). The agricultural land use types within this area is presented in **Table 2**, which shows grazing activities represent approximately 94 per cent of the agricultural land use, followed by cropping at approximately five per cent, and forestry and other land uses totalling less than two per cent.



Table 2: Bega Valley Shire LGA Agricultural Land Use 2020 – 2021 (ABS, 2022a)

Agricultural Land Use	Area	
	ha	%
Livestock Grazing	72,232	94
Cropping	4,094	5
Forestry	711	1
Other	162	<1
Total	77,199	100

The ABS (2022b) data shows that livestock consist primarily of dairy and meat cattle, sheep and lambs. Out of 47,563 total head of cattle, 26,190 were dairy cattle, representing 55%. 31,011 sheep's and lambs were recorded as part of the census. Further, a total of 211 business were associated with livestock grazing, 51 of which were dairy businesses, and 157 of which were meat cattle businesses.

Gross value is a measure of size or net wealth generated by the local economy and can be measured by industry and enterprise. The gross value of agriculture for the Bega Valley Shire LGA for the last agricultural census year of 2020 – 2021 is estimated at over 100 million (ABS, 2022b). **Table 3** highlights the dominance of livestock products as 75% of the total gross value for agriculture. Within this category, milk represents 98% of the total value of livestock products, as shown in **Table 4**, or 61% of the overall total gross value of agriculture.

Livestock for slaughter represent 31% of the total gross value for agriculture (refer **Table 3**), within which cattle and calves for slaughter represents 95% of the total value (**Table 5**), or 29% of the overall total gross value of agriculture.

Cropping activity represents 6% of the total value of agriculture (refer **Table 3**), and is dominated by nurseries, cut flowers or cultivated turf (as a single category) and hay (refer **Table 6**).

This data highlights the dominance of dairy and meat cattle grazing as the leading agricultural enterprises for the LGA, not just in terms of area of land used (94%) but also in terms of estimated gross value generated (90%).

Table 3: Bega Valley Shire LGA Agricultural Gross Value 2021 – 2022 by Enterprise (ABS, 2022b)

Agricultural Enterprise	Gross Value	
	\$	%
Livestock products	62,711,537	63
Livestock slaughter	31,007,266	31
Cropping	6,378,717	6
Total	100,097,520	100



Table 4: Bega Valley Shire LGA Agricultural Gross Value 2021 – 2022 by Livestock Products (ABS, 2022b)

Agricultural Enterprise	Gross Value	
	\$	%
Milk	61,291,471	98
Wool	1,056,370	2
Eggs	363,696	1
Total	62,711,537	100

Table 5: Bega Valley Shire LGA Agricultural Gross Value 2021 – 2022 by Livestock Slaughter (ABS, 2022b)

Agricultural Enterprise	Gross Value	
	\$	%
Cattle and Calves	29,438,607	95
Sheep and Lambs	1,391,004	4
Poultry	129,252	<1
Pigs	42,526	<1
Other	5,876	<1
Total	31,007,266	100

Table 6: Bega Valley Shire LGA Agricultural Gross Value 2021 – 2022 by Crop type (ABS, 2022b)

Agricultural Enterprise	Gross Value	
	\$	%
Nurseries, cut flowers or cultivated turf	4,441,993	70
Hay	1,256,513	20
Broadacre crops	381,047	6
Vegetables	189,470	3
Fruit and nuts	106,694	2
Total	6,378,717	100



2.3.4 REGIONAL AGRICULTURAL INFRASTRUCTURE

The key infrastructure item assisting agricultural market access and cost of production is the transport network servicing the South East and Tablelands. Underlining the importance of this issue, total freight costs from farm to port can be as much as 30% of the value of the crop being marketed depending on Australian and world commodity prices in a given season. The Princes highway provides access to the surrounding regions and Sydney, Canberra and Melbourne. Connections to Port Kembla, Port Botany, the Port of Melbourne and Western Sydney Airport Badgerys Creek give the region a competitive advantage. Demand from middle-class global markets, combined with the ability to transport produce from Canberra Airport to Singapore and beyond to Chinese cities, present opportunities for specific agricultural exports.

In proximity to the Study Area, Bega is an agricultural service centre with businesses providing agricultural equipment and supplies, including animal fencing, animal vaccinations, livestock ID, stock supplements, seed, fertiliser and crop protection.

The region is serviced by sale yards at Yass (South Eastern Livestock Exchange) and with smaller saleyards located at Bega, Boorowa and Young. There are also a number of abattoirs throughout the region including Polo Flat in Cooma, Wool is sold off farm through brokerages, with the Goulburn based Australian Wool Network offering wool rehandling and sales. Wool enterprises are reliant on shearing and other sheep-specific support services.

The dairy industry benefits from the Bega Cheese processing plant, located in Bega, which is the main milk processor in the South East and Tablelands Region. In addition, dairy farms in the region have the following characteristics (DPI, 2024):

- reliable water sources (cleaning dairy equipment, yards, for irrigation and livestock water)
- ready access to milk transport and markets (Sydney, Canberra, Wollongong)
- a reliable electricity supply (dairy machinery and irrigation equipment)
- good roads, bridges and access to towns (daily delivery of milk to the market, fodder supplements from grain/hay suppliers and feed mills in the central west of NSW).

Other infrastructure critical to agricultural production include energy needs, telecommunications services, urban water and wastewater services. General agricultural improvements such as stock fences, shedding, dams and access tracks are widespread throughout the locality which reflects the historical and current development of the local lands for agricultural use.

3 SITE CHARACTERISTICS AND LAND USE

3.1 SITE CHARACTERISTICS

3.1.1 LANDSCAPE

A site inspection was undertaken by Minesoils in October 2024. The Study Area was determined to be an erosionally stable landform with 90 - 100% surface cover of mostly modified and improved pastures that has been highly disturbed in the past by land clearing for agriculture, with few remnant native trees.

The Study Area landscape is characterised by undulating rolling low hills transected by a series of unnamed drainage lines and gullies which drain into a series of farm dams in the Western precinct before entering Bega River to the west. The remainder of the Study Area drains to the Bega River via Parbery Creek, which runs approximately west-east across the Eastern Precinct.

In the Eastern Precinct elevations range from approximately 20m Australian Height Datum (AHD) in low lying areas adjacent to Parbery Creek in the north east, to 70m AHD on crests of the more undulating country in the south west of the Precinct. In the Western Precinct elevations range from approximately 30 m AHD on the far west lower slopes leading towards the Bega River, and climb to approximately 90m AHD on a crested area in the south east of the Precinct. The Central Precinct is positioned on mid-slope and a mid-slope plateau, with an elevation range of approximately 40 – 60 m AHD. Throughout the Study Area, slopes range from flat (0 – 2%) up to approximately 30% on steeper upper slopes leading to crests, which in the Western Precinct contain exposed bedrock material.

Lands immediately adjacent to the far western boundary of the Western Precinct, and in the designated environmental area enveloped by the Eastern Precinct (in association with Parbery Creek), are subject to flooding.

Prominent built features within the Study Area include residences, agricultural improvements including shedding, farm dams, access tracks, farm gates and fences, as well as light-industrial facilities, venues and buildings.

3.1.2 LAND USE

The land located within the Study Area, as well as its surrounds, comprises a mix of uses, ranging from agricultural to industrial, with extensive presence of large lot residential as well as some community use (refer **Figure 3**).

The Eastern Precinct is generally characterised by low lying agricultural land which has been historically used for livestock grazing and dairying (**Plate 1**). A small extent of land in the south east of the Eastern Precinct (located to the east of Tathra Road, and covering approximately 25 ha) has also historically been used for dairying. However, this property is no longer used for dairying, but does contain grazing dairy heifers (**Plate 2**). To the west of the Precinct, more undulating country with higher soil and land capability limitations is also subject to livestock (**Plate 3**).

The Central Precinct is generally characterised by an industrial area, formed around the previous Bega Hospital, which now contains the Bega Valley Regional Council Depot and other rural industries. A small extent of large lot residential land containing sheep is also present within the Central Precinct (**Plate 4**).

The Western Precinct is generally characterised by and rural/ large block residential properties with livestock and/or hobby stock grazing. To the north of Finucane Lane a centrally located paddock of approximately 15 ha is subject to meat cattle (**Plate 5**), and a lower paddock of approximately 7 ha contains horses. A light-industrial operation occurs in the central area of the Precinct between the two aforementioned paddocks. Land to the south of Finucane Lane extends outside of the Study Area and contains larger paddocks for livestock grazing.

Surrounding land uses to the Study Area are generally agricultural and rural/ large block residential (**Plate 6**). To the east of the Eastern Precinct dairying occurs on lower slopes and flats on good quality agricultural lands leading to the Bega River.





Plate 1: Lands historically used for dairying within the northern section of the eastern precinct.



Plate 2: Land within the Eastern Precinct previously used for dairying now subject to dairy heifers.



Plate 3: Undulating land to the far west of the Eastern precinct used for livestock grazing.



Plate 4: Small section of land within the Central precinct subject to livestock grazing.



Plate 5: The Western Precinct contains meat cattle grazing and agricultural improvements including farm dams.



Plate 6: Large block residential properties at the southern boundary of the Eastern Precinct overlooking the Study Area.

To the south of the Central and Eastern Precincts, land use is comprised of newly established large lot residential blocks, some meat cattle grazing, a cemetery, the Bega livestock saleyards and the Cleanaway waste depot.

To the north of the Eastern Precinct a parcel of agricultural land containing improved pastures is located immediately adjacent to residential development, which highlights the risk of agricultural and residential land use conflict within the vicinity of the Study Area (refer **Plate 7**).

Dairying is the most intensive agricultural operation within or within proximity of the Study Area (namely, the Eastern Precinct). No sensitive agricultural activities such as intensive plant or livestock agriculture are being undertaken within the Western and Central Precincts or immediately adjacent lands.

On larger properties throughout the broader locality and district, similar agricultural improvements to those observed within the Study Area (e.g. cattle yards, stock fences, farm dams, dairying infrastructure, cattle grids and improved pastures, etc) reflect the historical development of the local lands for livestock grazing and dairying.



Plate 7: Adjacent agriculture and residential land uses to the immediate north of the Eastern Precinct highlight the risk of potential for land use conflict (such as spray drift) within the vicinity of the Study Area.

3.2 SOILS AND AGRICULTURAL STATUS

The following section presents the NSW state government regional mapping data for soil landscapes, soil types, inherent soil fertility and LSC as applied to the Study Area (NSW and Department of Planning, Industry and Environment, 2024).

3.2.1 SOIL LANDSCAPES

Soil landscape units provides an inventory of soil and landscape properties of an area and identifies major soil and landscape qualities and constraints. It integrates soil and topographic features into single units with relatively uniform land management requirements. Soils are described in terms of soil materials in addition to the Great Soil Group and Northcote classification systems.

The soil landscapes within the Study Area and locality are presented in the *Soil Landscapes of the Bega-Goalan Point 1:100,000 Sheet* (Tulau, 1998), as shown on **Figure 4** and described below.

Lower Brogo Soil Landscape

Landscape—Rolling to undulating low hills on granodiorite. Local relief 30–110 m; slopes gently to moderately inclined (8–32%). Elevation 10–210 m. Minor bedrock outcrop. Cleared.

Soils—Moderately deep (50–150 cm), moderately well-drained and well-drained leached Red Earths (Gn4.2) and leached Yellow Earths (Gn4.3; Gn4.8), and shallow (<50 cm), well-drained leached Yellow Earths (Uc2.12; Uc5.21) on crests to midslopes. Moderately deep (50–150 cm), poorly drained Yellow Podzolic Soils, yellow Solodic Soils and Gleyed Podzolic Soils (Dy3.8; Dy3.62) on lower slopes and drainage lines.

Limitations—Infertile, acid soils subject to seasonal waterlogging (lower slopes, springs) and water erosion hazard with bedrock outcrops (localised), groundwater pollution hazard.

Numbugga-Buckajo Swamps Soil Landscape

Landscape—swampy flats and drainage depressions, valley fills of Quaternary alluvium in granitic catchments. Local relief 10 - 20 m. Elevation range 150 - 200 m. Cleared open-forest to sedgeland.

Soils—moderately deep (50 - 150 cm), imperfectly to poorly drained clay loam over sand on fans and flats. Moderately deep (50 - 150 cm) or deep (>150 cm), imperfectly drained to poorly drained Gleyed Podzolic Soils and Alluvial Soils (Dg2.13; Dg4.13) on flats and in drainage depressions.

