Development application and Statement of Environmental Effects for proposed 999 head beef cattle feedlot on “Westholme”

“Westholme”
Newsomes Road
DEEPWATER NSW 2371

Narrie Holdings Pty Ltd as the trustee for Newsome Family Trust
“Sherwood”
166 Newsomes Road
DEEPWATER NSW 2371

[December 2024]

RDC ENGINEERS
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List of abbreviations

AADT	Annual Average Daily Traffic
AASS	Actual Acid Sulfate Soils
ACS	Animal Care Statement
AHC Act	Australian Heritage Commission Act 1975
AHD	Australian Height Datum
AHIMS	Aboriginal Heritage Information Management Systems
ARI	Average Recurrence Interval
AS	Australian Standard
AUSVETPLAN	Australian Veterinary Emergency Plan
BOD	Biochemical Oxygen Demand
BoM	Bureau of Meteorology
CEC	Cation Exchange Capacity
DA	Development Application
DCP	Development Control Plan
DEC	Department of Environment and Conservation
DEH	Department of Environment and Heritage
DIPNR	Department of Infrastructure, Planning and Natural Resources
DLWC	Department of Land and Water Conservation
DNR	Department of Natural Resources
DoP	Department of Planning
DPI	Department of Primary Industries
EAR's	Environmental Assessment Requirements
EAT	Emerson Aggregate Test
EC	Electrical Conductivity
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
EMS	Environmental Management System
ENCM	Environmental Noise Control Manual
EP&A Act	Environmental Planning and Assessment Act 1979
EP&A Regulation	Environmental Planning and Assessment Regulation 2000
EPA	NSW Environment Protection Authority
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
EPI	Environmental Planning Instrument
EPL	Environment Protection Licence
ESD	Ecologically Sustainable Development
FM Act	Fisheries Management Act 1994
GHG	Greenhouse Gases
GISC	Glen Innes Severn Council
HASP	Health and Safety Plan
H:V	Horizontal Units in Proportion to Vertical Units
IGAE	Intergovernmental Agreement on the Environment 1992
INP	Industrial Noise Policy
IPM	Integrated Pest Management
LEP	Local Environment Plan

LGA	Local Government Area
LLS	Local Land Service
Ltd	Limited
MLA	Meat and Livestock Australia
NES	National Environmental Significance
NFAS	National Feedlot Accreditation Scheme
NLWRA	National Land and Water Resources Audit
NP&W Act	National Parks and Wildlife Act 1974
NSW	New South Wales
NVC Act	Native Vegetation Conservation Act 1997
OEMP	Operational Environmental Management Plan
OH&S	Occupational Health and Safety
OU	Odour Unit
PASS	Potential Acid Sulfate Soils
PFM	Planning Focus Meeting
POEO Act	Protection of the Environment Operations Act 1997
Pty	Proprietary
QDPI	Queensland Department of Primary Industries
REP	Regional Environmental Plan
RMS	NSW Roads and Maritime Services
RTA	NSW Roads and Traffic Authority
SCU	Standard Cattle Unit
SEE	Statement of Environmental Effects
SEED	Sharing and Enabling Environmental Data
TAPM	The Air Pollution Model
TSC Act	Threatened Species Conservation Act 1995
WA	Wildlife Atlas
WAL	Water Access Licence
WSP	Water Sharing Plan

Executive summary

The Newsome family own and operate a beef production enterprise at Wellington Vale some 11 km by road west of the village of Deepwater and 19 km east of the village of Emmaville in the central New England tablelands region of New South Wales.

The aggregation at Wellington Vale includes several adjoining properties "Sherwood", "Westholme", "Gum Creek", "Picks", "Roundwood", "Ewandon", "Valley View", "Woodlands", "Kenya", "Kooringa", "Giru", "Seven V" and "Strachan Vale" comprising over 6,489 ha (~16,029 acres) and is located within the Glen Innes Severn Council area.

The enterprise currently comprises breeding and backgrounding of beef cattle and dryland cropping of winter forage crops (e.g oats, ryegrass) which are cut for silage or grazed.

"Westholme" comprises some 368 ha (~911 acres) and currently a beef production and dryland cropping enterprise is undertaken on the property producing fodder such as oats for grazing and silage. Native vegetation remains as scattered paddock trees and open woodland on areas less suitable for beef cattle and cropping.

Narrie Holdings Pty Ltd as trustee for the Newsome Family Trust wish to develop a beef cattle feedlot by gaining development approval for intensive livestock agriculture to operate as a 999 head beef cattle feedlot on the property "Westholme" as part of a diversification strategy. The property comprises some 510 ha (~1,260 acres).

Under Schedule 3, Part 2, Item 27 of the Environmental Planning and Assessment Regulation 2021, as the capacity of the proposed development does not exceed 1,000 head it is not a designated development. Consequently, the development application is not required to be accompanied by an Environmental Impact Statement.

This report has been prepared in support of a Development Application from the Glen Innes Severn Council for the proposed development.

1 Background

1.1 Introduction

The Newsome family own and operate a beef production enterprise in the central New England tablelands region of New South Wales trading as Narrie Holdings Pty Ltd as trustee for the Newsome Family Trust.

The supply chain model includes cattle breeding, backgrounding and farming operations. The breeding, backgrounding and farming operations are centred on an aggregation of properties in the Wellington Vale region some 11 km by road west of the village of Deepwater and 19 km east of the village of Emmaville.

The aggregation at Wellington Vale includes several adjoining properties "Sherwood", "Westholme", "Gum Creek", "Picks", "Roundwood", "Ewandon", "Valley View", "Woodlands", "Kenya", "Kooringa", "Giru", "Seven V" and "Strachan Vale" comprising over 6,489 ha (~16,029 acres) and is located within the Glen Innes Severn Council area. Dryland and irrigated cropping of winter cereals and forage is currently undertaken across the aggregation alongside the breeding and backgrounding of beef cattle. Some 3,000 breeder cows and progeny are run across the aggregation.

"Westholme" comprises some 368 ha (~911 acres) and currently a beef production and dryland cropping enterprise is undertaken on the property producing fodder such as oats for grazing and silage. Native vegetation remains as scattered paddock trees and open woodland on areas less suitable for beef cattle and cropping.

The beef production enterprise has been developed based around breeding cattle for domestic markets and feeder cattle for the Rangers Valley feedlot. "Westholme" has built infrastructure such as machinery/storage sheds, silos, cattle yards , water storages etc to support the agricultural enterprises on the property. "Westholme" has no dwellings.

As part of a diversification strategy, Narrie Holdings Pty Ltd as trustee for the Newsome Family Trust wish to develop a beef cattle feedlot by gaining development approval for Intensive livestock agriculture to operate as a 999 head beef cattle feedlot on the property "Westholme".

"Westholme" is within the Glen Innes Severn Council local government area and relevant environmental planning instrument is the Glen Innes Severn Council Local Environmental Plan 2012 (GISLEP).

The property does not have to a water access licence but is within the central-inland draining catchments harvestable rights area. Harvestable rights allow landholders to capture and store a proportion of the rainfall runoff from their landholding in one or more harvestable rights dams without a water access licence, water supply work approval or water use approval. Water collected in harvestable rights dams shall be used as the source of water for the proposed development.

Under Schedule 3, Part 2 Designated development, item 27, Feedlots, of the Environmental Planning and Assessment Regulation 2021, as the capacity of the proposed development does not exceed 1000 head it is not a designated development. Consequently, the development application is required to be accompanied by Statement of Environmental Effects (SEE) and an Environmental Impact Statement (EIS) is not required.

The NSW DPI (2006) publication "Preparing a Development Application for Intensive Agriculture in NSW" sets out the information to be included in a SEE for intensive livestock facilities and provides the framework for this SEE.

This report has been prepared in support of a Development Application from the Glen Innes Severn Council for the proposed development and provides an examination of the existing environment, an overview of the design, layout, operation and construction of the proposed development and an environmental assessment.

1.2 Proposed development outline

Narrie Holdings Pty Ltd as trustee for the Newsome Family Trust wish to develop a beef cattle feedlot on the property "Westholme". The proposed development shall have a maximum capacity of 999 head. The proposed development shall be designed and constructed in a manner that will allow flexibility of use with the ability to increase or decrease the number of animals within the development in line with market and economic factors.

The proposed development complex would occupy a footprint of approximately 3.6 ha and includes the following components in a functional configuration:

- Water supply/storage and reticulation infrastructure – Water storage tanks and pipelines to supply clean water for livestock drinking water;
- Pens - Fenced areas for accommodating beef cattle (production pens);
- Commodity storage – Commodities such as hay and grain are stored onsite;
- Access and internal roads – All weather road access to the site is provided;
- Controlled drainage area – Rainfall runoff from areas such as production pens and livestock handling areas that has a high organic matter and therefore a high pollution potential is controlled within a system that collects and conveys this runoff to a sedimentation system and holding pond prior to environmentally sustainable utilisation;
- Drainage system - The controlled drainage area contains a system including, catch drains, sedimentation system and holding pond(s) for conveying stormwater, allow entrained sediment to 'settle out' and capture and storage of the stormwater from the controlled drainage areas until it can be sustainably utilised; and
- Solid waste and effluent management areas – Solids wastes such as manure and mortalities are temporarily stockpiled and processed within the solid waste stockpile and carcass composting area prior to removal off-site onto adjoining land for utilisation. Effluent is stored in a holding pond pending application to the effluent utilisation area.

The proposed development also includes an associated 140 ha of cropping land for effluent and solid waste utilisation. When available, effluent shall be applied to land via irrigation within a dedicated effluent utilisation area. Further description of the various elements of the proposed development is provided in section 4.2.

2 Site and locality

2.1 Subject land

The subject land on which the proposed development is to be located forms part of the property known as "Westholme" and part of the property "Sherwood". "Westholme" and "Sherwood" are located on Newsomes Road at Wellington Vale, approximately 15 km by road west southwest of Deepwater and 23 km by road east southeast of Emmaville.

The subject land has primary frontage to the formed section of Newsomes Road (unsealed) of approximately 1.0 km in length. Newsomes Road intersects with Wellington Vale Road some 5 km north of the site access for the proposed development.

Figure 1 is a locality plan highlighting the subject land to roads and the nearby villages of Emmaville and Deepwater.

2.1.1 Real property description

The subject land comprises of nine (9) cadastral portions. The description of the subject land is provided in Table 1. The total area of the subject land is about 510.3 ha (~1,260 acres). The subject land is in the Glen Innes Severn Shire.

Figure 2 is a cadastral plan highlighting the cadastral parcels that comprise the subject land.

Table 1 – Subject land – Real Property Description

Property name	Lot no.	Plan no.	Parish	County	Easements	Area Ha
"Westholme"	1	DP612287	Wellington Vale	Gough	-	49.0
"Westholme"	133	DP753323	Wellington Vale	Gough	-	64.4
"Westholme"	134	DP753323	Wellington Vale	Gough	-	51.8
"Westholme"	135	DP753303	Rangers Valley	Gough	-	37.0
"Westholme"	136	DP753323	Wellington Vale	Gough	-	32.9
"Westholme"	137	DP753323	Wellington Vale	Gough	-	48.9
"Westholme"	200	DP753323	Wellington Vale	Gough	-	79.9
"Westholme"	225	DP753323	Wellington Vale	Gough	-	16.7
"Sherwood"	236	DP753323	Wellington Vale	Gough	-	129.8
Total						510.3

2.1.1.1 Limitations/Interests/Encumbrances

The subject land does not contain any easements and is subject to reservations and interests in favour of the crown.

2.1.1.2 Crown land

The subject land does not contain Crown land such as Crown reserve, Crown waterway, Crown lease, Crown road, for example.

2.1.1.3 Road reserve

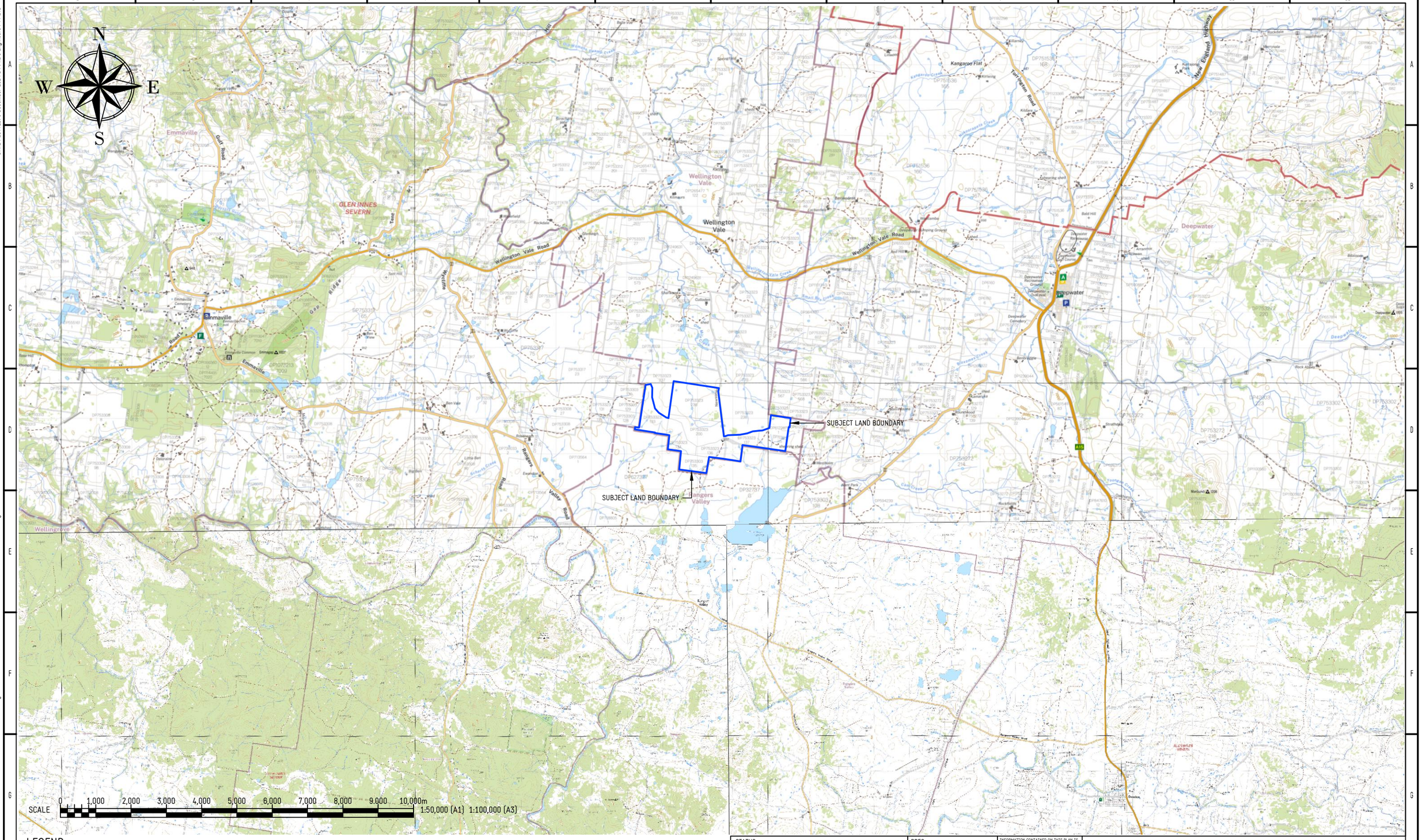
The subject land does contain a road reserve under the *Roads Act 1993* as shown in Figure 2.

Newsomes Road bisects the subject from north to south. Newsomes Road is unformed for the segment which bisects the subject land. A road reserve also extends from Newsomes Road east bisecting the subject land.

2.1.1.4 Tenure

The subject land is owned by Bruce Roderick Newsome in freehold land tenure.

The certificate of title for the subject land on which the development is proposed is provided in Appendix A.