Limitations—seasonal or permanent waterlogging, water (gully) erosion hazard, run-on, groundwater pollution hazard and foundation hazard.

Penooka Swamp Soil Landscape

Landscape—complex and highly variable stratigraphy with abundant sand layers in backswamps of Bega, Brogo, Bemboka and Murrah Rivers.

Soils—poorly drained Alluvial Soils and Black Earths (Ug5.1).

Limitations—infertile or non-cohesive erodible materials subject to flood hazard and waterlogging, with groundwater pollution hazard and foundation hazard

3.2.2 SOIL TYPES

The NSW regional soil mapping indicates the dominant soil types within the Study Area are Kurosols, with some Dermosols and Alluvial Rudosols, as per Australian Soil Classification (ASC) (Isbell, R. F., 2021) (refer **Figure 5**).

Kurosols are soils with a clear or abrupt textural B horizon and in which the major part of the upper 0.2 m of the B2t horizon (or the major part of the entire B2t horizon if it is less than 0.2 m thick) is strongly acid.



Dermosols are soils other than Vertosols, Hydrosols, Calcarosols and Ferrosols which:

- Have B2 horizons with grade of pedality greater than weak throughout the major part of the horizon, and
- Do not have clear or abrupt textural B horizon.

Rudosols are defined as soils with little, if any, (rudimentary) pedologic organisation apart from (a) minimal development of an A1 horizon or (b) the presence of less than 10% of B horizon material (including pedogenic carbonate) in fissures in the parent rock or saprolite. The soils are apedal or only weakly structured in the A1 horizon and show no pedological colour changes apart from the darkening of an A1 horizon. There is little or no texture or colour change with depth unless stratified or buried soils are present. Alluvial Rudosols are those derived from an alluvial source.

3.2.3 INHERENT SOIL FERTILITY

NSW regional mapping provides an estimation of the inherent fertility of soils in NSW. It uses the best available soils and natural resource mapping developed for LSC dataset. The mapping describes soil fertility in NSW according to a five-class system: Low (1), Moderately low (2), Moderate (3), Moderately high (4), High (5).

Soils with 'Low' fertility, due to their poor physical and/or chemical status, only support limited plant growth. Soils with 'Moderately Low' fertility can generally only support plants suited to grazing; large inputs of fertiliser are required to make the soil suitable for arable purposes. Soils with 'Moderate' fertility usually require fertilisers and/or have some physical restrictions for arable use. Soils with 'Moderately High' fertility have a high level of fertility in their virgin state which is significantly reduced after a few years of cultivation (Murphy *et al.*, 2007).

The Study Area is dominated by soils with Moderately Low (2) fertility, with a limited extent of Moderately high (4) fertility (refer **Figure 6**).

3.2.4 LAND AND SOIL CAPABILITY

Land capability, as detailed in LSC Scheme, is the inherent physical capacity of the land to sustain a range of land uses and management practices in the long term without degradation to soil, land, air and water resources. Failure to manage land in accordance with its capability risks degradation of resources both on- and off-site, leading to a decline in natural ecosystem values, agricultural productivity, and infrastructure functionality.

The scheme uses the biophysical features of the land and soil to derive detailed rating tables for a range of land and soil hazards. The scheme consists of eight classes, which classify the land based on the severity of long-term limitations. The LSC classes are described in **Table 6** and their definition has been based on two considerations:

- The biophysical features of the land to derive the LSC classes associated with various hazards.
- The management of the hazards including the level of inputs, expertise and investment required to manage the land sustainably.

The biophysical features of the land that are associated with various hazards are broadly soil, climate and landform, specifically noted as slope, landform position, acidity, salinity, drainage, rockiness; and climate. The eight hazards associated with these biophysical features that are assessed by the LSC scheme are:

1. Water erosion
2. Wind erosion
3. Soil structure decline
4. Soil acidification
5. Salinity
6. Water logging
7. Shallow soils and rockiness
8. Mass movement



Each hazard is assessed against set criteria tables, as described in the LSC Guideline, with each hazard ranked from 1 through to 8 with the overall ranking of the land determined by its most significant limitation.

Table 6: Land and Soil Capability Classification

Class	Land and Soil Capability
Land capable of a wide variety of land uses (cropping, grazing, horticulture, forestry, nature conservation)	
1	Extremely high capability land: Land has no limitations. No special land management practices required. Land capable of all rural land uses and land management practices.
2	Very high capability land: Land has slight limitations. These can be managed by readily available, easily implemented management practices. Land is capable of most land uses and land management practices, including intensive cropping with cultivation.
3	High capability land: Land has moderate limitations and is capable of sustaining high-impact land uses, such as cropping with cultivation, using more intensive, readily available and widely accepted management practices. However, careful management of limitations is required for cropping and intensive grazing to avoid land and environmental degradation.
Land capable of a variety of land uses (cropping with restricted cultivation, pasture cropping, grazing, some horticulture, forestry, nature conservation)	
4	Moderate capability land: Land has moderate to high limitations for high-impact land uses. Will restrict land management options for regular high-impact land uses such as cropping, high-intensity grazing and horticulture. These limitations can only be managed by specialised management practices with a high level of knowledge, expertise, inputs, investment and technology.
5	Moderate-low capability land: Land has high limitations for high-impact land uses. Will largely restrict land use to grazing, some horticulture (orchards), forestry and nature conservation. The limitations need to be carefully managed to prevent long-term degradation.
Land capable for a limited set of land uses (grazing, forestry and nature conservation, some horticulture)	
6	Low capability land: Land has very high limitations for high-impact land uses. Land use restricted to low-impact land uses such as grazing, forestry and nature conservation. Careful management of limitations is required to prevent severe land and environmental degradation.
Land generally incapable of agricultural land use (selective forestry and nature conservation)	
7	Very low capability land: Land has severe limitations that restrict most land uses and generally cannot be overcome. On-site and off-site impacts of land management practices can be extremely severe if limitations not managed. There should be minimal disturbance of native vegetation.
8	Extremely low capability land: Limitations are so severe that the land is incapable of sustaining any land use apart from nature conservation. There should be no disturbance of native vegetation.

The NSW regional based maps of LSC indicate the Study Area generally consists of LSC class 5, with very minor extents of LSC class 7 (very low capability) also occurring in low lying areas with a waterlogging limitation (refer Figure 7).

3.2.5 BIOPHYSICAL STRATEGIC AGRICULTURAL LAND

The 'NSW Government's Strategic Regional Land Use Policy' (the Policy) defines and identifies strategic agricultural land across NSW. Strategic agricultural land includes land with unique natural resource characteristics, known as biophysical strategic agricultural land (BSAL). The Policy has been developed to achieve balanced land use outcomes, particularly between mining, coal seam gas and agriculture.



There is no BSAL mapped within the Study Area. The nearest BSAL is located immediately west of the Study Area on the west of Tathra Road (refer **Figure 8**).

3.2.6 STATE SIGNIFICANT AGRICULTURAL LAND

The NSW DPI is undertaking a mapping program to identify State Significant Agricultural Land (SSAL). A map of SSAL is being developed as an essential component of agricultural land use planning, enabling clearer local planning with informed prioritisation of future land uses.

Based on current NSW DPI information, it is intended that the draft SSAL map provide information to planning authorities, land holders and development proponents about the location of the best agricultural land in the state. At this time, the mapping is in an early draft stage only. This draft version is stated by NSW DPI as the first step in what will be a continuous process to help improve the information base for local governments to make land use decisions.

SSAL is mapped extensively within the Study Area and surrounding areas (refer **Figure 8**).

There is presently no method to verify SSAL, nor is there a contextual framework for how SSAL should be considered and assessed (as there is for LSC and BSAL).

3.3 ESTIMATED AGRICULTURAL PRODUCTIVITY

Agricultural productivity is subject to long term climate and rainfall variables, as well as changes in economic, social and policy frameworks, often at a scale well beyond the Study Area. There is no set agricultural productivity value for land under agricultural use.

Agricultural productivity in the context of an impact assessment must also consider the potential productivity of a property, as opposed to the actual productivity, which may be influenced by land management that does not fulfill the potential or capabilities of the land being assessed.

A broad estimate of the potential agricultural productivity has been informed by the agricultural resources within the Study Area (as presented in Section 3.2) as well as existing agricultural enterprises in the Study Area and its locality. Based on these considerations, and by analysing the information presented from the last agricultural census of 2020 – 2021 in Section 2.3 (ABS 2022a and 2022b), a conservative estimation of the gross annual value of a combination of dairy and meat cattle enterprises on the Study Area has been modelled.

Based on 55% of cattle in the LGA being dairy (ABS 2022a), a conservative assumption for the purpose of modelling can be made that 15% of the 72,232 ha of land used for livestock grazing in the LGA is used for dairy cattle.

The total value of milk as an agricultural commodity in the LGA (\$61,291,471 – refer **Table 4**) can then be measured against the assumed area of dairy cattle (10,835 ha), resulting in a \$ per ha per year estimated gross value productivity rate of \$5,657.

By multiplying this productivity rate against the portion of the Study Area used, capable for use, or previously used as dairy farm (conservatively assumed as 50 ha for the purpose of modelling), a conservative estimate of potential productivity in terms of gross value is \$282,850 per year, as presented in **Table 7**.

For the remaining areas assumed to be capable for agriculture within the Study Area (estimated at 142 ha), it is conservatively assumed that the remaining 85 percent of the of the 72,232 ha of land used for livestock grazing in the LGA is used for meat cattle.

The total value of cattle and calves for slaughter as an agricultural commodity in the LGA (\$29,438,607 – refer **Table 5**) can then be measured against the assumed area of meat cattle (61,397 ha), resulting in a \$ per ha per year estimated gross value productivity rate of \$479.

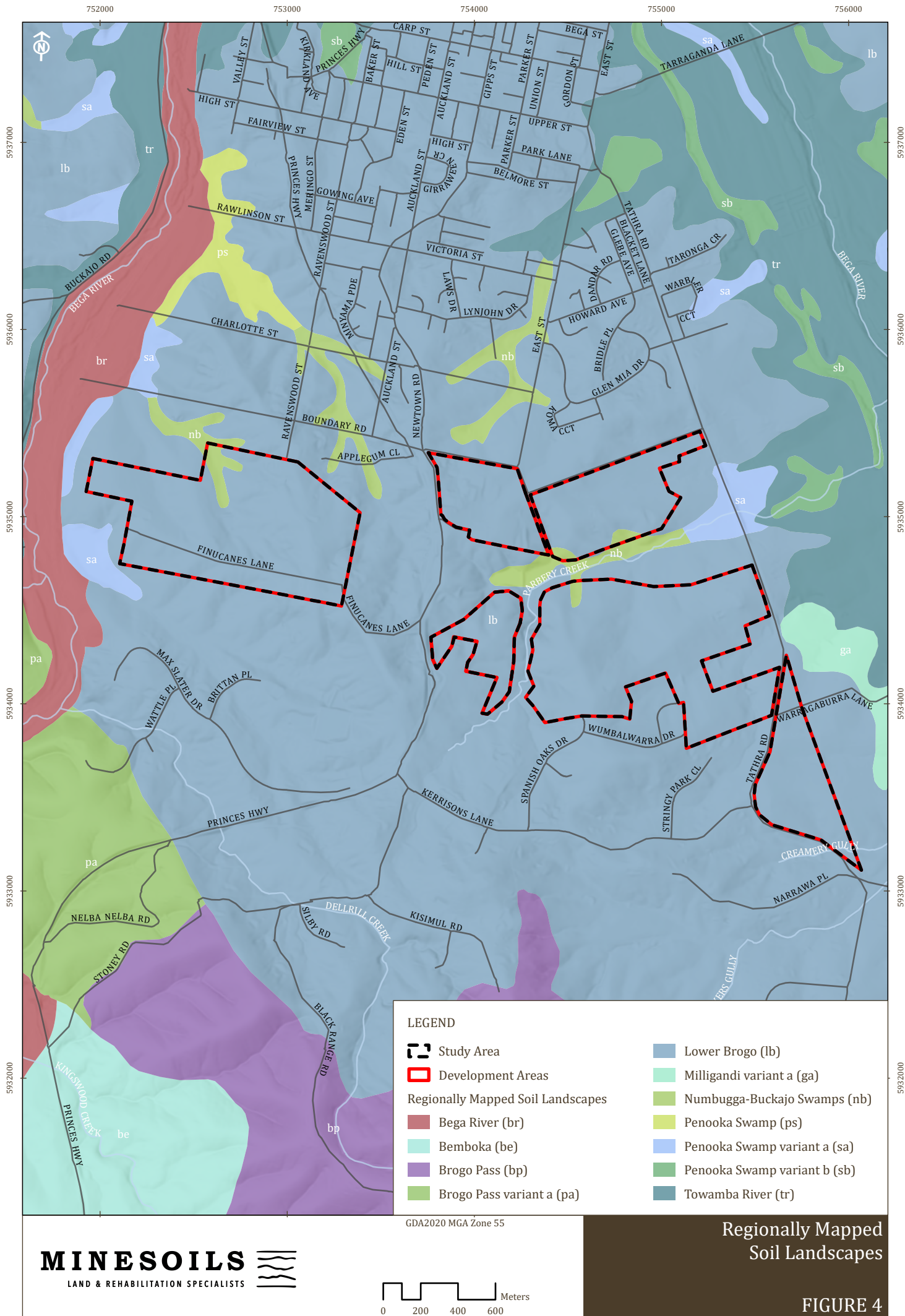
The resulting estimated agricultural productivity for the Study Area is \$480,318 per year, as shown in **Table 5**.