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- SUBJECT LAND BOUNDARY
- LAND PARCEL BOUNDARY

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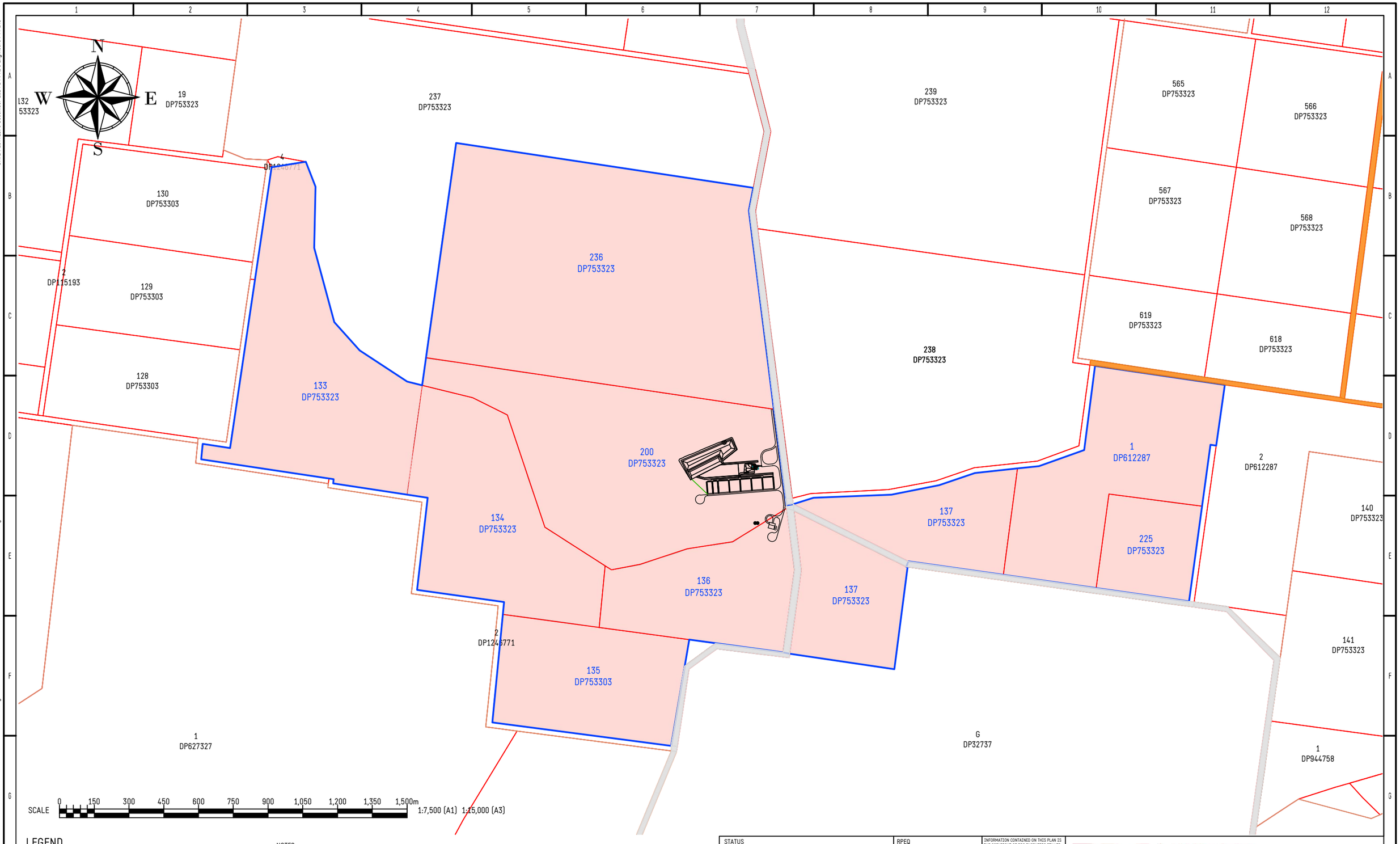
STATEMENT OF ENVIRONMENTAL EFFECTS
SUBJECT LAND - LOCALITY PLAN

REPORT REFERENCE	SUPPLIED DRAWING NUMBER		DRAWING NUMBER	REV.
FIGURE 1		A3	G4-116-00-01	B



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- SUBJECT LAND BOUNDARY
- LAND PARCEL BOUNDARY
- SUBJECT LAND AREA
- ROAD RESERVE
- EASEMENT
- CROWN LAND

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SUBJECT LAND - CADASTRAL PLAN

REPORT REFERENCE: FIGURE 2
SUPPLIED DRAWING NUMBER:
A3
DRAWING NUMBER: G4-116-00-02
REV.: B

2.1.2 Current land use

The subject land is in a landscape that has experienced significant modification by past land uses. Figure 3 is an aerial photograph showing the subject land and evidence of the current land use. These include clearing to allow for pasture based beef production on native and improved pastures and seasonal dryland cropping. These uses will continue alongside the proposed development.

The subject land has infrastructure improvements to support these land uses, including:

- Water storage and supply;
- Cattle handling infrastructure;
- Machinery sheds; and
- Stock-proof fencing;

The native vegetation reflects the temperate climate, soil type and topography of the region. Although the subject land has been subject to tree clearing, there are mature trees and a mosaic of remnant open woodland that has survived since colonial settlement for use as shade for livestock and on those areas less suited to livestock grazing and cropping such as on rocky outcrops. The larger areas of native vegetation are found on the western portion of the subject land as shown in Figure 3. The native vegetation comprises a diverse mix of grassy woodlands, and depauperate ground cover (grasses and weedy herbs) as shown in Photograph 1 and Photograph 4. The remainder of the subject land is predominantly open grazing land with a few scattered remnant paddocks trees. The granitic soils derived from the prominent New England batholith support a variety of tree species including Fuzzy Box (*Eucalyptus conica*) and Blakely's Red Gum (*Eucalyptus blakelyi*) and less common tree species are Roughbarked Apple (*Angophora floribunda*), Yellow Box (*Eucalyptus melloidora*).

The undulating nature of the subject land gives rise to many first and second order waterways. There are several gully dams located on these waterways for stock purposes.

There are no resource activities currently occurring on the land.

Photograph 1 , Photograph 2, Photograph 3 and Photograph 4 further illustrate the current land use of the subject land.

Photograph 1 – Subject land – Current land use – Cattle grazing

Photograph 2 – Subject land – Current land use – Infrastructure

Photograph 3 – Subject land – Current land use – Dryland cropping

Photograph 4 – Subject land – Current land use – Native Vegetation

2.2 Surrounding land use

2.2.1 Surrounding locality

The subject land is in the central New England tablelands region, a distinctive highland area of New South Wales with undulating hills, valleys, plateaus and mountains straddling the top of the Great Dividing Range. New England tablelands region is a prime agricultural region producing some of The Australia's best fine wool and beef cattle. The locality has historically been utilised for a variety of agricultural enterprises, predominantly wool production and pasture based sheep/lamb and beef production, dryland and irrigated cropping. There are several beef cattle feedlots capitalising on the competitive advantage of proximity to grain as a feed source and supply of livestock from improved pasture-based breeding enterprises. The area also contain viticulture, aquaculture and horticultural enterprises. Agricultural production continues to dominate the current land use practices in the locality.

There are few other land uses such as mining and gas exploration, rural and residential developments. Antimony, coal, gold, sapphires and tin have been the most important economic commodities mined in the New England region.

There are several conservation areas in the region notably Kings Plains National Park, Capoompeta National Park, Guy Fawkes River National Park, Walshpool National Park, New England National Park, Severn River Nature Reserve, Torrington State conservation Area for example.

Land parcels are typically several hundred hectares in area.

2.2.2 Adjoining properties

The subject land is co-located with rural properties that are engaged in similar agricultural pursuits such as dryland winter cropping, wool and sheep-meat and beef production.

Several parcels of land adjoining the subject land are owned by the applicant.

Within adjoining properties there are areas of native remnant vegetation fringing roads, drainage lines and those areas less suitable for grazing and cropping.

Rural dwellings are established on several of these properties along with associated infrastructure to support the agricultural pursuits such as outbuildings (machinery shed, woolshed, cattle handling yards, grain storage infrastructure etc).

The prevailing pattern of land use on adjoining properties may be summarised as follows:

- Dryland cropping, beef cattle grazing and native vegetation (north, east, west); and
- Dryland and irrigated cropping, beef cattle grazing, intensive livestock agriculture (beef cattle feedlot) and native vegetation (south).

Adjoining properties are similar size to the subject land and typically comprise parcels of land in the order of 50-150 ha in area.

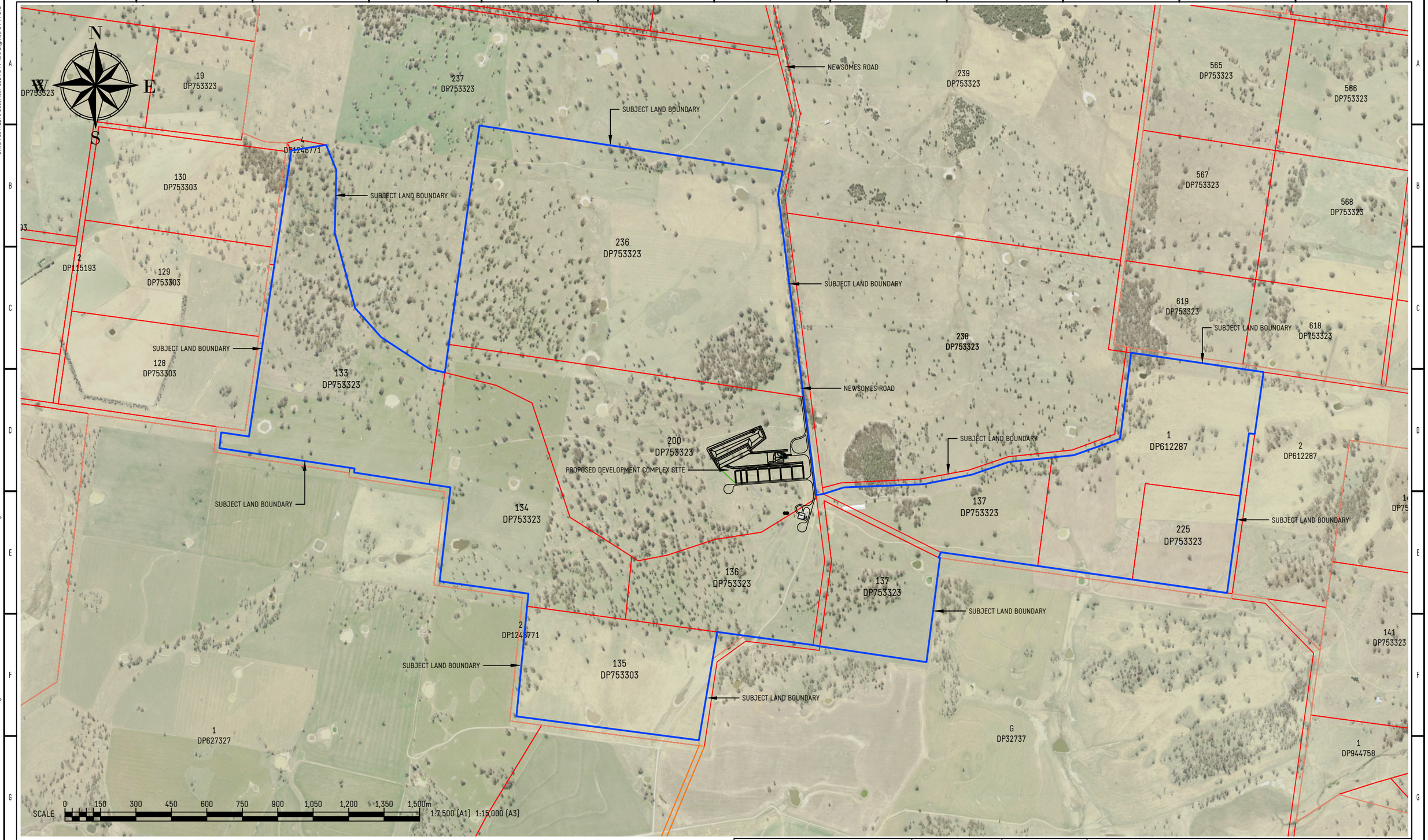
Figure 3 provides an aerial image of the subject land and adjoining properties. Photograph 5 to Photograph 8 further illustrate the land use surrounding the subject land.

Photograph 5 – Land use of adjoining properties (west)

Photograph 6 – Land use of adjoining properties (east)

Photograph 7 – Land use of adjoining properties (south)

Photograph 8 – Land use of adjoining properties (north)



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SUBJECT LAND - AERIAL PLAN

REPORT REFERENCE	SUPPLIED DRAWING NUMBER		DRAWING NUMBER	REV.
FIGURE 3		A3	G4-116-00-03	B

3 Existing utilities

3.1 Electricity

An 11kV overhead electricity line (Banana 6/1/3.75 ACSR/GZ) transects the subject land to the east of the proposed development complex site as shown in Photograph 9. Currently, there are no connections from this line in the vicinity of the proposed development complex.

A diesel powered generator as shown in Photograph 10 provides electricity supply to various infrastructure such as the machinery shed and for activities such as grain handling.

Photograph 9 – Subject land – Overhead supply electricity infrastructure

Photograph 10 – Subject land – Portable diesel generator

3.2 Water

The subject land is in a rural area and not in a reticulated water supply area of the Glen Innes Severn Council.

Currently surface water is used as the source of livestock drinking water for the cattle breeding and grazing enterprise. This water is obtained from several gully dams located on first and second order waterways or adjacent to these waterways across the subject land. Photograph 11 illustrates a typical gully dam located on a first order waterway in the centre-south of the subject land.

Photograph 11 – Subject land – Gully dam

There are no water access licences which authorise the use of water from groundwater or rivers on the subject land.

3.3 Sewerage

The subject land is in a rural area and not in a reticulated sewerage area of the Glen Innes Severn Council.

There are no dwellings on the subject land.

3.4 Telecommunications

The subject land is within mobile phone service coverage.

4 Proposed development

Narrie Holdings Pty Ltd as trustee for the Newsome Family Trust wish to develop on the subject land a beef cattle feedlot with a capacity of 999 head when fully developed.

The proposed development is small scale and comprise a permanent pen area with adjoining feed alley in which the beef cattle are housed in the open air and provided with their daily feed and water requirements. The pen area shall incorporate water and feeding infrastructure.

There are two components of the proposed development being the infrastructure and waste utilisation area.

The infrastructure of the proposed development includes:

- Production pens for beef cattle;
- Drainage system incorporating catch drains, sedimentation basin and holding pond;
- A cattle handling facility with receival/dispatch infrastructure;
- Internal roadways connecting the subject land access to the cattle handling and commodity storage facilities;

The waste utilisation area includes:

- Effluent and solid waste (manure) utilisation areas.

4.1 Design philosophy

The design philosophy of the proposed development enables ecological and economic sustainability to be integrated into the design, construction and management (when approved) of the development.

The *National Guidelines for Beef Cattle Feedlots in Australia* (MLA, 2012b), *National Beef Cattle Feedlot Environmental Code of Practice* (MLA, 2012a) and The New South Wales Feedlot Manual (NSW Agriculture, 1997) have been used as the guiding reference for the siting, design and management of the proposed development.

The design, construction and management of the proposed development shall be consistent with relevant legislation, environmental standards, codes of practice and guidelines as outlined in section 7 and consistent with its scale and intensity. The overarching design philosophy is to provide best practice animal welfare and to utilise the latest innovations to ensure optimal production efficiency.

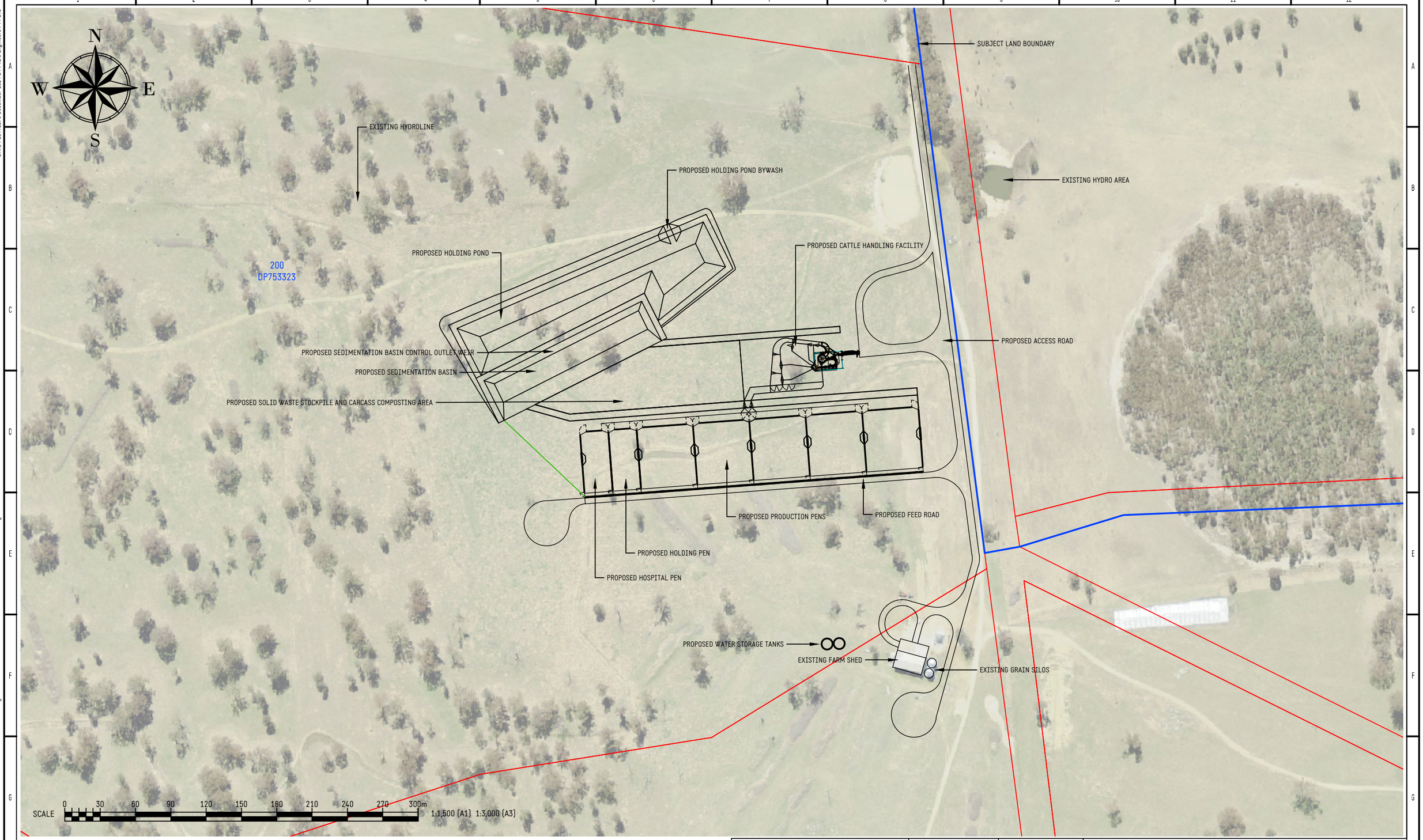
4.2 Layout, design and specification

The layout of the proposed development infrastructure area is shown in Figure 4. Figure 4 shows that the proposed development shall be located in the geographic centre of the subject land.

The proposed development has been designed to:

- maximise utilisation of the existing feedlot infrastructure (roads, drainage system etc);
- maximise operational efficiency;
- maximise cattle performance;
- maximise cattle welfare;
- maximise worker health and safety;
- minimise environmental impact;
- minimise waste; and
- minimise capital and operational costs.

A description of the various functional elements of the proposed development is outlined in the following sections.



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SCALE	1:3,000 (A3)
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CLIENT: NARRIE HOLDINGS PTY LTD ATF NEWSOME FAMILY TRUST
PROJECT: PROPOSED 999 HEAD BEEF CATTLE FEEDLOT
TITLE: DEVELOPMENT APPLICATION FOR INTENSIVE LIVESTOCK AGRICULTURE
STATEMENT OF ENVIRONMENTAL EFFECTS
PROPOSED DEVELOPMENT - DEVELOPMENT COMPLEX LAYOUT

REPORT REFERENCE: FIGURE 4
SUPPLIED DRAWING NUMBER:
A3
DRAWING NUMBER: G4-116-00-04
REV.: B

DATE PLOTTED: 5 December 2024, BY: RDC Engineers PTY LTD
FILE NAME: G4-116 BRN MASTERPLAN-00-20240625 v8.dwg
FILE PATH: C:\RDC Engineers\RDCE - Projects\G4-116 Newsome 999 head Feedlot\05 - ACAD MasterPlan\05.1 Drawings - CURRENT

4.3 Statement of objectives

The objectives of the proposed development are to develop a beef cattle feedlot:

- to support the current grazing operation on the subject land and provide for more efficient use of the land through feeding of cattle;
- that allows for feeding of cattle during drought;
- that is sited, designed, constructed and managed to protect the amenity of nearby sensitive land uses; and
- that is sited, designed, constructed and managed to protect the natural environment.

4.3.1 Capacity

In NSW, the capacity of beef cattle feedlots is defined in terms of the number of animals or head. The proposed development has been designed to accommodate up to 999 head of beef cattle.

4.3.1.1 Beef cattle

The proposed development shall feed beef cattle predominantly for the export market. The typical specifications for the cattle to be fed are provided in Table 11. All beef cattle fed shall be owned by the applicant.

4.3.1.2 Standard Cattle Unit (SCU)

The term 'Standard Cattle Unit' (SCU) is used in the *National Beef Cattle Feedlot Environmental Code of Practice* (MLA, 2012a) to describe the stocking capacity of a beef cattle feedlot in accordance with the average liveweight of cattle in the facility, rather than the number of head. A standard cattle unit is equivalent to an animal of 600 kg liveweight (MLA, 2012a). This term enables the stocking capacity of beef cattle feedlots to be expressed in line with the weight of cattle turned off from the facility, rather than the number of head. This concept is based on the understanding that manure production increases with cattle liveweight.

Each animal can be converted to a SCU equivalent based on their metabolic liveweight and the following formula:

$$\text{SCU scaling factor} = (\text{Animal liveweight}/600)^{0.75} \quad \text{----------Equation 1}$$

The SCU scaling factor for various average liveweight for beef cattle is provided in Table 2.

Table 2 – Standard Cattle Unit conversion factor

Average liveweight (kg)	SCU Scaling factor
350	0.68
400	0.74
450	0.81
500	0.87
550	0.94
600	1.00
650	1.06
700	1.12

The SCU scaling factor applied to lot fed cattle with an average liveweight of 390 kg for domestic and 515 kg for long fed cattle (Table 11) can be determined from Equation 1 and Equation 2 respectively as follows.

Domestic market - SCU scaling factor	$= (390/600)^{0.75}$	= 0.72 (25%).....Equation 1
Long fed market - SCU scaling factor	$= (515/600)^{0.75}$	= 0.89 (75%).....Equation 2
Weighted SCU scaling		= 0.84

Consequently, the proposed development shall have a total capacity equivalent to about 842 standard cattle units (SCUs) once fully developed.

4.3.2 Pen configuration

The layout and siting of the beef cattle production pens and associated drainage systems are shown in Figure 4. The configuration and design details of the beef cattle production pens are outlined in the following sections.

4.3.2.1 Stocking density

Stocking density will have a significant influence on the environmental performance of the proposed development since it partly determines the average moisture content of the surface of the pen. Every day, beef cattle add moisture to the pen surface by depositing manure (faeces and urine).

The National Feedlot Code of Practice (MLA, 2012a) recommends a maximum stocking density of 25 m^2 per Standard Cattle Unit (SCU) for beef cattle feedlots. Stocking densities higher than 20 m^2 per SCU can lead to increased pen dust loads and require higher capacity for drainage system infrastructure such as the sedimentation basin and holding pond.

The proposed development shall have an average stocking density of ~13.1 m^2/head for the proposed beef cattle production pens for the total capacity of 999 head. This equates to a stocking density in the order of about 15.6 m^2/SCU when the SCU scaling factor is applied.

4.3.2.2 Feed bunk

The beef cattle shall be provided with their daily feed requirements and water.

As the feed ration shall generally be processed on-site and fed-out once a day an open feed bunk (trough) system shall be used. Pre-cast 6 m length open feed bunks set in a continuous line shall be located on the outside, along the entire length of the higher end of the pen with frontage to the feed road. A typical pre-cast concrete open bunk system is shown in Photograph 12.

The feed bunks will have a 3 m wide concrete apron that extends into the pen as shown in Figure 5. A concrete apron prevents wearing of the pen surface within this high-use area. The apron will slope away from the bunk to facilitate drainage at the same slope as the pen slope.

Photograph 12 – Typical pre-cast concrete open feed bunk

4.3.2.3 Pen capacity

The capacity of the beef cattle production pens is sized to match multiples of deck sizes of livestock transport vehicles. A B-double of three decks would carry about fifteen (15) 705 kg cattle per deck giving a total load of 45 head. A B-double of three decks would carry about 65 head of 480 kg cattle.

4.3.2.4 Pen area

Typically, there will be one size of production pen with an area to accommodate 200 head.

For the proposed 200 head production pens, the combination of a nominal feed bunk length (width) of 54 m, design depth of pen and allowance for herringbone pen gate arrangement translates into a pen area in the order of 2,626 m^2.

The depth of each pen will be about 55 m depending on final pen layout and cattle lane and drain design.

Figure 5 shows the layout of a proposed beef cattle feeding pen.

4.3.2.5 Pen orientation

The orientation of the beef cattle feeding pens has been dictated by the site layout and natural surface topography. The longitudinal axis of the feed alley and adjoining pen row shall run generally in a east-west direction as shown in Figure 4.

4.3.2.6 Pen configuration

The proposed development shall have a sawtooth pen configuration as shown in Figure 5. The sawtooth design has a feed alley servicing a single row of pens falling away from the road to a cattle lane and catch drain as shown in Figure 5.

4.3.2.7 Pen slope

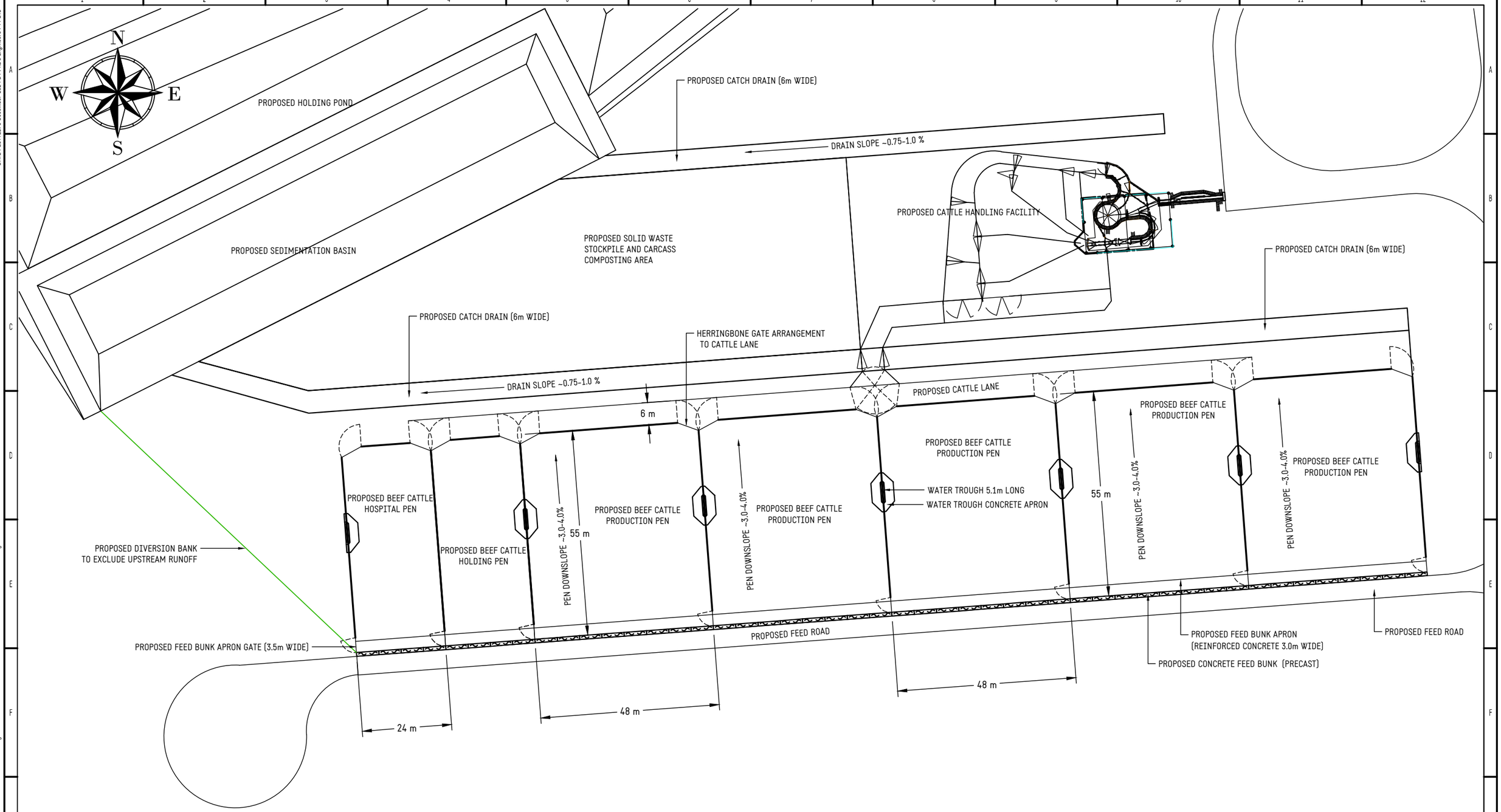
Pen slope is the fall of the pen surface perpendicular to the feed bunk. A pen also has down-slope because of the lateral slope of the catch drain. Hence, as there is a combined pen and drain slope across the site, the maximum pen slope is not perpendicular to the feed bunk. The magnitude of this slope and its angle from perpendicular to the bunk will depend on the relative magnitude of each of the pen and drain slopes.

The pen slope will be in the order of 3.5% and the down slope in the order of 0.75% in accordance with the relevant feedlot guidelines and as shown in Figure 5.

4.3.2.8 Water trough

Prefabricated concrete water troughs will be installed in the centre of each pen on the bottom fence line near the cattle lane/drain. The troughs will be situated at the drain-end of the pens to allow dirty water released during trough cleaning or as a result of spills to be directed out of the pen and into the catch drains by underground pipes. This will prevent the pen floors from being wetted during trough cleaning. Troughs are also likely to have less feed deposited. Water troughs in this location can be located easily by new cattle traversing the perimeter of the pen.

Concrete aprons at least 3 m wide will be constructed around all water troughs as shown in Figure 5. The aprons will be reinforced to withstand the loading of pen cleaning equipment.



SCALE 0 10 20 30 40 50 60 70 80 90 100m

1:500 (A1) 1:1,000 (A3)

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TITLE: DEVELOPMENT APPLICATION FOR INTENSIVE LIVESTOCK AGRICULTURE
STATEMENT OF ENVIRONMENTAL EFFECTS
PROPOSED DEVELOPMENT - PRODUCTION PEN DETAILS

REPORT REFERENCE	SUPPLIED DRAWING NUMBER		DRAWING NUMBER	REV.
FIGURE 5		A3	G4-116-00-05	B

4.3.3 Livestock handling

4.3.3.1 Beef cattle

The proposed development shall incorporate a purpose-built cattle handling facility with sufficient capacity to meet the cattle handling requirements for the proposed development. The cattle handling facility shall be a typical cattle handling facility incorporating holding yard, forcing yard, race, crush, draft, loading ramp. A functional building (or structure) shall be erected and as a minimum cover the crush area and provide a relatively clean, dedicated are for housing electronic or electrical equipment associated with the integrated cattle management system, facilities to store, clean and sanitise veterinary instruments and storage of veterinary chemicals etc.

4.3.4 Feed processing and commodity storage

The beef cattle in the proposed development require a nutritionally and scientifically formulated ration.

Due to the scale of the proposed development and quantities of forage and grain required each day, rations shall be prepared on-site in a facility, with associated commodity storage, handling and ration delivery infrastructure. Existing infrastructure shall be utilised where practical.

The subject land has built infrastructure for grain and roughage storage which has sufficient capacity to accommodate the proposed development. An additional shed may be constructed for storage of commodities such as hay, proteins and supplements etc. The style and type of shed proposed for commodity storage has not been decided. However, it is expected to be similar to the plan and elevation of a typical farm storage shed.