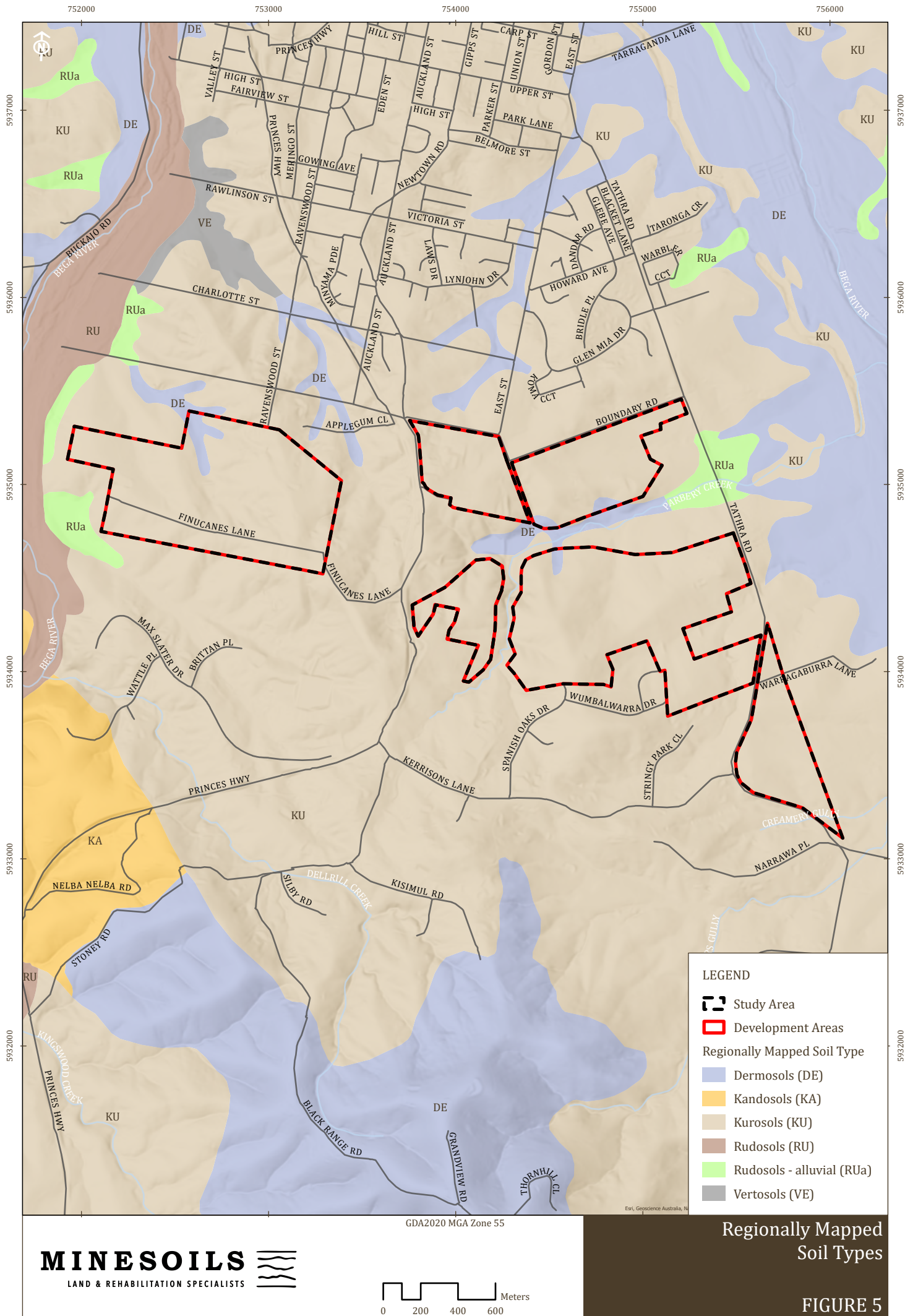
(Note, this is conservatively estimated *gross value* (as opposed to gross margin) and does not account for input costs including feed, milking, contracted services, etc.)

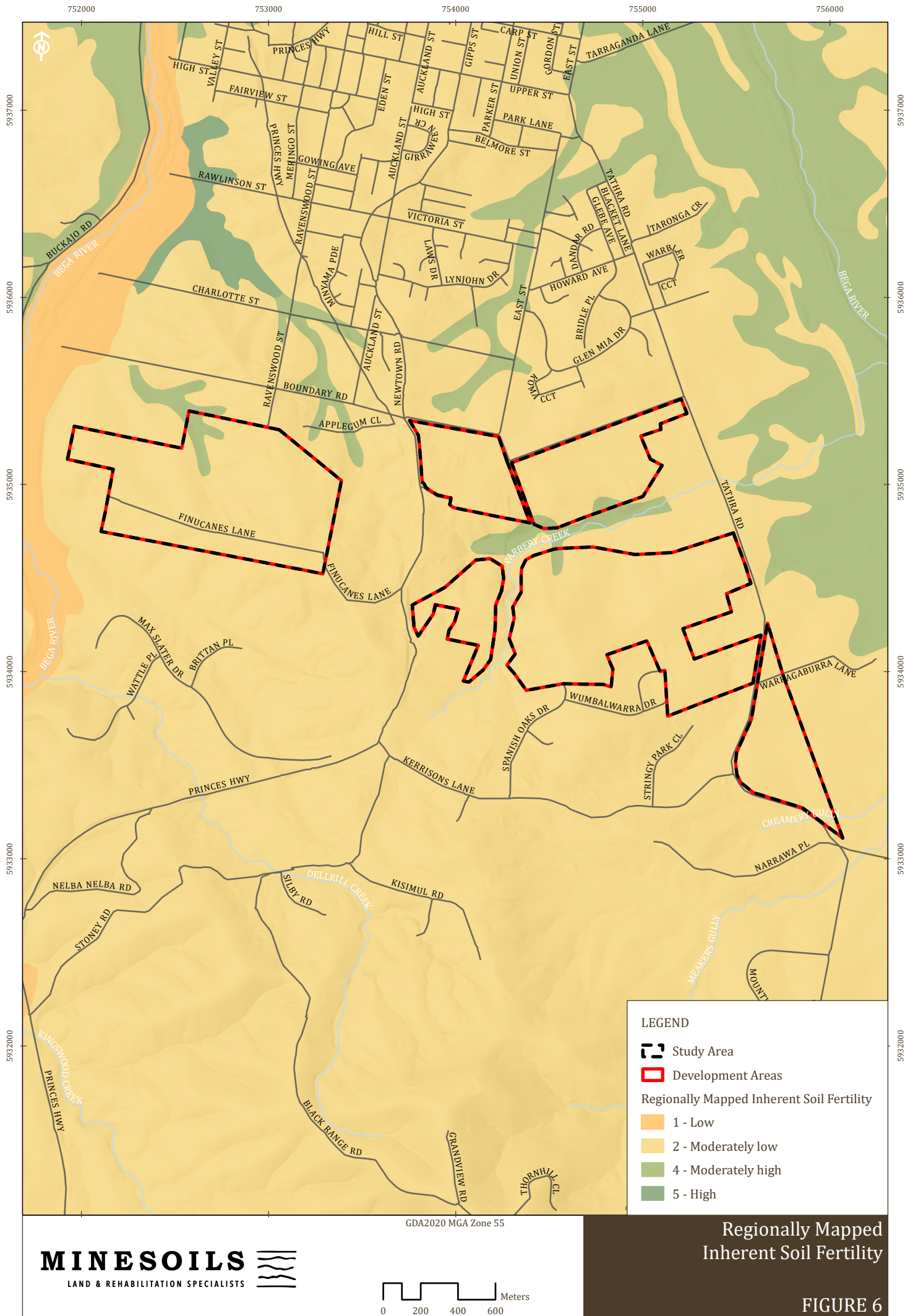
Table 7: Estimated Productivity of Study Area Under Dairy and Meat Cattle Operations

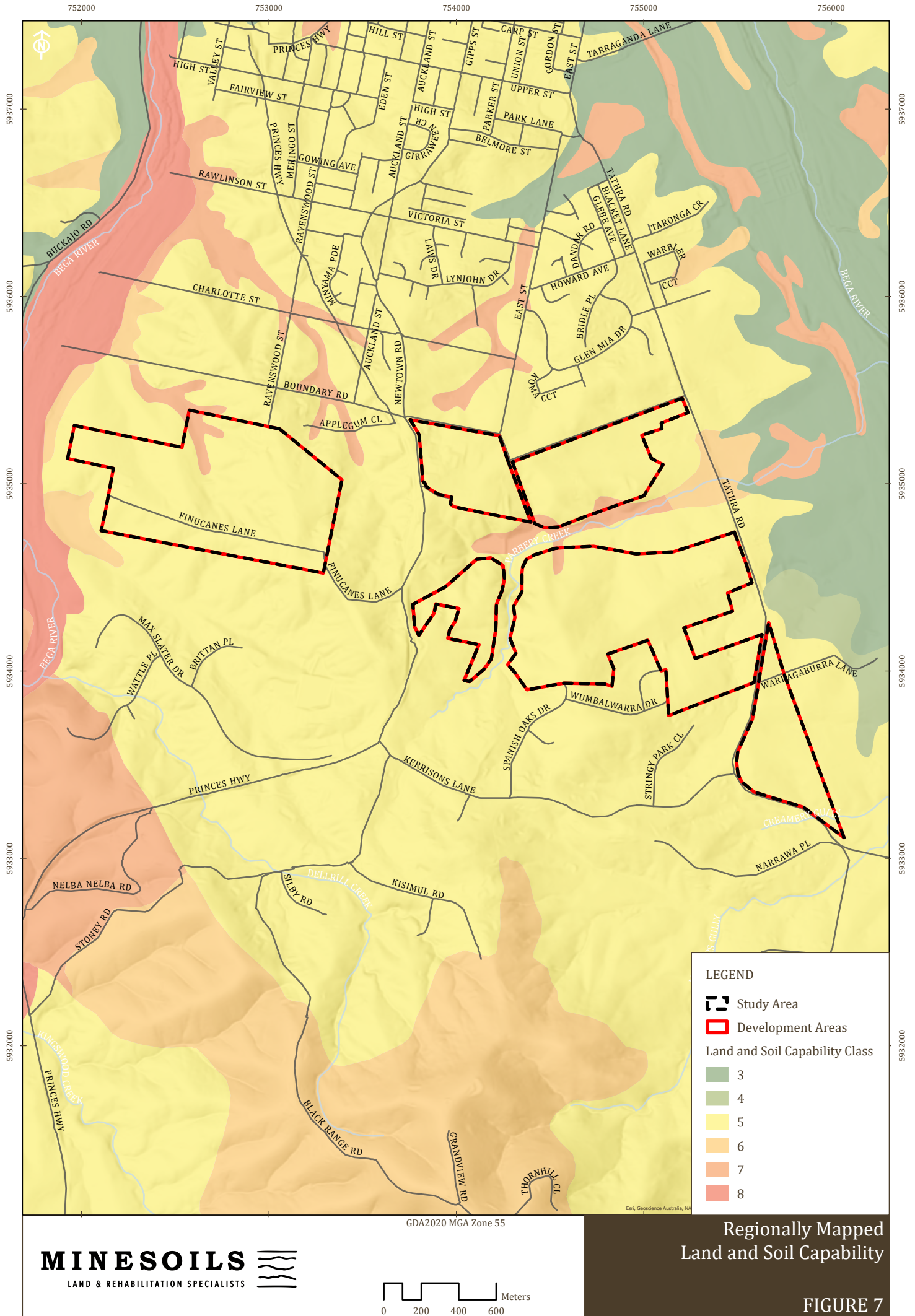
Enterprise	Estimated Gross Value in LGA (\$/ha/year)	Area within Study Area (ha)	Estimated Potential Productivity (\$/year)
Dairy cattle and Meat	5,657	75	424,275
Meat Cattle	479	117	56,043
Non Agricultural Land	-	25	0
Total		217	480,318