The feed processing and commodity storage facility shall comprise an integrated system of components, infrastructure and processes in a functional layout including:

- grain storage and handling (silos, augers, conveyors);
- grain processing (dry roll);
- other commodity storage and management;
- hay/straw storage and management; and
- storage and handling of dry / liquid ingredients and supplements,

4.3.5 Access and internal roads

Access to the site and the layout of internal road systems are critical to the efficient and safe functioning of the proposed development.

Access to the proposed development shall be from the existing subject land entrance off Newsomes Road as shown in Figure 6. Newsomes Road is formed and gravelled to edge of Lot 200 DP753323. Newsomes Road continues further south as an informal property track on the eastern boundary of the subject land. The informal property track has been constructed by the applicant and designed to accommodate the number of vehicle movements and type of vehicles servicing the existing agricultural operations on the subject land. The informal property track is not maintained by Council.

The access to the proposed development complex onto Newsomes Road is informal and effectively a continuation of Newsomes Road, which is used only for access to the subject land. As the access is a continuation of the road, there are no turn treatments warranted.

The applicant wishes to close a portion of Newsomes Road within the subject land.

The existing internal road network connecting the subject land entrance to the existing infrastructure is a well-formed durable gravel surface road that shall provide access and cater for the traffic demands of the proposed development in all weather conditions.

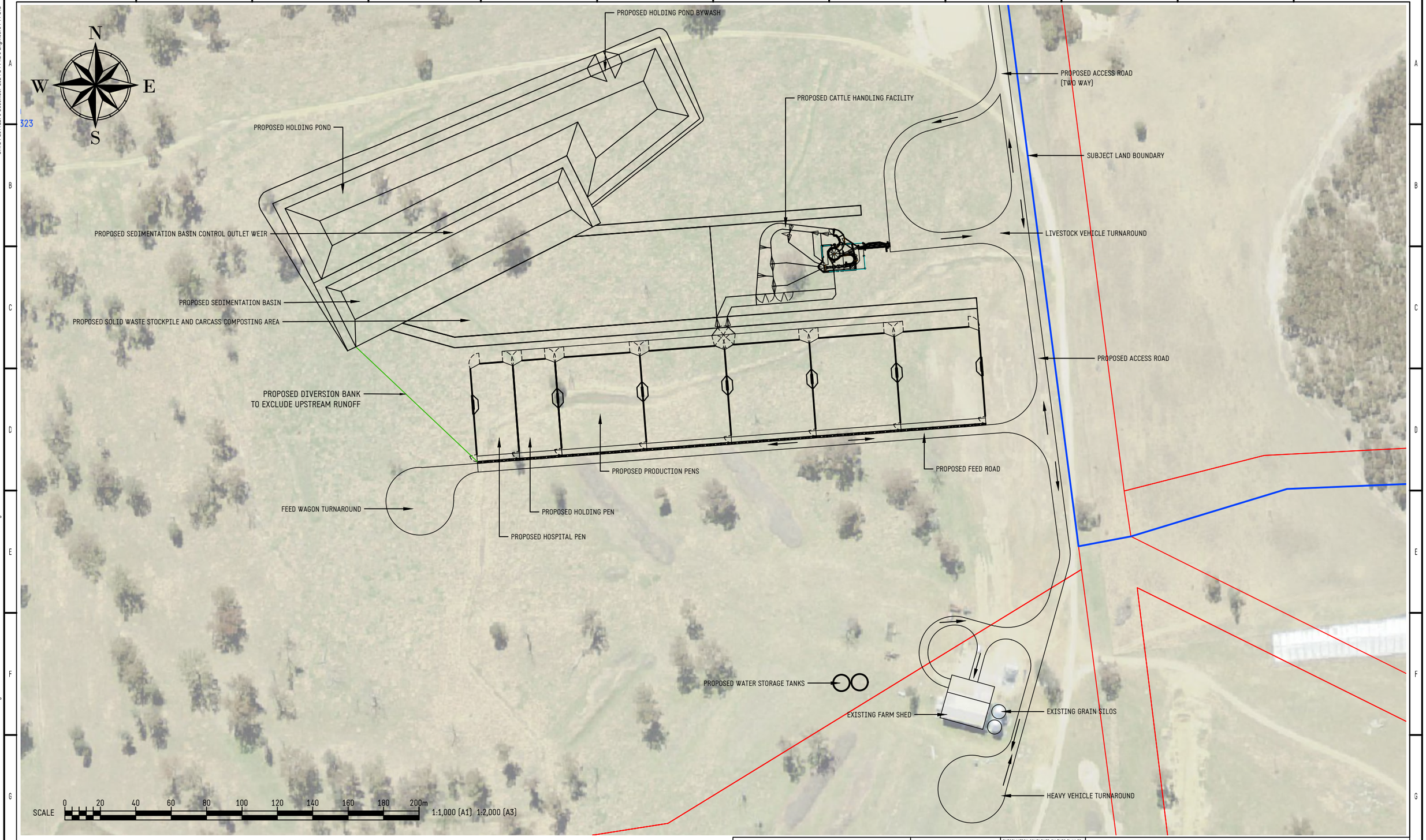
The entrance does not require any upgrades.

All signs shall be fully contained within the subject land. Sufficient on-site car parking shall be provided commensurate with the scale and use. Due to the nature of the development and rural character of the site, the provision of a formal car parking area is unnecessary. However, any gravel hardstand areas used as car parking areas such as adjacent to the site office shall be designed in accordance with relevant Australian Standards (e.g. Standards Australia, 2890.1-2004) where relevant.

Sufficient on-site manoeuvring area shall be provided to enable all vehicles to enter and exit the site in the forward direction. The proposed layout of internal roads is shown on Figure 6.

To ensure good traffic flow at the site, heavy vehicles travel to either the grain and commodity storage/processing area or to the cattle handling facility. The cattle handling and feeding systems are managed separately and both operate independently with little operational interference.

The feed road that runs across the southern end of the production will be constructed to also act as a clean water diversion bank to direct clean water from above the pen area away from the pen area downslope.



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STATEMENT OF ENVIRONMENTAL EFFECTS
PROPOSED DEVELOPMENT - INTERNAL RAODS AND VEHICLE MANOEUVRING

REPORT REFERENCE	SUPPLIED DRAWING NUMBER		DRAWING NUMBER	REV.
FIGURE 6		A3	G4-116-00-06	B

4.3.6 Car parking

The requirements for on-site vehicle parking for an Intensive Livestock agriculture are not specified in Table 7.1 Off-Street Parking Rates in the Glen Innes Severn Development Control Plan 2014.

The proposed development is located on a large parcel of land within the Rural zone.

The proposed development has been provided with adequate on-site vehicle parking for the expected demand generated by the 3 operational staff and support services.

The nature of the development and rural character of the site is such that the provision of a formal car parking area is unnecessary.

4.3.7 Administrative/Maintenance infrastructure

As the operation is family owned and operated, administrative activities shall initially be undertaken within existing office facilities within the "Sherwood" homestead. In the future, a dedicated site office in the form of a single storey relocatable prefabricated building may be setup at the proposed development complex.

Existing infrastructure on the subject land located adjacent to the proposed development complex shall be utilised for repairs and maintenance of machinery and for light engineering as required.

4.3.8 Water supply, storage and reticulation

Water for the proposed development will be sourced from overland flow dams under "Harvestable rights".

Water shall be pumped from the gully dams to storage tank(s) located towards the highest elevation at the proposed development complex site. Water storage of about 150,000 litres total capacity in one or more tanks is proposed. This will provide about two (2) days emergency supply in the event of supply interruption. The proposed location of the water storage infrastructure is shown on Figure 4.

Water shall then be reticulated around the proposed development via a gravity and/or a pressurised system.

Water shall be reticulated to the relevant areas of the proposed development using an underground polyethylene pipe network. The reticulation system shall be designed to supply water throughout the proposed development during peak demand periods.

4.3.9 Lighting

No lighting is proposed around the beef cattle production pens or the drainage systems as the proposed development shall typically operate during daylight hours only.

4.3.10 Controlled drainage area

Those areas of the proposed development from which stormwater runoff has a high organic matter and therefore a high pollution potential are contained within a controlled drainage area. The proposed development shall have one controlled drainage area as outlined in the following sections. Figure 7 shows the controlled drainage area plan for the proposed development.

4.3.10.1 Controlled Drainage Area 1

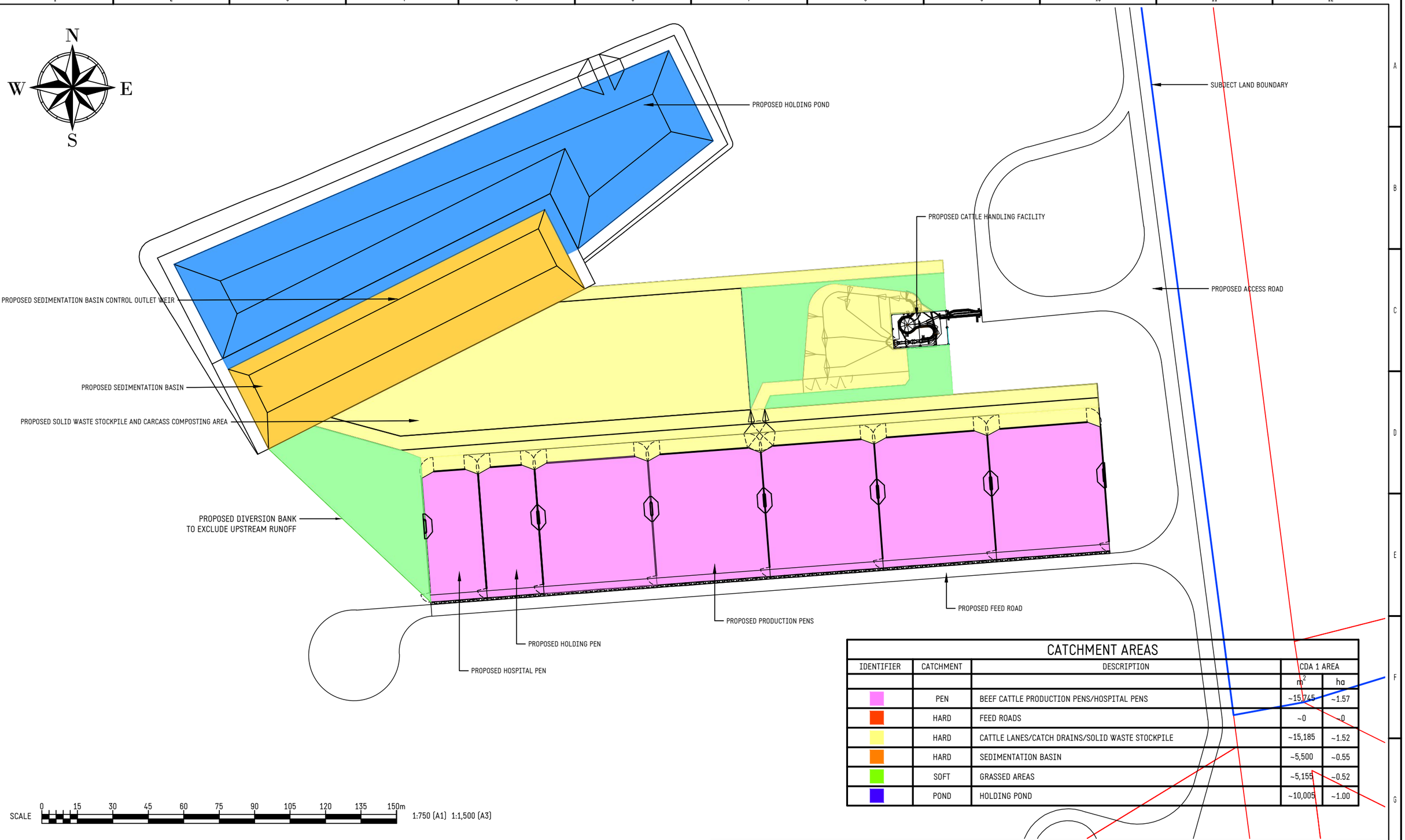
Controlled Drainage Area 1 (CDA 1) (Figure 7) shall be divided into three main sub-catchment areas. Each sub-catchment is divided into component areas, each of which has different runoff characteristics. These areas are:

- pen area – areas containing cattle and covered with manure e.g. beef cattle production pens etc;
- hard catchment – feed roads, cattle lanes, catch/main drains, sedimentation basin, holding pond etc; and
- soft catchment – areas with a low runoff yield such as grassed and other vegetated areas within the controlled drainage area.

Table 3 summarises the areas of the sub-catchments of CDA 1 shown in Figure 7. The sub-catchment areas are needed to calculate the design volumes for the sedimentation basin and holding pond (see section 4.3.10.2 and 4.3.10.4). Varying runoff coefficients are applied to each sub-catchment depending on surface characteristics.

Table 3 – Proposed development – CDA 1 catchment details

Sub-catchment	Runoff coefficient	Area m^2
Pens – production, holding, hospital	0.8	~15,745
Hard – cattle lanes / catch drains / solid waste stockpile	0.8	~15,185
Hard – sedimentation basin (inside crest)	0.8	~5,500
Soft – grassed areas	0.4	~5,155
Holding pond (inside crest)	1.0	~10,005
Total	-	~51,590



CATCHMENT AREAS

IDENTIFIER	CATCHMENT	DESCRIPTION	CDA 1 AREA	
			m^2	ha
	PEN	BEEF CATTLE PRODUCTION PENS/HOSPITAL PENS	~15,745	~1.57
	HARD	FEED ROADS	~0	~0
	HARD	CATTLE LANES/CATCH DRAINS/SOLID WASTE STOCKPILE	~15,185	~1.52
	HARD	SEDIMENTATION BASIN	~5,500	~0.55
	SOFT	GRASSED AREAS	~5,155	~0.52
	POND	HOLDING POND	~10,005	~1.00

SCALE 0 15 30 45 60 75 90 105 120 135 150m

1:750 (A1) 1:1,500 (A3)

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CLIENT NARRIE HOLDINGS PTY LTD ATF NEWSOME FAMILY TRUST

PROJECT PROPOSED 999 HEAD BEEF CATTLE FEEDLOT

TITLE DEVELOPMENT APPLICATION FOR INTENSIVE LIVESTOCK AGRICULTURE
STATEMENT OF ENVIRONMENTAL EFFECTS
PROPOSED DEVELOPMENT - CATCHMENT AREA PLAN - CDA 1

REPORT REFERENCE	SUPPLIED DRAWING NUMBER		DRAWING NUMBER	REV.
FIGURE 7		A3	G4-116-00-07	B

4.3.10.2 Sedimentation system

The controlled drainage area shall have a dedicated sedimentation basin. Sedimentation basins are typically wide, shallow storages, with a maximum water ponding depth no greater than 1 m and are designed to drain completely (down to bed level) following a runoff event. Solids are deposited in a relatively thin layer over a large area, facilitating rapid drying after the liquid material has drained. Once dried the solids are removed at the earliest possible opportunity and stockpiled in the solid waste stockpile and carcass composting area.

4.3.10.2.1 Controlled Drainage Area 1

The methodology outlined in the NSW Feedlot Manual (NSW Agriculture, 1997) and National Feedlot Guidelines (MLA, 2012a) was used to calculate the required sedimentation basin volume.

The sedimentation basin design specifications include:

- cater for the peak flow rate from a design storm having an average recurrence interval of 1 in 20 years; using runoff coefficients of 0.8 from production pens, roadways and other hard stand areas and 0.4 for grassed areas within the controlled drainage area;
- have a top water level of ≤1.2 m; the maximum flow velocity in the sedimentation system of 0.005 m/s;
- flow from the sedimentation system should be regulated by a control weir;
- provide embankment freeboard of 0.9 m above the top water level; and
- provide embankment batters of 1V:3H or greater.

The formula for determining the required volume of the sedimentation basin is:

$V = Q_p \times (L/W) \times (\lambda/v)$

Where:

V = sedimentation system volume (m^3);
Q_p = peak inflow for a design storm with an average recurrence interval of 20 years and duration equal to the time of concentration of the catchment (m^3/s);
L/W = length to width ratio, where l is the length in direction of flow;
λ = a scaling factor (2.5 for a basin);
v = flow velocity (m/s), <0.005 m/s

Table 4 summarises the input parameters used to determine the minimum required volume of the sedimentation basin. The time of concentration (T_c) is the time taken for rain that has fallen in the furthermost part of a catchment to flow to the discharge point. Thus, after T_c, the whole of the catchment is contributing to the discharge and the peak flow (Q_p) will only occur after this time.

NSW Feedlot Manual (NSW Agriculture, 1997) and the *National Guidelines for Beef Cattle Feedlots in Australia* (MLA, 2012a) use different methods to estimate the T_c. The NSW guidelines recommend the use of the Probabilistic Rational Method as discussed in Australian Rainfall and Runoff 1987 (Institution of Engineers, Australia, 1987). The *National Guidelines for Beef Cattle Feedlots in Australia* (MLA, 2012b) recommend the Bransby Williams Formula for calculating the T_c.

The rainfall intensity was selected from Intensity-Frequency-Duration (IFD) design rainfalls for the site for an average recurrence interval of 20 years and duration equal to the time of concentration of the catchment. The ARI design rainfalls for the site were obtained from the Bureau of Meteorology (BOM, 2024c) and are shown in Table 31 in section 5.1.2.

The minimum volume required as calculated by the method outlined in the NSW guidelines is 1,325 m^3 (Table 4). The minimum volume required as calculated by the method outlined in the National Guidelines is 1,557 m^3 (Table 4). The sedimentation basin shall have a minimum design volume of 1,750 m^3.

Figure 8 shows the location of the sedimentation basin for the controlled drainage area in relation to the production pens.

Table 4 – Proposed development – CDA 1 – Sedimentation basin design details

Parameter	Units		NSW Guidelines	National Guidelines
Time of concentration	hours	T_c	0.22	0.31
Time of concentration	minutes	T_c	12.9	18.86
Rainfall Intensity	mm/hr	$I_{tc,20}$	107.7	88.68
Peak flow rate	m^3/s	Q_p	0.66	0.78
Lambda		λ	2.5	2.5
Length:Breadth ratio at TWL		L/W	4.0	4.0
Design flow velocity	m/s	v	0.005	0.005
Required volume	m^3	V	1,605	1,557
Volume proposed (minimum)	m^3	V	**1,750**	**1,750**

The design dimensions of the sedimentation basin are shown in Table 5. The sedimentation basin would have length to width ratio of about 4.0, design side slopes of 1V:4H and have a depth of around 0.6 m at the outlet with a freeboard of 0.9 m.

Table 5 – Proposed development – CDA 1 – Sedimentation basin design dimensions

Parameter	Units		National Guidelines
Volume at outlet (minimum)	m^3	V	**1,750**
Freeboard at outlet	m	F	0.9
Depth at outlet	m	D	0.5
Internal embankment slopes	V:H	-	1:4
Length at TWL	m	L	130
Breadth at TWL	m	W	32

4.3.10.3 Control outlet

The sedimentation basin shall have a control outlet designed to temporarily retain stormwater within the sedimentation system. The control outlet regulates the discharge from the sedimentation system into the holding pond allowing the stormwater to drain freely from the entire depth of the settled sediment down to the bed of the basin and safely discharges flows in excess of the design flow.

The methodology outlined in the *National Guidelines for Beef Cattle Feedlots in Australia* (MLA, 2012b) was used to design the control outlet weir. The design criteria for the sedimentation basin control outlet weir include:

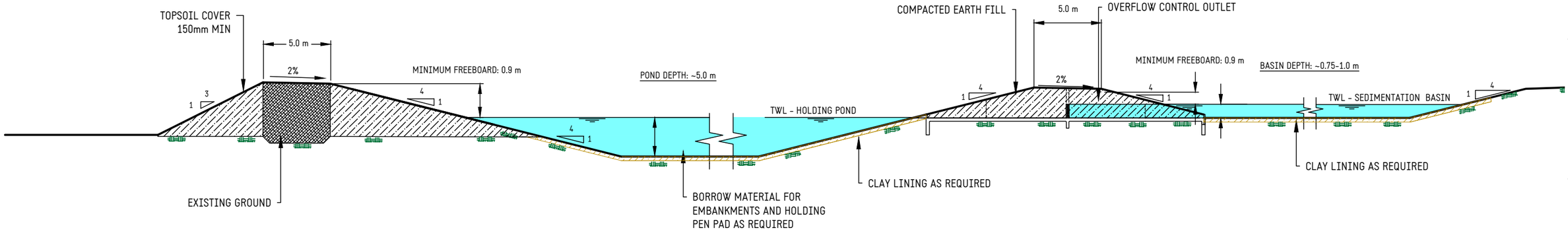
- allow sediment to accumulate up to a maximum depth of 1 m;
- to safely discharge flows greater than the sedimentation system design flowrate, up to the 50 year ARI design storm, without the earth embankment being overtopped; and
- provide embankment freeboard of 0.9 m between the control weir crest and the crest of the sedimentation system embankment.

Photograph 13 – Sedimentation basin control outlet – Horizontal drop-board weir

A typical control outlet is illustrated in Photograph 13. Figure 8 shows a typical cross section of the sedimentation basin control outlet weir to the holding pond.

The rainfall intensity was taken from Intensity-Frequency-Duration (IFD) design rainfalls for the site for an average recurrence interval of 50 years and duration equal to the time of concentration of the catchment. The ARI design rainfalls for the site are shown in Table 31 in section 5.1.2.

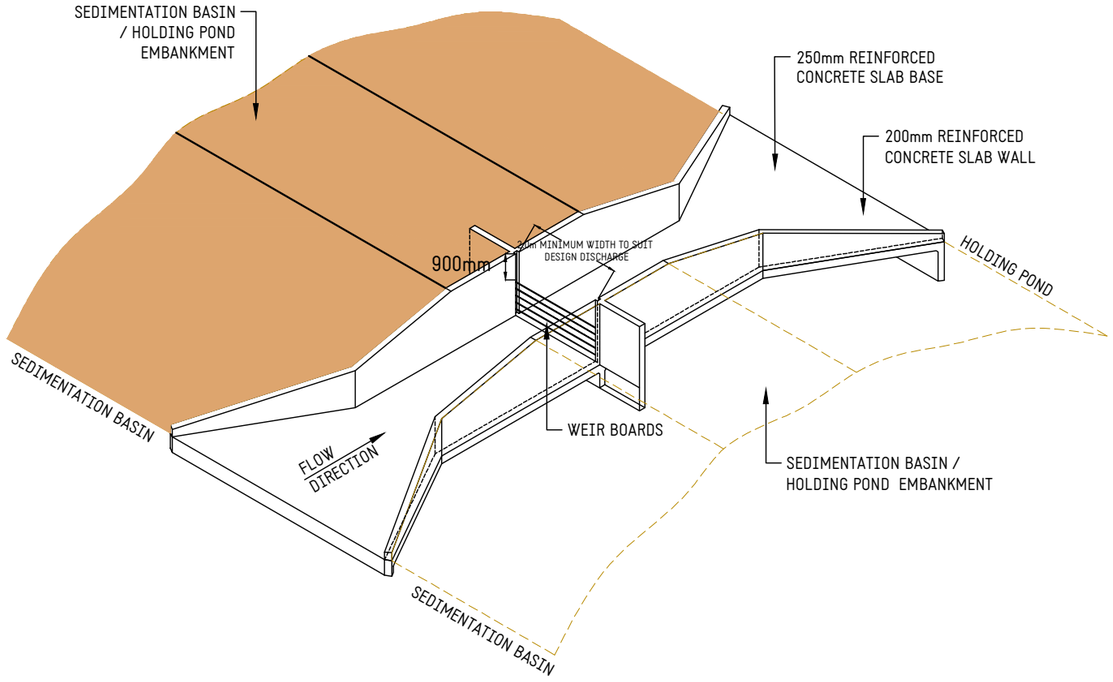
The minimum width for the control weir based on design flowrate of a 50 year ARI design storm is 1.5 m. The control weir shall have a minimum width of 2.5 m to facilitate cleaning.

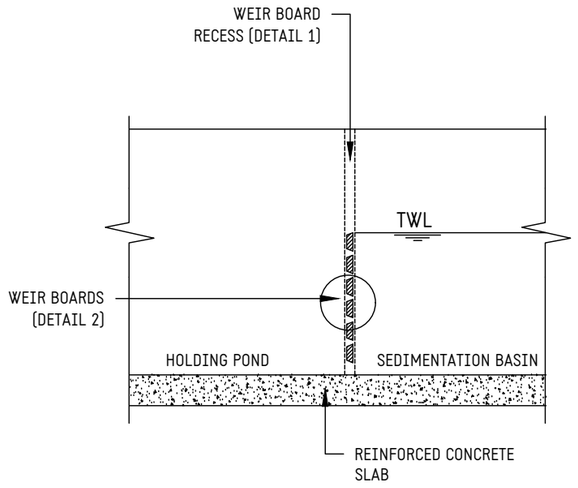


TYPICAL CROSS-SECTION: SEDIMENTATION BASIN AND HOLDING POND

SCALE 1:150

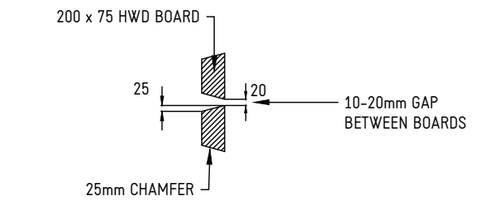
SCALE 0 3 6 9 12 15 18 21 24 27 30m — 1:150 (A1) 1:300 (A3)





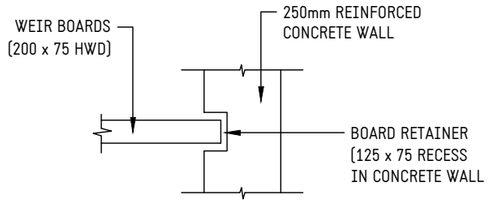
SECTION A - SECTION THROUGH CONTROL STRUCTURE

SCALE 1:25



DETAIL 2 - WEIR BOARDS SECTION VIEW

SCALE 1:10



DETAIL 1 - BOARD RETAINERS PLAN VIEW

SCALE 1:10

SCALE 0 100mm 200 300 400 500 600 700 800 900 1m — 1:10 (A1) 1:20 (A3)

SCALE 0 0.5 1 1.5 2 2.5 3 3.5 4 4.5 5m — 1:25 (A1) 1:50 (A3)

SCALE 0 1 2 3 4 5 6 7 8 9 10m — 1:50 (A1) 1:100 (A3)

STATUS: FOR APPROVAL — NOT TO BE USED FOR CONSTRUCTION PURPOSES

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REV.	DATE	REVISION DESCRIPTION	DRAWN	CHECK	APPROVED
A	24/11/24	DRAFT ISSUE TO CLIENT	RJD	RJD	RJD
B	06/12/24	FINAL ISSUE FOR LODGEMENT TO GLEN INNES SEVERN COUNCIL	RJD	RJD	RJD

SCALE	AS SHOWN
DRAWN	RJD
DATE	06/12/2024
CHECKED	RJD
DATE	06/12/2024
APPROVED	RJD
DATE	06/12/2024

CLIENT: NARRIE HOLDINGS PTY LTD ATF NEWSOME FAMILY TRUST

PROJECT: PROPOSED 999 HEAD BEEF CATTLE FEEDLOT

TITLE: DEVELOPMENT APPLICATION FOR INTENSIVE LIVESTOCK AGRICULTURE STATEMENT OF ENVIRONMENTAL EFFECTS - PROPOSED DEVELOPMENT - SEDIMENTATION BASIN SECTION AND CONTROL OUTLET DETAILS

REPORT REFERENCE: FIGURE 8 | SUPPLIED DRAWING NUMBER: | A3 | DRAWING NUMBER: G4-116-00-08 | REV.: B

4.3.10.4 Holding pond

The controlled drainage area shall have a dedicated holding pond located at the lower end of the controlled drainage area, immediately below the sedimentation basin. The holding pond shall be designed to temporarily store stormwater runoff (effluent) from major storm events (design storm method) and/or when extended wet periods prevent irrigation of effluent so that pond overtopping events are prevented and / or limited to an acceptable frequency.

4.3.10.4.1 Controlled Drainage Area 1

A dedicated holding pond shall be designed and constructed for CDA 1 catchment areas. The storage capacity of the holding pond needs to be large enough that it can safely store the captured effluent, without spilling at an unacceptable frequency.

The NSW Feedlot manual (NSW Agriculture, 1997) states that holding ponds should:

- be able to accommodate the greater volume produced from either:
    - a design storm having an average recurrence interval of 1 in 20 years; 24-hour duration and using runoff coefficients of 0.8 from production pens, roadways and other hard stand areas and 0.4 for grassed areas within the CDA; or
    - the balance of runoff from the CDA (making allowance for evaporative losses and withdrawals for irrigation) in a 90th percentile wet year. Volumetric runoff coefficients of 0.3-0.5 should be applied.
- provide embankment freeboard of 1 m above the top water level;
- provide embankment batters of 1V:3H or greater and embankment width of at least 5 m for safe machinery access during construction and cleanout;
- incorporate a spillway to cater for the peak flow rate from a design storm having an average recurrence interval of 1 in 50 years at non-scouring velocity.

The *National Guidelines for Beef Cattle Feedlots in Australia* (MLA, 2012b) outline the frequency criteria generally applied to feedlot holding ponds. These are:

- for a holding pond from which wastewater is routinely removed for land application, the spill frequency should not exceed an average of one spill in 10 years (i.e. notionally able to retain runoff in a 90th percentile wet year)
- for a holding pond where evaporation is the sole means of wastewater abstraction, the spill frequency should not exceed an average of one spill in 20 years (i.e. notionally able to retain runoff in a 95th percentile wet year).
- The holding pond should have a weir and bywash capable of discharging the peak flow from the controlled drainage area from a 50-year ARI design storm.
- A minimum freeboard of at least 0.9 m should be provided between the crest of the discharge weir and the crest of the holding pond embankment.

The effluent holding pond has been designed using the method outlined in the *National Guidelines for Beef Cattle Feedlots in Australia* (MLA, 2012a). The design storm method outlined in the NSW Feedlot manual (NSW Agriculture, 1997) was also used as a comparative assessment.

4.3.10.4.1.1 Method 1 – Major storm event

The design volume of the holding pond during a 1 in 20 year (Average Recurrence Interval); 24-hour duration storm event was calculated in accordance with the NSW Feedlot Manual (NSW Agriculture, 1997).

The *National Guidelines for Beef Cattle Feedlots in Australia* (MLA, 2012a) states that the design storm method fails to account for the cumulative impact of a series of wet weather events (such as might be experienced in a wetter than average season) and alternative design methods should be adopted.

For this approach, the design calculation requires catchment area, 24 hr rainfall at an average recurrence interval of 20 years and runoff coefficients from each catchment area.

The area of each sub-component area was determined from the proposed development layout as outlined in section 4.3.10. These data are shown in Table 3. Initially, an approximate surface area for the holding pond was assumed, then an iterative approach used to determine the holding pond volume and design surface area.

The 1 in 20 year, 24 hour rainfall for the development site was obtained from BoM IFD data as outlined in section 5.1.2. Runoff coefficients were 0.8 for the feedlot pens and other hard catchment (balance) areas, 0.4 for grassed areas and 1.0 for rainfall falling on the holding pond surface.

The runoff volume in Table 6 is calculated by multiplying the catchment area by the runoff depth. The minimum required holding pond volume is the cumulative total of the runoff volumes for each sub-component catchment area. The minimum holding pond volume required using the Major Storm Event method is 5,217 m^3 (5.2 ML).

Table 6 – Proposed development – Holding pond design – Method 1 (Major storm event)

Parameter	Units	Pen Area	Hard Area	Soft Area	Pond Area	Total
Catchment area	m^2	15,745	20,338	5,155	10,005	51,241
Rainfall event	mm	127.44	127.44	127.44	127.44	-
Runoff co-efficient		0.8	0.8	0.4	1	-
Runoff depth	mm	101.952	101.952	50.976	127.44	-
Runoff volume	m^3	1,605	2,073	263	1,275	5,217

4.3.10.4.1.2 Method 2 – Site-specific daily-step hydrological modelling

Daily-step hydrological modelling of the controlled drainage area and holding pond was used to determine the capacity of the proposed holding pond whilst ensuring that overflows are less than an average of one in 10 years. Site-specific daily-step hydrological modelling accounts for the cumulative impact of a series of wet weather events such as might be experienced in a wetter-than-average season. This method is the recommended method by the *National Guidelines for Beef Cattle Feedlots in Australia* (MLA, 2012a).