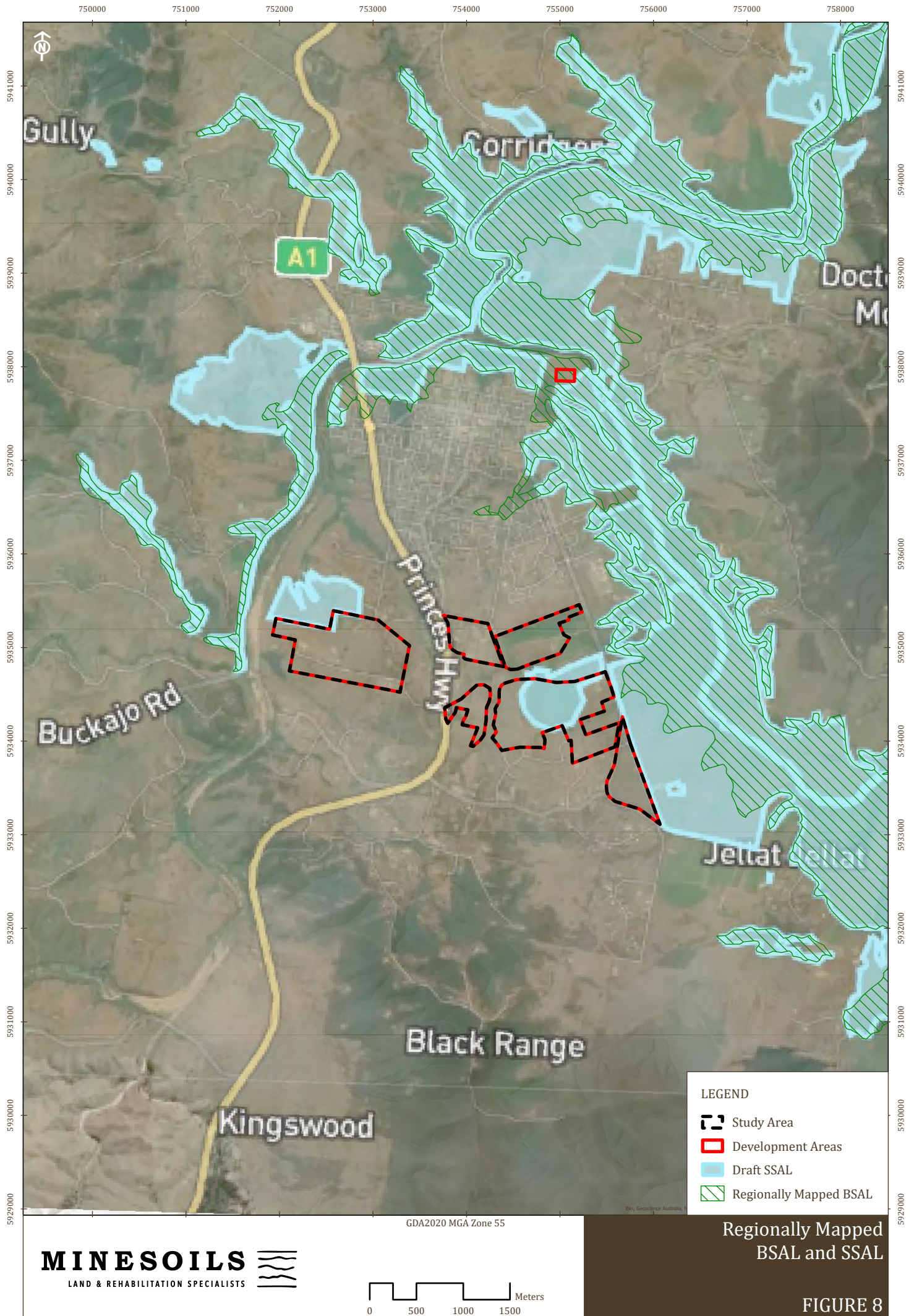












4 LAND USE CONFLICT RISK ASSESSMENT

4.1 OVERVIEW

The Land Use Conflict Risk Assessment (LUCRA) (NSW Department of Primary Industries, 2011) is a system to identify and assess the potential for land use conflict to occur between neighbouring land uses. It helps land managers and consent authorities assess the possibility for and potential level of future land use conflict. LUCRA aims to:

- Accurately identify and address potential land use conflict issues and risk of occurrence before a new land use proceeds or a dispute arises.
- Objectively assess the effect of a proposed land use on neighbouring land uses.
- Increase the understanding of potential land use conflict to inform and complement development control and buffer requirements.
- Highlight or recommend strategies to help minimise the potential for land use conflicts to occur and contribute to the negotiation, proposal, implementation and evaluation of separation strategies.

Land use conflicts occur when one land user is perceived to infringe upon the rights or impact the values or amenity of another. In rural areas land use conflicts commonly occur between agricultural and residential uses. However, land use conflicts can also occur between different agricultural enterprises and other primary industries.

Rural amenity issues are the most common land use conflict issues, followed by environmental protection issues. Rural amenity issues include impacts to air quality due to agricultural and rural industry (odour, pesticides, dust, smoke and particulates); use and enjoyment of neighbouring land e.g., noise from machinery; and visual amenity associated with rural industry e.g., the use of netting, planting of monocultures and impacts on views.

Environmental protection issues include soil erosion leading to land and water pollution, clearing of native vegetation, and stock access to waterways.

Direct impacts from neighbouring land uses on farming operations can also cause conflict, such as: harassment of livestock from straying domestic animals; trespass; changes to storm water flows or water availability; and poor management of pest animals and weeds.

4.2 APPROACH

The LUCRA as presented in **Appendix 1** compares and contrasts the Project against adjoining/surrounding land uses and activities for perceived or actual incompatibility and conflict issues based on the agricultural status of the locality, and the risks and impacts identified in Section 5. Each potential perceived or actual conflict between the proposed development and adjacent land has been assessed and given a risk ranking based on probability and consequence as outlined in **Appendix 1**.

The LUCRA is separated into the Eastern Precinct and the Western Precinct. These two Precincts were separated for the purpose of the LUCRA as they were determined to generally pose a different level land use conflict risk: The Eastern and the Western Precinct contain many of the same risk items, albeit with different risk rating, owing to the nature of the proposed provisions and the existing surrounding land uses. The key difference between these two areas in the context of the LUCRA is that the Eastern Precinct contains areas of proposed low density residential development adjacent to good quality agricultural lands, with dairy farming being undertaken to the east, representing a generally higher land use conflict risk. Meanwhile, the western Precinct contains more areas of proposed large lot residential land amongst existing semi-rural properties which are characterised by lower intensity agricultural land uses such as meat cattle grazing, representing a lower land use conflict risk.

Due to the existing semi-industrial nature of the Central Precinct, the proposed provisions, and the nature of surrounding land-uses, no land use conflicts for this area were identified.



4.3 FINDINGS

The following land use conflict risk item categories were identified for the Eastern and Western Precincts:

- Construction impacting agriculture
- Construction impacting existing residents
- Construction impacting the environment
- Construction impacting heritage values
- Change in land use impacting agriculture
- Change in land use impacting existing residents
- Agriculture impacting proposed land uses

There are 30 risk items of potential perceived or actual impact that were considered as part of the LUCRA for the for both the Eastern and Western Precincts. The mitigation and measures and controls, where available, reduce the level of risk for the majority of considered potential risks to low. The remaining high and medium risk potential conflicts are summarised in **Table 8**, with ten (10) moderate to high risks items identified for the Eastern Precinct, and seven (7) moderate to high risk items identified for the Western Precinct.

The LUCRA methodology including risk ranking matrix and full LUCRA assessment are included as **Appendix 1**.

Table 8: LUCRA Moderate and High Risk Items and Risk Controls Summary

Potential Conflict Category	Potential Conflict Description	Conflict Risk
Eastern Precinct		
Change in land use impacting existing residents	Residents and stakeholders in the locality who wish to maintain views of the existing agricultural landscape may be concerned about the change in visual amenity of the Eastern Precinct resulting from the change in land use.	High
Change in land use impacting existing residents	Existing residential land owners/users in the locality may be concerned about potential devaluation of properties due to development.	High
Agriculture impacting proposed land uses	Residents and land users of the proposed development may have concerns about nuisance noise from livestock and farm machinery.	High
Agriculture impacting proposed land uses	Residents and land users of the proposed development may have concerns about odour from adjacent livestock, fertilisers, chemical applications, etc.	High
Change in land use impacting agriculture	Agricultural operators adjacent to the Eastern Precinct or within the broader locality may be concerned about the required groundwater take of the proposed land uses and the implication for agricultural operations.	Moderate
Construction impacting agriculture	Agricultural operators adjacent to the Eastern Precinct or within the broader locality, may be concerned about weed, pest animal, or plant/animal disease introduction from increased volume of vehicles and workers from out of area during construction and spread to agricultural land.	Moderate
Change in land use impacting agriculture	Agricultural operators adjacent to the Eastern Precinct or within the broader locality may be concerned about future optionality relating	Moderate



Potential Conflict Category	Potential Conflict Description	Conflict Risk
Eastern Precinct		
	to agricultural enterprises able to be undertaken adjacent to the proposal land uses.	
Change in land use impacting agriculture	Agricultural operators adjacent to the Eastern Precinct or within the broader locality may be concerned about having to address complaints relating to their existing agricultural operations (such as in relation to noise, odour, animal welfare, etc). This includes the Bega Sale Yards and potential impact on future operations/expansions.	Moderate
Agriculture impacting proposed land uses	Residents and land users of the proposed development may be concerned about potential agricultural land uses that could occur on adjacent lands without development consent.	Moderate
Agriculture impacting proposed land uses	Residents and land users of the proposed development may have concerns about spray drift of water, fertilisers, pesticides, etc., from pasture management entering residential or recreational land.	Moderate
Western Precinct		
Change in land use impacting existing residents	Residents and stakeholders in the locality who wish to maintain views of the existing agricultural landscape may be concerned about the change in visual amenity of the Western Precinct resulting from the change in land use.	High
Change in land use impacting existing residents	Existing residential land owners/users in the locality may be concerned about potential devaluation of properties due to development.	High
Change in land use impacting agriculture	Agricultural operators adjacent to the Western Precinct or within the broader locality may be concerned about the required groundwater take of the proposed land uses and the implication for agricultural operations.	Moderate
Change in land use impacting agriculture	Agricultural operators adjacent to the Western Precinct or within the broader locality may be concerned about future optionality relating to agricultural enterprises able to be undertaken adjacent to the proposal land uses.	Moderate
Agriculture impacting proposed land uses	Residents and land users of the proposed development may have concerns about nuisance noise from livestock and farm machinery and light agri-industrial activities.	Moderate
Agriculture impacting proposed land uses	Residents and land users of the proposed development may have concerns about odour from adjacent livestock, fertilisers, chemical applications, etc.	Moderate
Agriculture impacting proposed land uses	Residents and land users of the proposed development may be concerned about potential agricultural land uses that could occur on adjacent lands without development consent.	Moderate



4.4 DISCUSSION AND RECOMMENDATIONS

The above listed high and medium risk potential conflicts will require further management or design consideration, or will remain as accepted conflict risk as a result of the proposed development. Some high risk items, such as impacts to visual amenity and property valuation, will be impossible to fully mitigate, as they are inherent to the nature of the Project. Other high risk items, such as noise and odour impacts from agriculture on land zoned as residential, can be further mitigated via the implementation of design mitigation measures, including physical separation buffer zones.