A site-specific small catchment daily-time-step hydrological model (Model for Effluent Disposal via Land Irrigation (MEDLI)) was used to size the holding pond using the annual water balance method (Gardner et al, 1996).

The annual water balance was run through a number of times to determine a holding pond capacity that notionally spills at the required frequency (i.e. no more often than an average of one in 10 years). The National Feedlot guidelines state that once a pond has 'spilled' in this type of modelling, the likelihood of another modelled spill occurring within the next few days is quite high; thus, modelled spill events within 30 days of one another should be treated as a single spill for the purpose of annual water balance calculations (MLA, 2012a). Subsequently, any spills within 30 days have been considered as a single spill in the annual water balance calculations. Operationally, it is likely that the feedlot manager would be able to intervene in these circumstances, and possibly avert secondary spills.

During operation, various mitigation measures shall be implemented to mitigate the potential environmental impact of additional overflows within a 30-day period.

The sustainability of the effluent utilisation system is dependent on balanced hydraulic and nutrient loads.

Table 7 shows a monthly summary of the daily-step water balance for the period (1924-2023) for Holding Pond 1 with the modelled controlled drainage area (Table 3).

Table 7 – Proposed development – CDA 1 – Holding Pond 1

	Rainfall	Evaporation	Pond inflow		Pond outflow	
			Rain in	Runoff	Evaporation	Effluent irrigated
	mm	mm	ML	ML	ML	ML
January	99.9	175.8	1.0	1.2	0.4	1.9
February	88.3	141.5	0.9	1.1	0.4	1.5
March	65.9	131.8	0.7	0.8	0.3	1.2
April	37.6	94.6	0.4	0.4	0.2	0.7
May	44.5	64.2	0.4	0.5	0.2	0.6
June	44.8	46.2	0.4	0.5	0.1	0.2
July	48.8	53.3	0.5	0.6	0.1	0.6
August	44.0	78.5	0.4	0.4	0.2	1.1
September	49.2	110.9	0.5	0.5	0.3	0.8
October	76.9	142.7	0.8	0.9	0.4	0.6
November	90.0	156.6	0.9	1.0	0.4	1.1
December	99.2	176.9	1.0	1.0	0.5	2.3
Total	789.0	1373.0	7.9	8.8	3.4	12.9

Table 7 shows that the annual inflow to the pond was estimated by the MEDLI feedlot model to be 16.6 ML which includes rainfall on the pond surface and runoff from the pen, hard and soft catchment areas. Table 7 shows that the annual outflow from the pond was estimated by the MEDLI feedlot model to be 10.0 ML which includes evaporation and irrigation. The balance comprises overtopping, sludge and seepage.

The volume of Holding Pond 1 over the modelling period is shown in Figure 9. The MEDLI model predicts that the existing holding pond with a volume of 10.0 ML and a surface area of 1.0 ha will restrict any overtopping events to a frequency of less than once every 10 years as shown in Figure 10. In accordance with the National Guidelines for Beef Cattle Feedlots (MLA, 2012), the number of spills within 30 days of one another has been treated as a single spill event for the purpose of these model calculations.

The holding pond shall have a bywash capable of discharging the peak flow from the controlled drainage area from a 50-year ARI design storm.

A minimum freeboard of 0.9 m shall be provided between the bywash level and the crest of the holding pond embankment.

The capacity of the Holding Pond 1 determined by the Major Storm event method is 5.2 ML. The capacity of the Holding Pond 1 determined by the site-specific daily-step hydrological modelling is 10.0 ML. Holding Pond 1 shall be constructed with a minimum design volume of 10.0 ML.

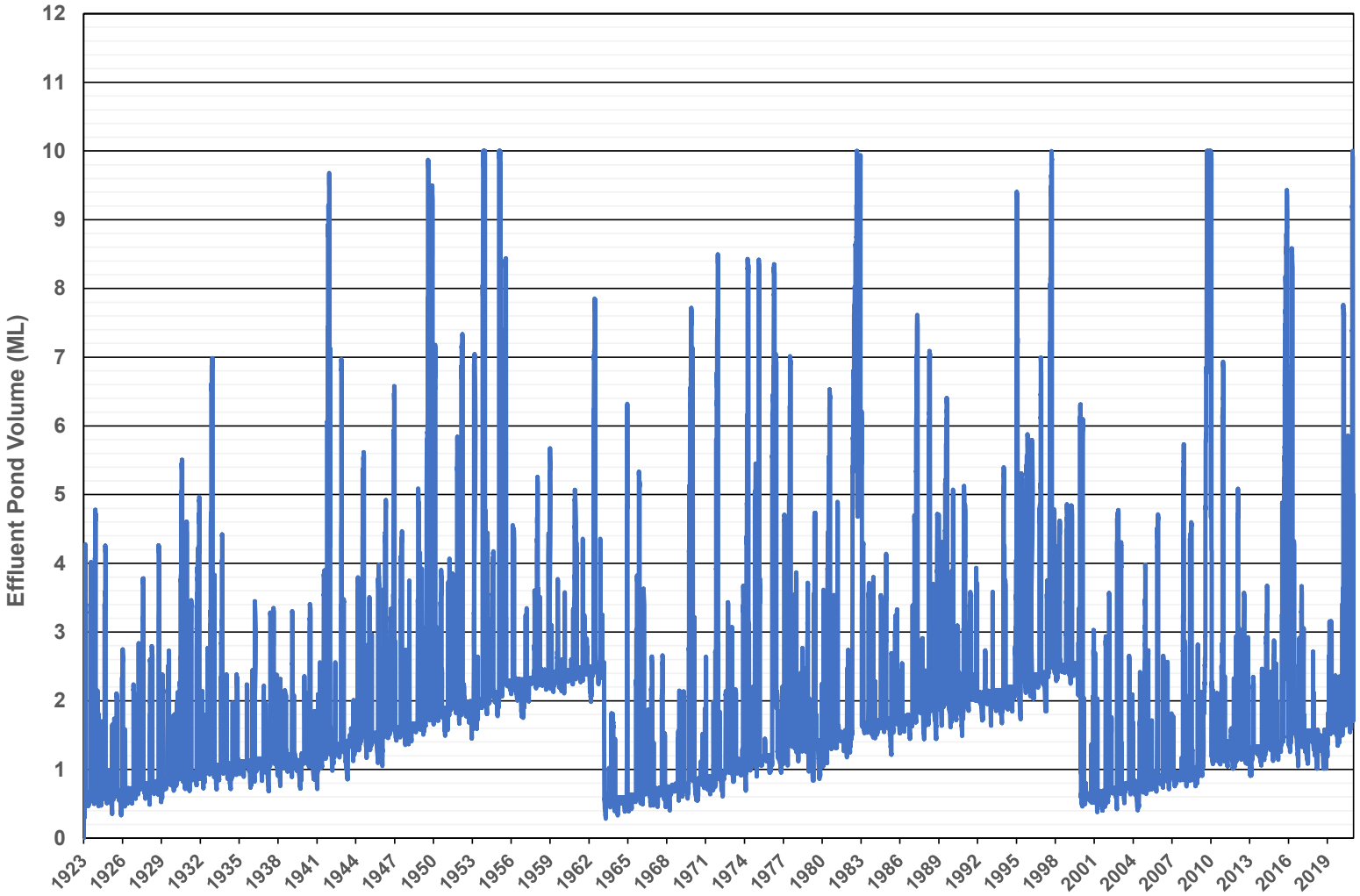

Figure 9 – Proposed development – CDA 1 – Holding Pond 1 volume

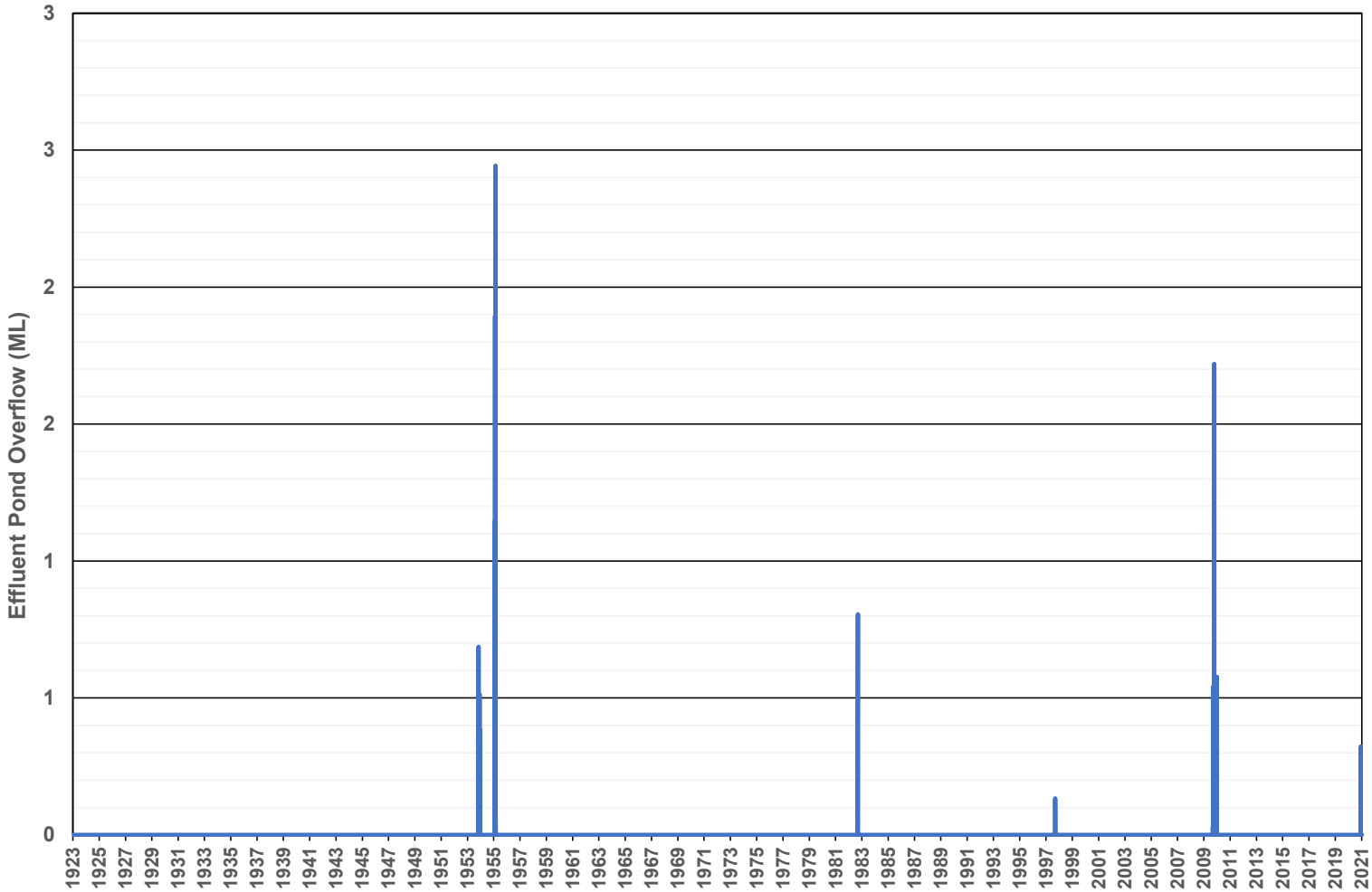

Figure 10 – Proposed development – CDA 1 – Holding Pond 1 overflow

4.3.11 Solid waste management

4.3.11.1 Solid wastes

The types of putrescible solid waste generated by the proposed development are outlined in the following sections. All other non-putrescible and domestic putrescible solid wastes shall be removed off-site for recycling, recovery or disposal at a suitable facility. The proposed development is expected to generate negligible quantities of non-putrescible and domestic putrescible solid wastes.

4.3.11.1.1 Manure

Manure is the solid waste produced by cattle. Manure is the faeces and urine excreted by the cattle. Manure also includes those solids that have settled from the stormwater runoff in the sedimentation basin and which are removed after drying. Manure is the principal solid waste for management.

4.3.11.1.2 Mortalities

Very few mortalities are anticipated with the proposed development as the proposed development shall predominantly feed the applicants own cattle. Any mortalities are composted within the solid waste stockpile and carcass composting area. Composting shall continue to be the method used for disposal of carcasses as composting yields a product for utilisation and is ecologically sustainable when compared to other methods of disposal such as burial and incineration. Most Australian beef cattle feedlots use composting for managing mortalities (MLA, 2012b).

Carcass composting will be undertaken in line with the principles outlined in the *Waste Management and Utilisation Guidelines* (MLA, 2016).

4.3.11.1.3 Holding pond sludge

When suspended solids from the effluent settle, a layer of sediment material known as sludge is deposited on the base of the holding pond. The distribution and accumulation of this sludge is rarely uniform and depends on the efficacy of the sedimentation system and drainage system. Over time the accumulated sludge reduces the effective storage volume of the pond.

Consequently, sludge that may progressively build up in the pond should be removed periodically when weather conditions allow.

With a well-designed and maintained sedimentation and holding pond system, sludge accumulation in the holding pond should be minimal.

4.3.11.2 Solid waste stockpile

A dedicated area is required to temporarily store manure after it has been removed from the pens, sedimentation basin and sludge from the holding pond when agricultural land is not ready for the application of manure or when it may not be possible to directly remove it from the subject land.

The composting of mortalities shall be undertaken within the solid waste stockpile and carcass composting area.

The storage, processing and/or composting of solid wastes shall be undertaken on a suitably designed and constructed area within Controlled Drainage Area 1.

The solid waste stockpile and carcass composting area shall be constructed using the specifications outlined in Appendix C and have a floor slope of 2% towards the sedimentation basin servicing the controlled drainage area to ensure drainage. Figure 4 shows the location of the solid waste stockpile and carcass composting area and Controlled Drainage Area 1.

As outlined in section 4.5.5.1, BEEFBAL (V10.01) (DAF, 2019) estimates some 488 t of manure on a dry matter basis harvested from the pens per year. Based on a scraped manure moisture content of 40%, this translates into some 814 t of wet scraped manure per year to the stockpile.

Stockpiling of solid wastes is best undertaken in windrows up to 3 m high rather than in large piles. Windrows are typically constructed by forming solid wastes into a long pile with a triangular cross-section, a base width of 3–4 m and a height of 2.5-3 m. Their long axes shall be perpendicular to the slope to promote drainage.

With the assumed windrow dimensions, some 1,360 m^2 of pad area is required to store and process harvested manure. An area for composting of carcasses has been allowed adjacent to the manure stockpiles. A total area of about 7,300 m^2 (~0.73 ha) has been allowed for solid waste stockpile and carcass composting.

4.3.11.3 Solid waste utilisation

Solid waste (e.g. manure, carcass compost, holding pond sludge) is valued as a source of nutrients for fertilising crops or pasture and therefore, shall be applied to land where it can be sustainably utilised by crops or pasture and soil. The application rates depend on factors such as the solid waste chemical characteristics, physical and chemical characteristics of the soils, type of crops grown and climate.

Utilisation of solid wastes will substitute a percentage of the synthetic fertilisers that would otherwise be trucked-in for use in the cropping program on the subject land. Various crops or pasture shall be grown on the solid waste utilisation area. Crops will be harvested for grain and straw to use as feed commodities in the proposed development.

Solid waste shall be applied sustainably to cropping land using a tractor drawn moving bed manure spreader or similar equipment on the subject land or removed off-site to be used as a soil conditioner and organic fertiliser on cropping and pasture operations on adjoining land leased by the proponent or other cropping land in the local region. A typical tractor drawn moving bed manure spreader is shown in Photograph 14.

Land has been identified on the subject land as being suitable for application of solid waste as shown in Figure 11 along with the proposed buffers to sensitive areas (e.g. vegetation communities, drainage lines and property boundaries).

To avoid adverse environmental impacts, the *National Guidelines for Beef Cattle Feedlots in Australia* (MLA 2012a) state that application rates should not exceed the rates at which the constituents of the solid waste (especially N and P) are:

- taken up by plants and removed from the site by harvesting;
- safely stored within the soil profile; and
- released into the surrounding environment in an acceptable form.

An assessment of the area required for sustainable utilisation of solid waste is provided in section 4.5.5.4. The subject land has an area of at least 75 ha of cropping land available for solid waste utilisation as shown on Figure 11.

Photograph 14 – Tractor drawn manure spreader

4.3.11.3.1 Environmental buffers

When planning the solid waste utilisation areas, consideration of the separation of these areas from neighbours and sensitive environments was considered. The rationale for separating these

land uses is to protect the locality's ground and surface waters, other environmental and social values as well the long-term future of the solid waste utilisation areas.

A buffer distance shall be also applied where the application of solid waste takes place within proximity to areas likely to be used by the public at that time. The appropriateness of the applied buffer distance has been determined having consideration for the qualities of the materials being applied, weather conditions and other environmental factors; as well as the anticipated level of public usage or exposure at those times.

A minimum buffer distance of 25 m between the solid waste utilisation areas and watercourses, drainage lines, native vegetation communities, property boundaries and public areas has been adopted. Various mitigation measures shall be implemented to ensure no adverse impacts to these sensitive receivers from solid waste application.

4.3.12 Liquid waste management

4.3.12.1 Effluent storage

Effluent shall be collected, temporarily held in the sedimentation basin and then stored in the holding pond until it can be used as outlined in section 4.3.10. The proposed development requires infrastructure to convey effluent stored in the holding pond to the effluent utilisation area.

4.3.12.2 Effluent utilisation

Effluent is valued as a source of nutrients for fertilising crops and therefore, shall be applied to land when available where it can be sustainably utilised by crops and soil. Land is required for the long-term application of water, nutrients, salts and organic loads in the effluent.

The effluent utilisation area has been selected and sized to be ecologically sustainable to prevent environmental harm, especially to soils, groundwater and surface water and to avoid impacts to native vegetation.

The effluent utilisation system is a full utilisation system. In this system, the effluent is fully used (thereby no discharges to surface waters), with the area required for irrigation determined by calculating the limiting land area using a water and nutrient balance.

Land has been identified on the subject land as being suitable for application of effluent as shown in Figure 11 along with the proposed buffers to sensitive areas (e.g. native vegetation communities, drainage lines and property boundaries).

An assessment of the area required for sustainable utilisation of solid waste is provided in section 4.5.5.4. The amount of land proposed for irrigation of effluent is approximately 60 ha.

4.3.12.2.1 Environmental buffers

When planning the effluent utilisation area, consideration of the separation of these areas from neighbours and sensitive environments was considered. The rationale for separating these land uses is to protect the locality's ground and surface waters, other environmental and social values as well the long-term future of the effluent utilisation area.

A buffer distance shall also be applied where the application of effluent takes place within proximity to areas likely to be used by the public at that time. The appropriateness of the applied buffer distance has been determined having consideration for the qualities of the materials being applied, weather conditions and other environmental factors; as well as the anticipated level of public usage or exposure at those times.

The adopted buffer distances between effluent utilisation areas and water resources and public areas are provided in Table 8.

Table 8 – Proposed development – Proposed buffer distances to sensitive environments

Sensitive area	Minimum buffer distance Effluent m	Impact of concern/comments
Watercourses (Stream Order 3 or higher)	100	Protection of water quality and aquatic ecosystems.
Internal natural drainage lines	25	Protection of water quality for most sensitive water uses of the potentially affected waterbody.
Bore – Domestic supply	50	Groundwater quality for domestic human uses protected.
Native vegetation	25	Protection of biodiversity and native ecosystems.
Public roads	25 (50*)	Avoidance of spray drift of effluent containing pathogens offsite.
Public spaces	50 (100*)	Avoidance of spray drift of effluent containing pathogens offsite.
Property boundary	25 (50*)	Avoidance of spray drift of effluent containing pathogens offsite.

*Where irrigation gives rise to aerosols.

4.3.12.3 Sewage

The proposed development is in a rural area and cannot be connected to the Glen Innes Severn Council's reticulated sewerage system.

As the proposed development shall be a family run operation, the existing on-site domestic wastewater management systems in their respective place of residence on neighbouring land. These systems have sufficient capacity to service the proposed development.

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S

19
DP753323

237
DP753323

NEWSOMES ROAD

239
DP753323

565
DP753323

566
DP753323

4
DP1246771

SUBJECT LAND BOUNDARY

130
DP753303

567
DP753323

568
DP753323

2
DP115193

129
DP753303

236
DP753323

SUBJECT LAND BOUNDARY

SUBJECT LAND BOUNDARY

128
DP753303

133
DP753323

238
DP753323

619
DP753323

SUBJECT LAND BOUNDARY

618
DP753323

NEWSOMES ROAD

200
DP753323

PROPOSED DEVELOPMENT COMPLEX SITE

SUBJECT LAND BOUNDARY

1
DP612287

2
DP612287

SUBJECT LAND BOUNDARY

134
DP753323

137
DP753323

225
DP753323

SUBJECT LAND BOUNDARY

136
DP753323

137
DP753323

SUBJECT LAND BOUNDARY

2
DP1245771

SUBJECT LAND BOUNDARY

135
DP753303

SUBJECT LAND BOUNDARY

141
DP753323

1
DP627327

G
DP32737

1
DP944758

SCALE 0 150 300 450 600 750 900 1,050 1,200 1,350 1,500m
1:15,000 (A1) 1:30,000 (A3)

LEGEND

- SUBJECT LAND BOUNDARY
- LAND PARCEL BOUNDARY
- EFFLUENT UTILISATION AREA
- SOLID WASTE UTILISATION AREA

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STATUS
FOR APPROVAL
NOT TO BE USED FOR CONSTRUCTION PURPOSES

RPEQ

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REV.	DATE	REVISION DESCRIPTION	DRAWN	CHECK	APPROVED
A	24/11/24	DRAFT ISSUE TO CLIENT	RJD	RJD	RJD
B	06/12/24	FINAL ISSUE FOR LODGEMENT TO GLEN INNES SEVERN COUNCIL	RJD	RJD	RJD

SCALE	1:15,000 (A3)
DRAWN	RJD
DATE	06/12/2024
CHECKED	RJD
DATE	06/12/2024
APPROVED	RJD
DATE	06/12/2024

CLIENT NARRIE HOLDINGS PTY LTD ATF NEWSOME FAMILY TRUST
PROJECT PROPOSED 999 HEAD BEEF CATTLE FEEDLOT
TITLE DEVELOPMENT APPLICATION FOR INTENSIVE LIVESTOCK AGRICULTURE
STATEMENT OF ENVIRONMENTAL EFFECTS
PROPOSED DEVELOPMENT - WASTE UTILISATION AREAS

REPORT REFERENCE	SUPPLIED DRAWING NUMBER		DRAWING NUMBER	REV.
FIGURE 11		A3	G4-116-00-11	B

4.3.13 Utilities

4.3.13.1 Electricity

The proposed development requires energy for feed processing and water reticulation. All electrical power requirements shall be met off-grid by way of diesel generator or an electrified off-grid system comprising solar photovoltaics, lithium ion battery storage and back-up diesel generator.

4.3.13.2 Water

The proposed development requires a reliable source of water to service the water demands of livestock drinking water. The proposed water supply would be from existing surface water as harvestable rights.

As outlined in section 3.2 the proposed development is not located in a reticulated water supply area. Consequently, no extensions or upgrades to reticulated water supply are required.

4.3.13.3 Communications

No extensions or upgrades to existing communications services are required for the proposed development.

4.3.14 Separation distances

The proposed development has been sited and designed to prevent or minimise adverse impacts on the amenity of the surrounding community.

An assessment of potential impacts to community amenity has been undertaken and is presented in section 6.2.5.

4.3.15 Landscaping

The proposed development has been sited and designed to be consistent with and respect the rural character of the area. The locality is characterised by large expanses of grazing land, framed by vegetation and drainage lines and very sparsely populated with low-rise, very-low intensity dwellings and rural infrastructure.

As far as practical all native vegetation around the proposed development complex shall not be disturbed.

Landscaping is not planned throughout the development to provide visual amenity and ambience as the proposed development complex shall not be visible from dwellings on adjoining land due to vegetative screening and the topography within the setback distance.

An assessment of potential impacts to community amenity has been undertaken and is presented in section 6.2.4.

4.4 Construction

The process of constructing the proposed development involves a number of steps. A brief outline of these steps is provided in the following sections.

4.4.1 Area set-out

The layout of the proposed development must be transferred from design to on-ground at the site with precision and detail. The approach shall include the traditional method of pegging the physical position as well as using GPS-guided machinery.

GPS-guided (machine control) plant provides independent operation and less survey pegging resulting in significant cost benefits, improved accuracy, easy design updates, the inclusion of unplanned works and increased safety. All construction machinery shall be equipped with machine-control.

4.4.2 Clearing and grubbing

Clearing is carried out in advance of any earthwork operations on areas affected by earthworks or other areas to be cleared as designated on the approved construction plans.

The area to be cleared is that required by site works, including the area occupied by the production pens, access and feed roads, drains, sedimentation basin, holding pond and solid waste stockpile and carcass composting area plus appropriate clearance of some 5 m beyond tops of cuts and toes of embankments.

The absolute minimum area for construction of site works shall only be cleared. Before clearing commences, the limits of clearing shall be marked by pegs placed at 25 m intervals around the area to be cleared.

Clearing consists of the removal of vegetation both living and dead, all minor man-made structures, all rubbish and other materials unsuitable for use in the works except where such trees, vegetation, structures etc are designated for preservation. Any vegetation or man-made structures to remain shall be appropriately marked.

Trees that shall be preserved shall be protected during site works by the erection of barricades, generally at a distance of 4 m from the trunk of the tree.

The material to be cleared shall include, but not be limited to, trees, stumps (parts above ground), logs, bushes, undergrowth, grasses, large rocks and fences.

Grubbing consists of the removal of vegetation, the bases of stumps, roots and other obstructions to a depth not less than 300 mm below the natural surface or 1.5 m below the finished surface level whichever is the lower in areas where bulk earthworks will be required unless otherwise specified in the earthworks specifications.

Holes remaining after trees and stumps have been grubbed shall be backfilled with sound material to prevent the infiltration and ponding of water. The backfilling material shall be compacted to at least the relative density of the material existing in the adjacent ground.

The cleared vegetation may be chipped and mulched and stockpiled for subsequent use in landscaping or for use at other locations as appropriate.

4.4.3 Bulk earthworks

Bulk earthworks create the foundations of the engineering works on the site such as beef cattle production, holding and hospital pens, runoff and drainage control, feed and access roads, sedimentation basin, holding pond and buildings and structures that are to be erected.

The standard of the bulk earthworks will have a profound effect on protection of the environment and the ongoing maintenance costs of the proposed development.

4.4.3.1 Blasting

Due to the material strata, no blasting is expected to be required during the construction of the proposed development.

4.4.3.2 Topsoil stripping

Topsoil is surface soil which is normally high in organic material and contaminated by residual grass seed and grass roots and reasonably free from subsoil, refuse, clay lumps and large stones.

Topsoil is unsuitable for use in bulk earthworks due to the high organic matter and contamination by other materials (e.g. rocks and timber).

Topsoil can only be removed once clearing and grubbing and disposal of materials have been completed and sediment and erosion control measures have been implemented on that section of the works.

Topsoil shall be stripped to a minimum depth of around 100 mm with the stripped material to be stockpiled in areas outside of the area to be covered by the works for subsequent spreading on areas marked for revegetation upon completion of construction.

Topsoil shall be placed in layers not exceeding 200 mm to a maximum height of 2.5 m and a maximum batter slope of 1V:2H.

To minimise erosion, stockpile batters shall be track rolled or stabilised by other acceptable means. Temporary erosion and sedimentation control measures to protect the stockpiles shall be installed and maintained.

4.4.4 Material suitability

The suitability of material for construction is assessed on the basis of its geotechnical qualities. Soil testing, during site investigations, determines the nature of the material on the site of the proposed development.

Soils may need to be mixed or engineered to produce a material that meets the foundation, sub-base or lining specifications. The parameters of interest include permeability (for protecting groundwater) and strength (for trafficability).

Even though soil investigations may indicate that materials are suitable for construction, unsuitable materials may still be encountered below the designed level of excavation. Unsuitable material shall be excavated and disposed of as directed to spoil or as fill in areas in which it would be deemed suitable.

Material excavated and suitable for placement in the beef cattle production pens foundation or clay lining shall be subject to the suitability requirements outlined in the National Feedlot Guidelines (MLA, 2012b).

A representative sample of the strata to be encountered during bulk earthworks was submitted to a laboratory with NATA accreditation for the tests to be undertaken. A summary of the geotechnical test results is provided in Table 9. The complete test results are provided in Appendix D.

Table 9 – Proposed development complex – Geotechnical results

Test pit	Sample depth	Description	Liquid limit	Plastic limit	Plasticity index	LS	MDD	EAT	% passing 75µm
	m		%	%	%	%	kg/m^3		
TP1	0.5-1.0	Silty clay (CH)	42	19	23	13.5	1.81	3	60
TP2	1.0-1.5	Silty clay (CH)	35	15	20	12.0	1.86	3	53

The geotechnical test results confirm the presence of high plasticity silty clay with trace of sand. This material is well suited as an underlying material for the construction of the proposed development complex as it is well graded, has low permeability when compacted and good shearing strength. The subsoils have do not slake but have a tendency for dispersion when remoulded, however.

4.4.5 Excavation and fill

All excavation and filling shall be carried out to produce a smooth, uniform surface in accordance with the design grades, levels and dimensions of the proposed works.

Material for filling shall be obtained from excavations within the site, supplemented by borrow material if necessary.

The fill material shall be free of tree stumps and roots and be capable of being compacted in accordance with the earthworks specification. In general, fill materials will be well-graded suitable material such as soil or gravel. A well graded soil is a soil that contains particles of a wide range of sizes and has a good representation of all sizes.

Fill materials shall be generally placed in layers with a minimum thickness of 200 mm before compaction and uniformly compacted to the design (dry density at optimum moisture content) specification before the next layer is applied. Typically, compaction shall achieve at least 95 per cent of the standard maximum laboratory dry density determined in accordance with AS1289.

The National Guidelines for Beef Cattle feedlots (MLA, 2012b) state that clay lining material should be placed in layers of 150 mm (±50 mm). Each layer should be tined, wetted to ±2% of optimum moisture content and compacted to the required compaction (relative to the Maximum Dry Density) that is needed to achieve the required permeability of ~0.1 mm/day. The minimum depth recommended for the clay liner is 300 mm after compaction.

The finished surface of the clay liner or pen surface shall be durable and trafficable for cattle and equipment.

4.4.5.1 Embankments

The process of cutting and filling to form the design surface shall create cut and fill embankments. The design surface shall be graded to the natural surface with a batter slope appropriate for the in-situ or placed soil characteristics to ensure a safe and stable slope.

No retaining walls are proposed.

4.4.6 Pen infrastructure

After completion of the bulk earthworks, the feed bunks, water troughs, aprons, fences and gates shall be installed.

The feed bunks for each row shall be pre-cast 6 m concrete sections. The feed bunks shall be placed over part of the concrete apron and compacted gravel road base to provide a level and stable foundation. The concrete apron along the feed bunk shall extend some 3 m into the pen and will be cast in-situ (see Figure 5) using formwork and suitably reinforced to withstand the loading of pen cleaning equipment.

Pre-fabricated concrete water troughs shall be placed in the dividing or rear fenceline of each pen. Concrete aprons will be cast in-situ around all water troughs (see Figure 5) using formwork and suitably reinforced to withstand the loading of pen cleaning equipment.

For the production pens, the fences shall be constructed using steel posts with steel top and belly rail to provide the required strength. Wire cables will be strung along the fence between the top rail and belly rail and under the belly rail to securely contain the cattle and facilitate under-fence cleaning.

Steel gates shall be installed at the rear of each pen for movement of stock and pen cleaning equipment and across the feed bunk apron at the top of each dividing fence between pens to facilitate cleaning of feed bunk aprons between pens.

Water reticulation and water trough drainage pipelines shall be installed in-ground to maintain the water at a relatively constant temperature year round and to prevent wet spots in the pens respectively. Water pipeline material shall be HDPE, polyethylene or PVC depending on the location within the proposed development.