A buffer zone is an area of land set aside to minimise the impacts of land uses on each other. Establishing physical separation buffer zones as part of design is critical to minimising land use conflicts between agricultural and residential land uses and should be explored as much as possible during the detailed design phase of the Project. It is unreasonable to expect an agricultural producer to impose a buffer on their land and thus sterilise part of the operation if residential preperty is established within that buffer zone. Similarly, it is unreasonable to expect a sensitive receiver to move away from a boundary of an agricultural operator that changes practices, which impacts the receiver.

A common issue is that with the encroachment of residential dwellings around intensive agriculture, new residents often find the noises and odours of their neighbouring farms intrusive, and make amenity related complaints. This and related conflicts can be exacerbated by the decline in knowledge of agriculture among the increasingly urbanised population (Hu and Gill, 2023). Conflict with the dairy farming enterprises to the east of Tathra Road is largely mitigated by Tathra Road itself, with the road easement forming a physical separation buffer zone. To further mitigate potential conflicts, setback of residential properties away from Tathra Road easement is recommended.

Boundary Road and Kerrison's Lane form suitable physical separation buffers between the proposed development and lower intensity agricultural land uses in the Eastern Precinct, while the nature of existing agricultural and property types within the Western Precinct suggests a reduced requirement for physical separation buffers to mitigate conflicts (however, buffer zones here should be considered). The southern portion of the Eastern Precincts eastern boundary has been identified by this assessment as a potentially high risk zone for future land use conflict (refer **Plate 8**). Minesoils recommends the implementation of a physical separation buffer zone along this boundary.

Agricultural land is not static in use and may change practice (e.g., meat cattle grazing to dairy) which could impact differently on different receivers. While the neighbouring property to the immediate east of the southern portion of the Eastern Precinct contains dairy heifers, it is not a dairy farm per se, however, due to the wider property containing good quality agricultural land and being previously used as a dairy, this part of the Study Area which may be subject to greater housing densities is particularly exposed to the possibility of changes to agricultural land use with no requirement for a development consent, which could result in a higher intensity agricultural operation being undertaken immediate to residential zoned land. Here, an access road, or physical separation buffer of some sort, should be implemented as a design control to avoid direct backing of residential properties to agricultural land and the increased risk of land use conflict that would result

Finally, Minesoils recommends the establishment of a clear channel to resolve any land use conflicts that arise as a result of the Project, independent of any agency with a perceived interest.





Plate 8: Land use conflict potential high-risk zone.

5 IMPACTS ON AGRICULTURAL LAND

The impacts development activities can have on land resources and agricultural productivity range from short term temporary impacts to long term and permanent impacts. Temporary impacts can include the removal agriculture from service over a period of the life of a Project, or short term impacts to agricultural operators (i.e., during a construction period). Permanent impacts may include changes to land and soil capability and agricultural resources, or the cessation of agriculture being undertaken over an area of land.

This section identifies and describes the nature, duration and consequence of the potential impacts on agricultural land as a result of the Project, in the context of the Study Area, neighbouring properties, and in the wider region

5.1 LAND USED FOR AGRICULTURE

The Project will be undertaken over an area of approximately 217 ha, approximately 192 ha of which is considered by this assessment to be currently subject to agriculture land use or capable of agricultural land use. Therefore, it is anticipated that the Project will permanently remove approximately 192 ha of agricultural land.

This represents 0.3% of land used for agriculture in the Bega Valley Shire LGA (refer Section 2.3.3).

Current agricultural land use immediate to the Study Area and in the broader Project locality is not anticipated to change as a result of the Project.

5.2 PRODUCTIVITY AND ENTERPRISES

5.2.1 PRIMARY PRODUCTIVITY

The productivity of the Project Area is estimated in Section 3.3. For the purpose of this assessment, the impact of the Project on productivity of agricultural land based on the change in land is estimated as \$480,318 per year.

This represents 0.8% of the gross value of agriculture in the Bega Valley Shire LGA (refer Section 2.3.3).

5.2.2 PRODUCTIVITY OF LAND WITHIN LOCALITY

Agricultural productivity of land outside of the Project Area will not be affected by the Project as the associated agricultural resources will not be affected. Therefore, the Project will not negatively impact any existing agricultural enterprise outside of the Project Area.

5.2.3 AGRICULTURE SUPPORT SERVICES

The Project will have a negligible impact on local, regional and state agricultural services. Changes to the supply and viability of agricultural support services in Bega and townships within the Bega Valley Shire LGA are driven by social and market trends far exceeding the scale of the minor reduction in agricultural land use and productivity as a result of the Project.

5.2.4 CRITICAL MASS THRESHOLDS

Due to the limited reduction in agricultural activity as a result of the Project, and the scale of the dairy and livestock industries operating in the Bega Valley Shire LGA and broader region, there will be no impact to critical mass thresholds of agricultural enterprises needed to attract and maintain investment in agricultural service industries and infrastructure as a result of the Project.

5.2.5 INDUSTRY FRAGMENTATION

There will be no fragmentation or displacement of existing agricultural industries as a result of the Project.



5.3 AGRICULTURAL RESOURCES

5.3.1 SOILS

Over the area of the Study Area being permanently impacted, soils will be subject to significant, permanent impacts where earthworks and surface disturbance are necessary for construction and new build developments.

There will be no direct or indirect impacts to the soil resources of neighbouring properties or the Project locality outside the Study Area.

5.3.2 AGRICULTURAL CAPABILITY

Land will be permanently removed from agricultural capability, or agricultural capability will be significantly downgraded, where new land uses as a result of the Project occur.

There will be no direct or indirect impacts to the agricultural capability of neighbouring properties or the Project locality outside the Study Area.

There will be no impact to land mapped as BSAL.

5.3.3 WATER

Water Supply data for the Project was provided by the Bega Valley Shire Council. Water demand is forecast to increase from an annual volume of 1,025 ML in 2025 (servicing a population of 8,300 people) to 1,180 ML by 2048 (servicing 9,500 people). Beyond 2048, with the development of an additional 2,227 dwellings and a projected population increase of 5,315 people, total demand is expected to reach 1,850 ML annually, still falling below the licenced annual entitlement of the Bega borefield (2,640 ML/yr).

Surface water extraction for agriculture, primarily dairy pasture irrigation, occurs throughout the Bega-Brogo River system. Irrigators in the Lower Bega and Brogo River sections are reliant on regulated river flows, and Bega Valley Shire Council's groundwater take has no impact on their access to water. In the Mid Bega River section, close to the borefield, four irrigators and two Bega Cheese production bores access water either from the river during flow events or from aquifer storage during low-flow periods. Only in extended droughts, when surface flow is absent for prolonged periods, does the cumulative groundwater use by Bega Valley Shire Council, Bega Cheese, and Mid Bega irrigators result in localised drawdown of the aquifer.

Groundwater levels are monitored via a DEECCW bore. Under the *Water Sharing Plan for the Bega River Area Regulated, Unregulated and Alluvial Water Sources 2023*, surface water extraction in the Mid Bega River is suspended when groundwater levels fall below 4.5 mAHD (approximately 2.5 m below the riverbed). At that point, only groundwater licence holders (e.g. Bega Valley Shire Council and Bega Cheese), domestic users, and basic landholder rights users may continue to take water.

The projected increase in groundwater extraction of 1.8 ML/day will have only a minor additional impact. During drought conditions, this may cause groundwater levels in the Mid Bega River section to decline slightly more rapidly. However, the exact number of days by which this could advance the suspension of surface water licences is unknown. Any impact is expected to be infrequent, short-lived, and quickly reversible once surface flows resume following catchment rainfall.

In summary, the forecast increase in groundwater extraction to meet future urban water demands is not expected to significantly affect agricultural users. The system is managed adaptively through real-time monitoring and regulatory thresholds to minimise conflict between urban and agricultural water needs.



5.3.4 EROSION AND SEDIMENTATION

Erosion risks are primarily associated with the anticipated impacts to soils during construction. The Project should prepare an erosion and sediment control plan (ESCP) that addressed specific soil dispersion risks based on disturbance activities anticipated with development.

5.3.5 AGRICULTURAL INFRASTRUCTURE

The Project will have a negligible impact on local and regional agricultural infrastructure. There will be negligible impacts on the road network that connects the agricultural industry to markets, services and suppliers (refer Section 5.4.4).

5.4 OTHER POTENTIAL IMPACTS ON AGRICULTURE

5.4.1 PEST SPECIES

Pest species could be inadvertently brought into the Study Area with imported materials, machinery, or allowed to invade naturally through removal or damage of current vegetation. The presence of weed species has the potential to be a major hinderance to agricultural endeavours on neighbouring properties.

Weeds in general must be managed across the site through specific control measures. In the event that weeds are not effectively managed, impacts to agriculture may be experienced in the locality. However, given the readily available controls to mitigate the spread of weeds, the Project is not anticipated to have any impact on the agricultural resources and enterprises within the region as a result of weed spread.

5.4.2 BIOSECURITY

Biosecurity is defined as 'the protection of the economy, environment and community from pests, diseases and weeds.' It includes measures to prevent new pests, diseases and weeds from entering our country and becoming established. At the local level, as per Section 5.4.1 above, appropriate weed management will reduce biosecurity risks. On a regional level, any import of equipment or machinery from overseas will follow the standard procurement safeguards and quarantine procedures as per Australian requirements. Given the processes above, it is considered that the Project will not have any potential impact on the biosecurity of agricultural resources and enterprises within the region.

5.4.3 AIR QUALITY AND DUST

Construction has the potential to increase dust through movement of traffic on unsealed roads on dry days, vegetation removal, and localised dust emissions generated by land disturbance (such as excavation activities required for infrastructure). These impacts are unlikely to affect agriculture and standard dust suppression measures can be readily implemented where required.

5.4.4 TRAFFIC

Agricultural enterprises can be impacted by increased traffic movements through an increase in noise and dust, and also through the cumulative impact of road transport being utilised by Project activities, leaving fewer transport options for agricultural enterprises.

The roads in proximity to the Study Area are anticipated to experience an increase in traffic volumes as a result of the Project. However, the proposed upgrades to the road network has adequate capacity for additional traffic and free flow conditions would continue. Further, no increases in levels of noise and dust that could impact agriculture will result from increased traffic.

Therefore, the traffic impacts of the Project are not likely to have consequences on agricultural enterprises within the Project locality.



5.4.5 NOISE AND VIBRATION

Noise levels as a result of the Project are predicted to comply with noise criteria. It is expected that noise will be effectively managed and minimised through the adoption of standard management practices.

Generally, agriculture is only impacted by noise when constantly high noise levels or sudden loud noise leads to a decrease in animal production through increased livestock stress. Cattle may tolerate moderate levels of noise and may easily adapt to an intensity level of 60-90dB. Continuous exposure to noise above 90dB has been known to severely affect animals (Dairy Global, 2017).

Appropriate mitigation measures are recommended to minimise noise impacts. As a result, there must be no exceedances of noise greater than 90dBA where livestock including dairy cattle will be located on a non-associated property adjacent to the Study Area. As such, livestock and other agricultural resources are unlikely to be impacted by noise due to the Project.

5.5 CUMULATIVE IMPACTS

The Project has the potential to generate cumulative impacts with other existing, approved or proposed developments in the region. Increased cumulative impacts including changes to land used for agricultural, localised productivity, secondary productivity and some agricultural support services are likely to be experienced where projects in the region conflict with agricultural land. However, given the nature and scale of the established agricultural industries within the region, significant impacts to critical mass thresholds and regional agricultural infrastructure are unlikely to occur in the foreseeable future.



6 SUMMARY

This agricultural impact assessment and a land use conflict risk assessment (LUCRA) has established the soil and land capability of the Study Area, the potential productivity of the Study Area, identified the key land use conflicts risks associated with the Project, and determined the key impacts to agriculture as a result of the Project. The following key findings are noted:

- The NSW regional based maps of LSC indicate the Study Area generally consists of LSC class 5 land, which is defined as moderate-low capability land. Very minor extents of LSC class 7 (very low capability) also occurs in low lying areas with a waterlogging limitation.
- The conservative potential agricultural productivity gross value of the agricultural lands within the Study Area under dairy farming and meat cattle grazing enterprises has been estimated up to \$480,318 per year.
- The LUCRA undertaken identified the following key high and medium risk potential perceived or actual conflicts:
 - Agricultural operators adjacent to the Study Area or within the broader locality may be concerned about the required groundwater take of the proposed land uses and the implication for agricultural operations.
 - Residents and stakeholders in the locality who wish to maintain views of the existing agricultural landscape may be concerned about the change in visual amenity of the Study Area resulting from the change in land use.
 - Existing residential land owners/users in the locality may be concerned about potential devaluation of properties due to development.
 - Residents and land users of the proposed development may have concerns about nuisance noise from livestock and farm machinery.
 - Residents and land users of the proposed development may have concerns about odour from adjacent livestock, fertilisers, chemical applications, etc.
 - Agricultural operators adjacent to the Study Area or within the broader locality, may be concerned about weed, pest animal, or plant/animal disease introduction from increased volume of vehicles and workers from out of area during construction and spread to agricultural land.
 - Agricultural operators adjacent to the Study Area or within the broader locality may be concerned about future optionality relating to agricultural enterprises able to be undertaken adjacent to the proposal land uses.
 - Agricultural operators adjacent to the Study Area or within the broader locality may be concerned about having to address complaints relating to their existing agricultural operations (such as in relation to noise, odour, animal welfare, etc).
 - Residents and land users of the proposed development may be concerned about potential agricultural land uses that could occur on adjacent lands without development consent.
 - Residents and land users of the proposed development may have concerns about spray drift of water, fertilisers, pesticides, etc., from pasture management entering residential or recreational land.
- The impacts on agriculture as a result of the Project can be summarised as the following:
 - Permanent removal of approximately 192 ha of land used for agriculture, or land capable for use for agriculture, within the Study Area. This represents 0.3% land used for agriculture within the Bega Valley Shire LGA.
 - Permanent removal of potential agricultural primary productivity to the estimated value of up to \$ as \$480,318 per year. This represents 0.3% of gross commodities value of agriculture within the Bega Valley Shire LGA.
 - Permanent impacts to soil resources and agricultural capability within the Study Area where surface disturbance occurs.



Based on the above findings, the conclusions of this assessment are as follows:

1. There are several potential moderate and high risk land use conflict risks which will require further management or design consideration, or will remain as accepted conflict risk as a result of the proposed development. These potential conflicts are determined to be consistent with existing land use conflict risks in the Project locality.
2. Impacts to agriculture as a result of the Project are generally limited to the Study Area and are considered minor in the context of the significant dairy and livestock grazing industries operating within the broader Bega Valley Shire LGA.



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Appendix 1

Land Use Conflict Risk Assessment



Overview

LUCRA is a system to identify and assess the potential for land use conflict to occur between neighbouring land uses. It helps land managers and consent authorities assess the possibility for and potential level of future land use conflict.

The LUCRA compares and contrasts the Project against adjoining/surrounding land uses and activities for incompatibility and conflict issues based on the risks and impacts identified in Section 5, and the mitigation measures and controls of the Project design. Each potential conflict between the Project and adjacent land has been assessed and given a risk ranking based on probability and consequence as outlined in the following section.

Methodology

A risk ranking matrix (**Table A1**) provided by the DPI (2011) is used to rank the identified potential land use conflicts. The risk ranking matrix assesses the economic, social and environmental impacts according to the probability of occurrence and consequence of the impact.

Table A1: Risk Ranking Matrix

Consequence	Probability				
	A	B	C	D	E
Level 1	25	24	22	19	15
Level 2	23	21	18	14	10
Level 3	20	17	13	9	6
Level 4	16	12	8	5	3
Level 5	11	7	4	2	1

(Source: DPI, 2011)

The risk ranking matrix yields a risk ranking from 25 to 1. It covers each combination of five levels of 'probability' (a letter A to E as defined in **Table A2**) and 5 levels of 'consequence', (a number 1 to 5 as defined in **Table A3**) to identify the risk ranking of each impact. For example, an activity with a 'probability' of D and a 'consequence' of 3 yields a risk rank of 9. A rank of 25 is the highest magnitude of risk; a highly likely, very serious event. A rank of 1 represents the lowest magnitude of risk; an almost impossible, very low consequence event. Low risk is a ranking score of 10 or below.



Table A2: Probability Definitions

Level	Descriptor	Description
A	Almost Certain	Common or repeating occurrence.
B	Likely	Known to occur or it has happened.
C	Possible	Could occur or 'I've heard of it happening.'
D	Unlikely	Could occur in some circumstances but not likely to occur.
E	Rare	Practically impossible or 'I've never heard of it happening.'

(Source: DPI, 2011)



Table A3: Consequence Definitions

	Description	Example of Implications
Level 1		
Severe	<ul style="list-style-type: none"> Severe and/or permanent damage to the environment Irreversible Severe impact on the community Neighbours are in prolonged dispute and legal action involved 	<ul style="list-style-type: none"> Harm or death to animals, fish, birds or plants Long term damage to soil or water Odours so offensive some people are evacuated or leave voluntarily Many public complaints and serious damage to Council's reputation Contravenes Protection of the Environment & Operations Act and the conditions of Council's licences and permits. Almost certain prosecution under the POEO Act
Level 2		
Major	<ul style="list-style-type: none"> Serious and/or long-term impact to the environment Long-term management implications Serious impact on the community Neighbours are in serious dispute 	<ul style="list-style-type: none"> Water, soil or air impacted, possibly in the long term Harm to animals, fish or birds or plants Public complaints. Neighbour disputes occur. Impacts pass quickly Contravenes the conditions of Council's licences, permits and the POEO Act Likely prosecution
Level 3		
Moderate	<ul style="list-style-type: none"> Moderate and/or medium-term impact to the environment and community Some ongoing management implications Neighbour disputes occur 	<ul style="list-style-type: none"> Water or soil known to be affected, probably in the short to medium-term (e.g. 1-5 years) Management could include significant change of management needed for agricultural enterprises to continue
Level 4		
Minor	<ul style="list-style-type: none"> Minor and/or short-term impact to the environment and community Can be effectively managed as part of normal operations Infrequent disputes between neighbours 	<ul style="list-style-type: none"> Theoretically could affect the environment or people but no impacts noticed No complaints to Council Does not affect the legal compliance status of Council
Level 5		
Negligible	<ul style="list-style-type: none"> Very minor impact to the environment and community Can be effectively managed as part of normal operations Neighbour disputes unlikely 	<ul style="list-style-type: none"> No measurable or identifiable impact on the environment No measurable impact on the community or impact is generally acceptable

(Source: DPI, 2011)



Potential Conflict Category	Potential Conflict Description	Initial Risk Rating			Risk Reduction Control	Final Risk Rating			Performance Target
		Probability	Consequence	Rating		Probability	Consequence	Rating	
Eastern Precinct									
Construction impacting agriculture	Agricultural operators adjacent to the Eastern Precinct or within the broader locality may be concerned construction noise may affect livestock behaviour and/or breeding.	D	3	9	Compliance with standard construction mitigation measures and criteria, as well as the presence physical separation buffer zones (such as Tathra Road in the context of adjacent dairy enterprise), are anticipated to reduce the risk of conflict related to noise impacts on agricultural land users. Ongoing consultation with stakeholders will identify and address concerns if they arise.	E	3	6	Any complaints from neighbours regarding effects to livestock can be managed within normal construction procedures.
Construction impacting agriculture	Agricultural operators adjacent to the Eastern Precinct or within the broader locality may be concerned that dust generated by construction activities may cause nuisance and/or have adverse health implications for livestock.	D	3	9	Compliance with standard construction mitigation measures and criteria, as well as the presence physical separation buffer zones (such as Tathra Road in the context of adjacent dairy enterprise), are anticipated to reduce the risk of conflict related to noise impacts on agricultural land users. Ongoing consultation with stakeholders will identify and address concerns if they arise.	E	4	3	Any complaints from neighbours regarding effects to livestock can be managed within normal construction procedures.
Construction impacting agriculture	Agricultural operators adjacent to the Eastern Precinct or within the broader locality may be concerned that the increased vehicles during construction or operation may result in an incident with livestock or farm machinery on roads and lanes.	D	3	9	Project design and mitigation measures are anticipated to reduce the risk of conflict related to construction traffic for surrounding land users. Ongoing consultation with stakeholders will identify and address concerns if they arise.	E	3	6	Effectiveness of mitigation measures will be measured as part of a construction management plan.
Construction impacting agriculture	Use of surrounding roadways during construction may cause conflict by interacting with agricultural and/or local transport activities, resulting in additional travel time for road users or potentially impacting / degrading the physical condition of local roads.	C	4	8	Compliance with mitigation measures is anticipated to reduce the risk of conflict related to traffic for surrounding land users. Liaison with relevant road authorities (ie. Bega Valley Council and Transport for NSW) regarding ongoing maintenance of road surface during construction. Damaged or degraded roads as a result of construction activities will be repaired.	D	4	5	Effectiveness of mitigation measures will be measured as part of a construction management plan.
Construction impacting agriculture	Agricultural operators adjacent to the Eastern Precinct or within the broader locality may be concerned about weed, pest animal, or plant/animal disease introduction from increased volume of vehicles and workers from out of area during construction and spread to agricultural land.	C	3	21	Compliance with standard construction mitigation measures is anticipated to reduce the risk of conflict related to pest spread to agricultural land. Ongoing consultation with stakeholders will identify and address concerns if they arise.	D	3	10	Any complaints from neighbours regarding weed or pest species spread can be readily addressed.

Potential Conflict Category	Potential Conflict Description	Initial Risk Rating			Risk Reduction Control	Final Risk Rating			Performance Target
		Probability	Consequence	Rating		Probability	Consequence	Rating	
Construction impacting existing residents	Increased noise generated by construction activities and heavy vehicle movements may be perceived as nuisance to existing residential land users within the locality.	C	4	8	Compliance with standard construction mitigation measures and criteria is anticipated to reduce the risk of conflict related to noise impacts on neighbouring residents. Ongoing consultation with stakeholders will identify and address concerns if they arise.	D	4	5	Any complaints from neighbours regarding effects of construction dust can be managed within normal construction procedures.
Construction impacting existing residents	Land users in the locality may be concerned that dust generated by construction activities may cause nuisance and/or have adverse health implications for existing residents within the locality.	D	3	9	Compliance with standard construction mitigation measures and criteria is anticipated to reduce the risk of conflict related to dust impacts on neighbouring residents. Ongoing consultation with stakeholders will identify and address concerns if they arise.	E	3	6	Any complaints from neighbours regarding effects of construction dust can be managed within normal construction procedures.
Construction impacting the environment	Land users in the locality may be concerned about changes to water quality, quantity and surface water flows of watercourses, including Parbery Creek, from surface disturbances during construction activities.	D	3	9	Appropriate mitigation measures, including soil erosion and sedimentation controls, must be implemented to minimise impacts to watercourse health and quality. Compliance with mitigation measures is anticipated to reduce the risk of conflict related to watercourse health and quality. Implement all measures specified in an erosion and sediment control plan developed for the construction phase of the Project.	E	3	6	Effectiveness of mitigation measures will be measured as part of a construction management plan.
Construction impacting heritage values	Stakeholders may be concerned about impacts to heritage items or values at the Study Area and locality.	D	3	9	An assessment of impacts to heritage will be undertaken. Compliance with mitigation measures is anticipated to reduce the risk of conflict related to environmental features, culturally sensitive land and heritage. Implement all measures specified in management plans and/or consent conditions.	E	3	6	Effectiveness of engagement will be measured as part of the construction management plan.
Change in land use impacting agriculture	Agricultural operators adjacent to the Eastern Precinct or within the broader locality may be concerned about increased biosecurity risk as a result of proposed land uses (residential, recreational, etc).	D	3	10	The potential weed and pest spread impacts are determined to be appropriate in the context of existing residential development. No mitigation measures are proposed.	E	3	6	No complaints from agricultural land users regarding pest or weed spread as a result of the development.
Change in land use impacting agriculture	Agricultural operators and/or neighbouring property owners adjacent to the Eastern Precinct may be concerned about sprays from weed control adversely affecting adjacent agricultural land.	D	4	5	Impacts to agricultural operations as a result of residential and small scall pesticide use spray drift is anticipated to be negligible. Ongoing consultation with stakeholders will identify and address concerns if they arise.	D	4	5	No complaints from agricultural land users regarding impacts from residential weed control activities.
Change in land use impacting agriculture	Agricultural operators adjacent to the Eastern Precinct or within the broader locality may be concerned that waste generated by the development may increase the presence of pest animals and/or vermin which could impact agricultural productivity.	D	4	5	The potential impacts as a result of increased waste generation are determined to be appropriate in the context of existing residential development and surrounding agricultural activities. No mitigation measures are proposed.	E	4	3	No complaints from land users in locality regarding increased waste or pest animals.

Potential Conflict Category	Potential Conflict Description	Initial Risk Rating			Risk Reduction Control	Final Risk Rating			Performance Target
		Probability	Consequence	Rating		Probability	Consequence	Rating	
Change in land use impacting agriculture	Agricultural operators adjacent to the Eastern Precinct or within the broader locality may be concerned about the required groundwater take of the proposed land uses and the implication for agricultural operations.	A	3	20	The forecast increase in groundwater extraction to meet future urban water demands is not expected to significantly affect agricultural users adjacent to the Eastern Precinct. Irrigators in the Lower Bega and Brogo River sections of the Bega Borefield are reliant on regulated river flows, and Bega Valley Shire Council's groundwater take has no impact on their access to water. Ongoing consultation with stakeholders will identify and address concerns if they arise.	D	3	9	No restrictions to water supply for agriculture users.
Change in land use impacting agriculture	Agricultural operators adjacent to the Eastern Precinct or within the broader locality may be concerned about future optionality relating to agricultural enterprises able to be undertaken adjacent to the proposal land uses.	C	3	13	The risks of future land uses are determined to be consistent with existing residential development adjacent to agricultural land uses within the LGA. Development design has included measures to mitigate the conflict between agriculture and the proposed land uses. Ongoing consultation between stakeholders will be required identify and address land use conflict concerns if they arise.	D	3	9	No restrictions to agricultural enterprise optionality for local agricultural operators.
Change in land use impacting agriculture	Agricultural operators adjacent to the Eastern Precinct or within the broader locality may be concerned about having to address complaints relating to their existing agricultural operations (such as in relation to noise, odour, animal welfare, etc). This includes the Bega sale yards and potential impact on future operations/expansions.	C	3	13	The potential risks are determined to be appropriate in the context of existing residential development adjacent to agricultural land uses including the Bega sale yards within the LGA. Development design has included measures to mitigate the general impacts to residential, commercial and recreational land uses. Historical data suggests very minimal complaints received about the Bega Sale Yard operations by nearby residents (Approximately 3 complaints over the last 10 years)	D	3	9	No unnecessary complaints required to be addressed by agricultural operators (including Bega Sale Yards).
Change in land use impacting agriculture	Agricultural operators adjacent to the Eastern Precinct or within the broader locality may be concerned about the risk of fires occurring as a result of the proposed land uses and their potential to spread to surrounding land, infrastructure or livestock.	D	1	19	The risks related to fire spread are determined to be appropriate in the context of existing residential development and surrounding agricultural activities. Standard design in accordance with relevant guidelines will mitigation risk.	E	3	6	No instances of fire starting on the Project are as a result of the Project, which impact surrounding land, infrastructure or livestock.

Potential Conflict Category	Potential Conflict Description	Initial Risk Rating			Risk Reduction Control	Final Risk Rating			Performance Target
		Probability	Consequence	Rating		Probability	Consequence	Rating	
Change in land use impacting agriculture	Agricultural operators and land users in the locality may be concerned about impacts to agricultural support infrastructure in the Project locality and wider region.	D	4	5	The assessment of the impacts to agricultural support infrastructure in the Project locality and wider region has been undertaken within this agricultural assessment. Anticipated impacts are determined to be negligible and presented in this report for stakeholder consideration. Ongoing consultation with stakeholders will identify and address concerns if they arise.	D	5	2	No complaints from agriculture enterprises regarding impact to agricultural support infrastructure due to Project activities.
Change in land use impacting agriculture	Stakeholders may be concerned about impacts to agricultural industries and critical mass thresholds that determine viability as a result of the removal of dairy and cattle grazing enterprises within the Eastern Precinct.	D	4	5	The assessment of the impacts to agricultural industries has been undertaken within this agricultural assessment. Given the nature of agriculture being removed (i.e., dairy and beef cattle grazing) and in the context of the scale of the established agricultural industries within the region and wider state, impacts to critical mass thresholds and regional and state agricultural industries are unlikely to occur. Impacts are determined to be minor and presented in this report for stakeholder consideration.	D	5	2	No complaints from wider agriculture industries due to Project activities.
Change in land use impacting agriculture	Agricultural operators adjacent to the Eastern Precinct may be concerned about their livestock entering the development area and becoming injured.	D	4	5	Fencing and/or physical separations such as roads between agriculture operations and residential will be fit for purpose and maintained. The potential impacts are determined to be appropriate in the context of existing residential development and surrounding agricultural activities. Standard design in accordance with relevant guidelines will mitigation risk (fencing). Ongoing consultation with stakeholders will identify and address concerns if they arise.	E	4	3	No instances of livestock entering development area and becoming injured.
Change in land use impacting agriculture	Agricultural operators adjacent to the Eastern Precinct or within the broader locality may be concerned about domestic dogs entering agricultural properties and harassing cattle and calves.	D	4	5	Development design will include measures to mitigate the impacts (dog-proof fencing and physical separation). Ongoing consultation with stakeholders will identify concerns if they arise.	E	4	3	No complaints from agricultural land users regarding domestic dogs' presence.
Change in land use impacting existing residents	Residents and stakeholders in the locality who wish to maintain views of the existing agricultural landscape may be concerned about the change in visual amenity of the Eastern Precinct resulting from the change in land use.	A	3	20	There will be a permanent impact to the existing visual amenity of agricultural land for neighbouring land users. Project design will include measures to mitigate the impacts.	C	3	13	Nil.
Change in land use impacting existing residents	Existing residential land owners/users in the locality may be concerned about an increase in nuisance noise generated from the proposed residential, commercial and recreational land uses.	D	3	9	The potential nuisance noise impacts are determined to be appropriate in the context of existing residential development and Tathra Road. Ongoing consultation with stakeholders will identify and address concerns if they arise.	E	3	6	No complaints from land users in locality regarding nuisance noise.

Potential Conflict Category	Potential Conflict Description	Initial Risk Rating			Risk Reduction Control	Final Risk Rating			Performance Target
		Probability	Consequence	Rating		Probability	Consequence	Rating	
Change in land use impacting existing residents	Existing residential land owners/users in the locality may be concerned about potential devaluation of properties due to development.	A	2	23	Impacts to property values in the locality may be experienced for properties in proximity to development. Project design has included measures to mitigate the impacts.	2	3	21	Nil.
Change in land use impacting existing residents	Existing residential land owners/users in the locality may be concerned that the change in land use may attract people to the area who may not otherwise visit the area, including workers. This may be perceived to adversely affect a resident’s security.	D	3	9	The potential impacts are determined to be appropriate in the context of existing residential development. Workforce behaviour will be managed through the implementation of the construction management plan, which will encourage positive workforce behaviour. Ongoing consultation with stakeholders will identify and address concerns if they arise.	E	3	6	Effectiveness of mitigation measures will be measured as part of a construction management plan.
Agriculture impacting proposed land uses	Agricultural operators adjacent to the Eastern Precinct may be concerned about their livestock entering the development area and causing damage or injuring land users	C	3	13	Fencing and/or physical separations such as roads between agriculture operations and residential will be fit for purpose and maintained. The potential impacts are determined to be appropriate in the context of existing residential development and surrounding agricultural activities. Standard design in accordance with relevant guidelines will mitigation risk (fencing).	E	3	6	No instances of livestock entering development area and becoming injured or causing damage.
Agriculture impacting proposed land uses	Residents and land users of the proposed development may have concerns about nuisance noise from livestock and farm machinery.	B	3	17	The potential impacts are determined to be appropriate in the context of existing residential development adjacent to agricultural land uses within the LGA. Project design has included measures to mitigate the impacts, including Tathra Road as a separation buffer between residential land and dairy farming.	C	3	17	No complaints from residents regarding nuisance noise.
Agriculture impacting proposed land uses	Residents and land users of the proposed development may have concerns about odour from adjacent livestock, fertilisers, chemical applications, etc.	B	3	17	The potential impacts are determined to be appropriate in the context of existing residential development adjacent to agricultural land uses within the LGA. Project design has included measures to mitigate the impacts, including Tathra Road as a separation buffer between residential land and dairy farming.	C	3	17	No complaints from residents regarding nuisance odour.
Agriculture impacting proposed land uses	Residents and land users of the proposed development may be concerned about potential agricultural land uses that could occur on adjacent lands without development consent.	C	3	13	The risks of future land uses are determined to be consistent with existing residential development adjacent to agricultural land uses within the LGA. Development design has included measures to mitigate the conflict between agriculture and the proposed land uses. Ongoing consultation between stakeholders will be required identify and address land use conflict concerns if they arise.	D	3	9	No heightened risk of land use conflict as a result of changes to agricultural activities on adjacent properties. .

Potential Conflict Category	Potential Conflict Description	Initial Risk Rating			Risk Reduction Control	Final Risk Rating			Performance Target
		Probability	Consequence	Rating		Probability	Consequence	Rating	
Agriculture impacting proposed land uses	Residents and land users of the proposed development may have concerns about increased presence of pests, including flies and vermin attracted, associated with agricultural activities.	C	4	8	The potential risks are determined to be appropriate in the context of existing residential development adjacent to agricultural land uses within the LGA. Project design has included measures to mitigate the impacts, including Tathra Road as a separation buffer between residential land and dairy farming.	D	4	5	No complaints from residents regarding flies and vermin.
Agriculture impacting proposed land uses	Residents and land users of the proposed development may have concerns about spray drift of water, fertilisers, pesticides, etc., from pasture management entering residential or recreational land.	C	3	13	The potential risks are determined to be appropriate in the context of existing residential development adjacent to agricultural land uses within the LGA. Project design has included measures to mitigate the impacts, including Tathra Road as a separation buffer between residential land and dairy farming.	D	3	9	No complaints from residents regarding pesticide spray drift.
Western Precinct									
Construction impacting agriculture	Agricultural operators adjacent to the Western Precinct or within the broader locality may be concerned construction noise may affect livestock behaviour and/or breeding.	D	3	9	Compliance with standard construction mitigation measures and criteria, as well as the presence physical separation buffer zones (such as Tathra Road in the context of adjacent dairy enterprise), are anticipated to reduce the risk of conflict related to noise impacts on agricultural land users. Ongoing consultation with stakeholders will identify and address concerns if they arise.	E	3	6	Any complaints from neighbours regarding effects to livestock can be managed within normal construction procedures.
Construction impacting agriculture	Agricultural operators adjacent to the Western Precinct or within the broader locality may be concerned that dust generated by construction activities may cause nuisance and/or have adverse health implications for livestock.	D	3	9	Compliance with standard construction mitigation measures and criteria, as well as the presence physical separation buffer zones (such as Tathra Road in the context of adjacent dairy enterprise), are anticipated to reduce the risk of conflict related to noise impacts on agricultural land users. Ongoing consultation with stakeholders will identify and address concerns if they arise.	E	4	3	Any complaints from neighbours regarding effects to livestock can be managed within normal construction procedures.
Construction impacting agriculture	Agricultural operators adjacent to the Western Precinct or within the broader locality may be concerned that the increased vehicles during construction or operation may result in an incident with livestock or farm machinery on roads and lanes.	D	3	9	Project design and mitigation measures are anticipated to reduce the risk of conflict related to construction traffic for surrounding land users. Ongoing consultation with stakeholders will identify and address concerns if they arise.	E	3	6	Effectiveness of mitigation measures will be measured as part of a construction management plan.

Potential Conflict Category	Potential Conflict Description	Initial Risk Rating			Risk Reduction Control	Final Risk Rating			Performance Target
		Probability	Consequence	Rating		Probability	Consequence	Rating	
Construction impacting agriculture	Use of surrounding roadways during construction may cause conflict by interacting with agricultural and/or local transport activities, resulting in additional travel time for road users or potentially impacting / degrading the physical condition of local roads.	C	4	8	Compliance with mitigation measures is anticipated to reduce the risk of conflict related to traffic for surrounding land users. Liaison with relevant road authorities (ie. Bega Valley Council and Transport for NSW) regarding ongoing maintenance of road surface during construction. Damaged or degraded roads as a result of construction activities will be repaired.	D	4	5	Effectiveness of mitigation measures will be measured as part of a construction management plan.
Construction impacting agriculture	Agricultural operators adjacent to the Western Precinct or within the broader locality may be concerned about weed, pest animal, or plant/animal disease introduction from increased volume of vehicles and workers from out of area during construction and spread to agricultural land.	D	3	9	Compliance with standard construction mitigation measures is anticipated to reduce the risk of conflict related to pest spread to agricultural land. Ongoing consultation with stakeholders will identify and address concerns if they arise.	E	3	6	Any complaints from neighbours regarding weed or pest species spread can be readily addressed.
Construction impacting existing residents	Increased noise generated by construction activities and heavy vehicle movements may be perceived as nuisance to existing residential land users within the locality.	C	4	8	Compliance with standard construction mitigation measures and criteria is anticipated to reduce the risk of conflict related to noise impacts on neighbouring residents. Ongoing consultation with stakeholders will identify and address concerns if they arise.	D	4	5	Any complaints from neighbours regarding effects of construction dust can be managed within normal construction procedures.
Construction impacting existing residents	Land users in the locality may be concerned that dust generated by construction activities may cause nuisance and/or have adverse health implications for existing residents within the locality.	D	3	9	Compliance with standard construction mitigation measures and criteria is anticipated to reduce the risk of conflict related to dust impacts on neighbouring residents. Ongoing consultation with stakeholders will identify and address concerns if they arise.	E	3	6	Any complaints from neighbours regarding effects of construction dust can be managed within normal construction procedures.
Construction impacting the environment	Land users in the locality may be concerned about changes to water quality, quantity and surface water flows of watercourses, including Parbery Creek, from surface disturbances during construction activities.	D	3	9	Appropriate mitigation measures, including soil erosion and sedimentation controls, must be implemented to minimise impacts to watercourse health and quality. Compliance with mitigation measures is anticipated to reduce the risk of conflict related to watercourse health and quality. Implement all measures specified in an erosion and sediment control plan developed for the construction phase of the Project.	E	3	6	Effectiveness of mitigation measures will be measured as part of a construction management plan.
Construction impacting heritage values	Stakeholders may be concerned about impacts to heritage items or values at the Study Area and locality.	D	3	9	An assessment of impacts to heritage will be undertaken. Compliance with mitigation measures is anticipated to reduce the risk of conflict related to environmental features, culturally sensitive land and heritage. Implement all measures specified in management plans and/or consent conditions.	E	3	6	Effectiveness of engagement will be measured as part of the construction management plan.

Potential Conflict Category	Potential Conflict Description	Initial Risk Rating			Risk Reduction Control	Final Risk Rating			Performance Target
		Probability	Consequence	Rating		Probability	Consequence	Rating	
Change in land use impacting agriculture	Agricultural operators adjacent to the Western Precinct or within the broader locality may be concerned about increased biosecurity risk as a result of proposed land uses (residential, recreational, etc).	D	3	10	The potential weed and pest spread impacts are determined to be appropriate in the context of existing residential development. No mitigation measures are proposed.	E	3	6	No complaints from agricultural land users regarding pest or weed spread as a result of the development.
Change in land use impacting agriculture	Agricultural operators and/or neighbouring property owners adjacent to the Western Precinct may be concerned about sprays from weed control adversely affecting adjacent agricultural land.	D	4	5	Impacts to agricultural operations as a result of residential and small scall pesticide use spray drift is anticipated to be negligible. Ongoing consultation with stakeholders will identify and address concerns if they arise.	D	4	5	No complaints from agricultural land users regarding impacts from residential weed control activities.
Change in land use impacting agriculture	Agricultural operators adjacent to the Western Precinct or within the broader locality may be concerned that waste generated by the development may increase the presence of pest animals and/or vermin which could impact agricultural productivity.	D	4	5	The potential impacts as a result of increased waste generation are determined to be appropriate in the context of existing residential development and surrounding agricultural activities. No mitigation measures are proposed.	E	4	3	No complaints from land users in locality regarding increased waste or pest animals.
Change in land use impacting agriculture	Agricultural operators adjacent to the Western Precinct or within the broader locality may be concerned about the required groundwater take of the proposed land uses and the implication for agricultural operations.	C	3	13	The forecast increase in groundwater extraction to meet future urban water demands is not expected to significantly affect agricultural users adjacent to the Western Precinct. In drought times, when surface flow can cease in the Mid Bega River section, there is a large volume of water stored and available in the aquifer to utilise. Ongoing consultation with stakeholders will identify and address concerns if they arise.	D	3	9	No restrictions to water supply for agriculture users.
Change in land use impacting agriculture	Agricultural operators adjacent to the Western Precinct or within the broader locality may be concerned about future optionality relating to agricultural enterprises able to be undertaken adjacent to the proposal land uses.	D	3	13	The risks of future land uses are determined to be consistent with existing residential development adjacent to agricultural land uses within the LGA. Agricultural enterprise options in the Western Precinct are limited by soil and land capability. Development design has included measures to mitigate the conflict between agriculture and the proposed land uses. Ongoing consultation between stakeholders will be required identify and address land use conflict concerns if they arise.	D	3	9	No restrictions to agricultural enterprise optionality for local agricultural operators.
Change in land use impacting agriculture	Agricultural operators adjacent to the Western Precinct or within the broader locality may be concerned about having to address complaints relating to their existing agricultural operations (such as in relation to noise, odour, animal welfare, etc).	D	3	9	The potential risks are determined to be appropriate in the context of existing residential development adjacent to agricultural land uses within the LGA. Development design has included measures to mitigate the general impacts to residential, commercial and recreational land uses.	E	3	6	No unnecessary complaints required to be addressed by agricultural operators.

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Change in land use impacting agriculture	Agricultural operators adjacent to the Western Precinct or within the broader locality may be concerned about the risk of fires occurring as a result of the proposed land uses and their potential to spread to surrounding land, infrastructure or livestock.	D	1	19	The risks related to fire spread are determined to be appropriate in the context of existing residential development and surrounding agricultural activities. Standard design in accordance with relevant guidelines will mitigation risk.	E	3	6	No instances of fire starting on the Project are as a result of the Project, which impact surrounding land, infrastructure or livestock.
Change in land use impacting agriculture	Agricultural operators and land users in the locality may be concerned about impacts to agricultural support infrastructure in the Project locality and wider region.	D	4	5	The assessment of the impacts to agricultural support infrastructure in the Project locality and wider region has been undertaken within this agricultural assessment. Anticipated impacts are determined to be negligible and presented in this report for stakeholder consideration. Ongoing consultation with stakeholders will identify and address concerns if they arise.	D	5	2	No complaints from agriculture enterprises regarding impact to agricultural support infrastructure due to Project activities.
Change in land use impacting agriculture	Stakeholders may be concerned about impacts to agricultural industries and critical mass thresholds that determine viability as a result of the removal of dairy and cattle grazing enterprises within the Western Precinct.	D	4	5	The assessment of the impacts to agricultural industries has been undertaken within this agricultural assessment. Given the nature of agriculture being removed (i.e., dairy and beef cattle grazing) and in the context of the scale of the established agricultural industries within the region and wider state, impacts to critical mass thresholds and regional and state agricultural industries are unlikely to occur. Impacts are determined to be minor and presented in this report for stakeholder consideration.	D	5	2	No complaints from wider agriculture industries due to Project activities.
Change in land use impacting agriculture	Agricultural operators adjacent to the Western Precinct may be concerned about their livestock entering the development area and becoming injured.	D	4	5	Fencing and/or physical separations such as roads between agriculture operations and residential will be fit for purpose and maintained. The potential impacts are determined to be appropriate in the context of existing residential development and surrounding agricultural activities. Standard design in accordance with relevant guidelines will mitigation risk (fencing). Ongoing consultation with stakeholders will identify and address concerns if they arise.	E	4	3	No instances of livestock entering development area and becoming injured.
Change in land use impacting agriculture	Agricultural operators adjacent to the Western Precinct or within the broader locality may be concerned about domestic dogs entering agricultural properties and harassing cattle and calves.	D	4	5	Development design will include measures to mitigate the impacts (dog-proof fencing and physical separation). Ongoing consultation with stakeholders will identify concerns if they arise.	E	4	3	No complaints from agricultural land users regarding domestic dogs' presence.
Change in land use impacting existing residents	Residents and stakeholders in the locality who wish to maintain views of the existing agricultural landscape may be concerned about the change in visual amenity of the Western Precinct resulting from the change in land use.	B	3	17	There will be a permanent impact to the existing visual amenity of agricultural land for neighbouring land users. Project design (i.e., largely rural residential zoning) will include measures to mitigate the impacts.	C	3	13	Nil.

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Change in land use impacting existing residents	Existing residential land owners/users in the locality may be concerned about an increase in nuisance noise generated from the proposed residential, commercial and recreational land uses.	D	3	9	The potential nuisance noise impacts are determined to be appropriate in the context of existing residential development and Tathra Road. Ongoing consultation with stakeholders will identify and address concerns if they arise.	E	3	6	No complaints from land users in locality regarding nuisance noise.
Change in land use impacting existing residents	Existing residential land owners/users in the locality may be concerned about potential devaluation of properties due to development.	A	2	23	Impacts to property values in the locality may be experienced for properties in proximity to development. Project design has included measures to mitigate the impacts.	B	2	21	Nil.
Change in land use impacting existing residents	Existing residential land owners/users in the locality may be concerned that the change in land use may attract people to the area who may not otherwise visit the area, including workers. This may be perceived to adversely affect a resident’s security.	D	3	9	The potential impacts are determined to be appropriate in the context of existing residential development. Workforce behaviour will be managed through the implementation of the construction management plan, which will encourage positive workforce behaviour. Ongoing consultation with stakeholders will identify and address concerns if they arise.	E	3	6	Effectiveness of mitigation measures will be measured as part of a construction management plan.
Agriculture impacting proposed land uses	Agricultural operators adjacent to the Western Precinct may be concerned about their livestock entering the development area and causing damage or injuring land users	C	3	13	Fencing and/or physical separations such as roads between agriculture operations and residential will be fit for purpose and maintained. The potential impacts are determined to be appropriate in the context of existing residential development and surrounding agricultural activities. Standard design in accordance with relevant guidelines will mitigation risk (fencing).	E	3	6	No instances of livestock entering development area and becoming injured or causing damage.
Agriculture impacting proposed land uses	Residents and land users of the proposed development may have concerns about nuisance noise from livestock and farm machinery and light agri-industrial activities.	C	3	13	The potential impacts are determined to be appropriate in the context of existing residential development adjacent to agricultural land uses within the LGA. Project design has included measures to mitigate the impacts, including Tathra Road as a separation buffer between residential land and dairy farming.	D	3	9	No complaints from residents regarding nuisance noise.
Agriculture impacting proposed land uses	Residents and land users of the proposed development may have concerns about odour from adjacent livestock, fertilisers, chemical applications, etc.	C	3	13	The potential impacts are determined to be appropriate in the context of existing residential development adjacent to agricultural land uses within the LGA. Project design has included measures to mitigate the impacts, including Tathra Road as a separation buffer between residential land and dairy farming.	D	3	9	No complaints from residents regarding nuisance odour.

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Agriculture impacting proposed land uses	Residents and land users of the proposed development may be concerned about potential agricultural land uses that could occur on adjacent lands without development consent.	C	3	13	The risks of future land uses are determined to be consistent with existing residential development adjacent to agricultural land uses within the LGA. Development design has included measures to mitigate the conflict between agriculture and the proposed land uses. Ongoing consultation between stakeholders will be required identify and address land use conflict concerns if they arise.	D	3	9	No heightened risk of land use conflict as a result of changes to agricultural activities on adjacent properties. .
Agriculture impacting proposed land uses	Residents and land users of the proposed development may have concerns about increased presence of pests, including flies and vermin attracted, associated with agricultural activities.	C	4	8	The potential risks are determined to be appropriate in the context of existing residential development adjacent to agricultural land uses within the LGA. Project design has included measures to mitigate the impacts, including Tathra Road as a separation buffer between residential land and dairy farming.	D	4	5	No complaints from residents regarding flies and vermin.
Agriculture impacting proposed land uses	Residents and land users of the proposed development may have concerns about spray drift of water, fertilisers, pesticides, etc., from pasture management entering residential or recreational land.	D	3	9	The potential risks are determined to be appropriate in the context of existing residential development adjacent to agricultural land uses within the LGA. Project design has included measures to mitigate the impacts, including Tathra Road as a separation buffer between residential land and dairy farming.	E	3	6	No complaints from residents regarding pesticide spray drift.