4.4.7 Roads

The design and construction road surfaces are important for their long-term performance. Roads are complex engineering structures upon which feed delivery and reliable access to the proposed development depend.

Typically, the road formation shall include a compacted gravel base of a minimum of 200 mm and a strong and stable underlying subgrade. The subgrade is the prepared surface (foundation) on which the road surface is constructed and provides support to the road surface. The subgrade for the feed roads is the layer of soil (cut or fill) prepared during bulk earthworks.

Access and feed roads shall be designed and constructed with careful consideration given to correct shape of the cross section.

For feed roads, the design objective is to keep water drained away from the roadway. In a sawtooth layout, the feed road falls away at 2% from the feed bunk with a longitudinal fall

along the length of the road equivalent to the slope of the catch drains servicing each row of pens.

For access roads, the design objective is to keep water drained away from the roadway. The access road cross section has three components – a crowned driving surface, a shoulder area that slopes away from the edge of the driving surface and a drain to remove the water away from the road.

Typically, the feed and access road surfaces shall be unbound natural material such as gravel without surface sealing.

4.4.8 Drainage system

Runoff from the controlled drainage area contains organic and mineralised manure constituents that could pose a significant impact to soil and water resources if they were released, uncontrolled, into the environment.

A low-permeability barrier shall be needed on those areas within the controlled area where the permeability of underlying soil/rock strata exceeds 0.1 mm/day (3.5 cm/year). This barrier shall be created by using a liner made of compacted clay (clay liner).

For a given soil, permeability is related to soil particle composition, moisture content and level of compaction; and there are limits to the permeability that can be achieved at any level of compaction. In-situ and laboratory measurement of permeability is difficult, and relatively inaccurate (MLA, 2012b).

Consequently, cattle feedlot design guidelines provide guidance on specifications for materials and construction methods to be used for clay lining rather than relying on permeability standards.

Table 10 and Appendix C outline the characteristics of suitable clay lining material and provides guidance on the selection of the correct materials for use in the liner. Soils may need to be mixed or engineered to produce a material that meets the specifications.

Because of the formation of a low permeability soil-manure interface layer, clay lining is not generally required on the beef cattle production pen area (MLA, 2012b).

Table 10 – Specifications for clay liner materials (MLA, 2012b)

Soil characteristic	Acceptability criterion	Test method
Percentage fines	More than 25% passing a 75 µm sieve More than 15% passing a 2 µm sieve	AS 1289 3.6
Liquid Limit	Less than 70	AS 1289 3.1.2
Plasticity Index	More than 15	AS 1289 3.3.1
Emerson Class	Number 5 to 6	AS 1289 3.8.1

4.4.8.1 Drains

Catch drains are located along the bottom of the row of beef cattle production pens. Catch drains flow directly into the sedimentation basin. The catch drains convey stormwater runoff to the sedimentation basin. Catch drains shall be constructed by clearing vegetation and undertaking bulk earthworks as outlined in sections 4.4.2 and 4.4.3 to achieve the design geometry.

To mitigate the potential for contamination of underground water resources because of leaching of contaminants through permeable, underlying soil, a low-permeability barrier shall be constructed on the floor of the drains.

Hence, the base of the catch drain shall be underlain by a minimum of either 300 mm clay or other suitable soil, able to provide a design permeability of $<1 \times 10^{-9}$ m/s (~ 0.1 mm/day) (MLA, 2012b). The specification for clay lining is provided in Appendix C.

A representative sample of the strata to be encountered during bulk earthworks was submitted to a laboratory with NATA accreditation for the tests to be undertaken. The complete test results are provided in Appendix D. As shown in Appendix D, the soil has sufficient clay particles to achieve a design permeability of less than 1×10^{-9} m/s for a clay liner.

4.4.8.2 Sedimentation basin

A sedimentation basin is sited at the downslope end of the controlled drainage area. The sedimentation basin for Controlled Drainage Area 1 shall have a minimum nominal working capacity of 1,750 m^3 (1.75 ML) as stated in section 4.3.10.2.1.

The sedimentation basin for Controlled Drainage Area 1 shall be constructed by clearing vegetation and undertaking bulk earthworks as outlined in sections 4.4.2 and 4.4.3 to achieve the design geometry.

The general method of protecting groundwater is to ensure that a low-permeability barrier exists between the stored effluent and any underlying groundwater resources. Hence, the base and embankment of each sedimentation basin shall be underlain by a minimum of either 300 mm clay or other suitable soil, able to provide a design permeability of $<1 \times 10^{-9}$ m/s (~ 0.1 mm/day) (MLA, 2012b).

Embankment slopes shall be stabilised as soon as possible after construction to minimise erosion.

4.4.8.3 Holding pond

A holding pond shall be sited downslope of the sedimentation basin within the controlled drainage area as shown on Figure 7.

The holding pond for Controlled Drainage Area 1 shall have a minimum nominal working capacity of 8.0 ML as stated in section 4.3.10.4.1.

The holding pond shall be constructed by undertaking bulk earthworks as outlined in sections 4.4.2 and 4.4.3 to achieve the design geometry.

The general method of protecting groundwater is to ensure that a low-permeability barrier exists between the stored effluent and any underlying groundwater resources. The base and embankment for each holding pond shall be underlain by a minimum of either 300 mm clay (or other suitable soil), able to provide a design permeability of $<1 \times 10^{-9}$ m/s (~ 0.1 mm/d) (MLA, 2012b).

Earthen embankment slopes and holding pond bywash returns shall be stabilised as soon as possible after construction to minimise erosion.

Excavation of the holding pond would be performed to a depth of some 2-3 m below existing ground surface as shown on Figure 8.

4.4.9 Solid waste storage area

Solid wastes contain organic and mineralised manure constituents that could have adverse impacts on the environment if they were released uncontrolled from the site. Therefore, the storage of solid wastes shall take place on a suitably constructed area that is within the controlled drainage area.

Runoff external to the solid waste stockpile and carcass composting area is diverted away from the solid waste stockpile and carcass composting area by the provision of diversion banks upslope of the area that prevent upslope runoff from entering the area.

Any groundwater resources underlying the solid waste stockpile and carcass composting area shall be protected by implementing a low-permeability barrier on the base of the area. Hence, the solid waste stockpile and carcass composting area shall be underlain by a minimum of either 300 mm clay (or other suitable material), able to provide a design permeability of less than 1×10^{-9} m/s (~ 0.1 mm/day) (MLA, 2012b).

4.4.10 Hours of construction

The construction of the proposed development shall occur within the hours specified in the conditions contained in the development consent for the proposed development issued by the Glen Innes Severn Council

Due to the rural location, the hours would be between 6:30 am and 6:30 pm for Monday to Friday and between 7 am and 5 pm on Saturdays and Sundays with no construction activities undertaken on Public Holidays.

However, there are some situations, where construction work may need to be undertaken outside of these hours, including for example:

- the delivery of oversized plant or structures that police or other authorities determine require special arrangements to transport along public roads;

- emergency work to avoid the loss of life or damage to property, or to prevent environmental harm; and
- maintenance and repair of public infrastructure where disruption to essential services and/or considerations of worker safety do not allow work within standard hours.

4.4.11 Staging

The proposed development shall be developed in one stage.

4.4.12 Construction period

The construction period for the proposed development, if undertaken in one contiguous program, is estimated to take approximately 3-4 months depending on weather conditions.

4.4.13 Construction materials

Various materials are required for the construction of the proposed development. These include:

- Concrete aggregates and products – cement, sand, rock, blocks etc;
- Pre-cast concrete structures – water troughs, culverts, tanks etc;
- Steel – fencing, shade structure, reinforcing mesh, building frame, cladding etc; and
- Subgrade/base materials – clay, gravels etc.

All materials, with the exception of those able to be legally sourced from the subject land such as subgrade materials shall be imported onto the development site.

4.4.14 Traffic and access arrangements

The proposed development site would be accessed from the existing subject land entrance off Newsomes Road.

All heavy vehicles associated with the construction of the proposed development would be routed west along Wellington Vale Road from the New England Highway at Deepwater. Typically, a low-loader type vehicle would deliver the construction equipment to the site as required and backload with equipment that has completed operations and is to be demobilised from the site. Delivery of items of construction equipment would be staggered throughout the construction period in line with sequencing of activities.

4.4.15 Security and lighting

Access control to the construction area will be maintained at the subject land entrance off Newsomes Road. The construction area shall be fenced with standard cattle-proof fencing for livestock control during works.

Construction activities shall only be conducted during daylight hours. Hence, no illumination lighting will be required.

4.4.16 Workforce requirements

At this stage it is anticipated that construction of the proposed development shall involve an average construction workforce in the order of 2-3 personnel on-site at any one time.

Typically, a different workforce would undertake the various discrete activities such as earthworks, fencing, concrete works, water reticulation, for example. A local contractor shall be engaged for the bulk earthworks. The applicant shall undertake a majority of the aboveground infrastructure works such as fencing, concrete works etc. Consequently, no on-site accommodation is required for the construction workforce.

4.4.17 Hazardous materials

All hazardous materials required to be stored on-site during construction shall be kept in designated bunded areas or stored in transportable bunded vessels. This includes fuels (diesel, petrol), lubricants (oils, grease) and chemicals (concrete plasticisers) etc.

Fuel used during construction of the proposed development will be stored in a truck or trailer mounted bunded facility constructed in accordance with Australian Standard AS 1940-2004: The Storage and Handling of Flammable and Combustible Liquids. The Construction Contractor will be responsible for servicing their equipment and management of their waste products. Minor maintenance of construction equipment may be conducted on site such as tyre replacement, repairs of leaks etc if required.

The estimated capacity of fuel stored on-site for construction activities is expected to be less than 5,000 L.

4.5 Operation

4.5.1 Cattle management

When fully developed, the proposed development shall have about 13,130 m^2 of constructed outdoor beef cattle production pens within the controlled drainage area which equates to a cattle capacity of 999 head at an average stocking density of about 13.1 m^2/head.

4.5.1.1 Beef cattle

The proposed development shall fatten beef cattle for the domestic and export beef market. The average intake weight of beef cattle into the proposed development is in the order of 300 kg. Beef cattle are fed for about 120 to 200 days to achieve an average liveweight in the order of 510 kg or 480 kg depending on the market type. The typical specifications for the cattle to be fattened are provided in Table 11. All beef cattle fattened shall be owned by the applicant.

Table 11 – Proposed development – Cattle – Typical specifications

Parameter	Units	Market type	
		Domestic Mid Fed	Export Long Fed
Days on feed	days	~100	~400
Entry weight	kg	~300	~325
Exit weight	kg	~480	~700-710
SCU scale factor	-	0.72	0.89
Net gain	kg		~400
Average daily gain	kg gain/head/day	~2.0	~0.95
Mortality rate (No in/No Out)	%	~0.25	~0.25
Percent in lot	%	25	75.0

The number of beef cattle turned off from the proposed development is dependent on the following factors:

- pen capacity;
- intake weight;
- days on feed;
- average daily gain;
- required turnoff weight;
- occupancy levels; and
- mortality rates.

When fully constructed, the proposed development shall be able to accommodate up to 999 head of beef cattle at an average stocking density of about ~13.1 m^2/head. Based on this

number of head and the market specification from Table 11, the proposed development shall have a capacity equivalent to 849 SCUs at ~15.6 m^2/SCU.

Based on these data and the market type specifications of the cattle to be fed (Table 11), the estimated number of incoming and outgoing cattle for the proposed development is shown in Table 12. The long-term continuous occupancy rate in the proposed development per year has been assumed to be in the order of 95% of capacity to allow for any fluctuations in cattle supply, cattle demand and climatic conditions, for example.

Total beef cattle throughput would be approximately 1,726 head of cattle annually when fully developed based on an occupancy of 95% and a mortality rate of 0.25%.

Table 12 – Proposed development – Estimated cattle throughput

Parameter	Units	Market type	
		Domestic Mid Fed	Export Long Fed
Development capacity	Head	~19,425	29,135
Entry weight	kg	~300	~325
Exit weight	kg	~480	~705
Days on fed	Days	~90	~400
Occupancy	%	~95.0	~95.0
Mortality rate (No in/No out)	%	~0.25	~0.75
Market type percent in lot	%	25.0	75.0
Head-on-feed	No head per year	~673	~276
Incoming cattle (walked in*)	No head per year	~612	~1,120
Incoming cattle (transported in)	No head per year	~0	~0
Incoming cattle (Total)**	No head per year	~612	~1,120
Outgoing cattle	No head per year	~610	~1,116

4.5.2 Feed management

The feed ration for the beef cattle shall be prepared on-site in a dedicated facility, with associated commodity storage, handling and ration delivery infrastructure.

As outlined in section 4.3.4, the subject land has existing infrastructure to accommodate the grain storage, feed processing and commodity storage requirements for the proposed development.

Cattle are fed a predominantly grain based diet. Winter cereals such as wheat and barley shall be the predominant grains used in the ration. The level of each grain in the ration depends on the availability and cost of the grain sourced.

The location of the proposed development within the northern cropping region of NSW leaves it well positioned for grain and commodities procurement. The applicant is a producer of fodder crops on the subject land.

A typical ration composition is outlined in Table 13. The percentage of each commodity within a ration is dependent on commodity availability and the buying price and therefore the composition often changes seasonally and from year to year. The dry matter content of beef cattle rations is usually formulated to be 70–80%.

Table 13 – Proposed development – Cattle – Typical ration composition (As-fed)

Parameter	Type	Units	Value
Grain	Winter (wheat/barley)	%	~65.5
Protein	Whole cottonseed	%	~12.0
Roughage	Silage (oats/maize)	%	~17.0
Supplements	Limestone/Minerals	%	~5.5

All grain shall be processed on-site through the grain processing facility. The facility consists of storage silos to store grain, a grain movement system and a grain processing system. Grain is processed by dry rolling.

All of the silage requirements shall be grown on the subject land or adjoining land owned by the applicant or related entities.

The commodities are loaded into a tractor-drawn feed wagon by front-end loader. The tractor-drawn feed wagon has on-board mixing equipment. The ration is then dispensed into the feed bunks directly from the tractor-drawn feed wagon.

The approximate annual amount of feed commodities required for the proposed development are listed in Table 14. The proposed development shall accommodate up to 999 head of cattle and shall require about 2,010 t of grain, 1,825 t of roughage (silage), protein and other commodities annually.

The subject land can produce about 1,500 t of silage per year. Consequently, all of the silage can be produced on the subject land.

Table 14 – Proposed development – Estimated annual commodity usage

Parameter	Type	Units	Value
Grain	Winter (barley)	t/year	~2,010
Protein	Whole cottonseed	t/year	~425
Roughage	Silage (oat/maize)	t/year	~1,225
Supplements	Liquid	t/year	~175

4.5.3 Water management

Water is a vital resource for the proposed development and is also a significant expense. The proposed development's water supply, storage and reticulation shall be managed to:

- meet the total annual water requirement of the development;
- provide an unrestricted, reliable supply of water to beef cattle at all times of the year;
- provide water that is clean, fresh and free from contamination for beef cattle;
- meet the peak water intake requirement for the beef cattle, especially during the summer period;
- minimise losses and maximise water use efficiency;
- ensure that the quality of the water (which includes temperature, salinity and impurities) does not affect welfare; and
- provide water that is clean, fresh and free from contamination for personnel working at the development.

4.5.4 Water usage

The water consuming activities within the proposed development are outlined in Table 15.

Table 15 – Proposed development – Water use activities

Activity	Usage
Livestock management	
Drinking water	Yes
Water trough cleaning	Yes
Feed management	
Grain processing	No
Vehicle cleaning	No
Cattle management	
Cattle washing	No
Sundry uses	
Potable	Yes
Evaporative losses	
Storage tanks	No
Water troughs	Yes
Dust control/leakages	Yes

No water shall be used for cattle washing at the proposed development. Consequently, the annual water requirements shall comprise mostly livestock drinking water and sundry uses.

4.5.4.1.1 Drinking water

Davis et al (2009) found drinking water to be in the order of 90% of total water consumption in feedlots where cattle are not washed. Hicks et al. (1988) relate ambient temperature, dry matter intake (DMI) and dietary sodium to water intake. Table 16 shows the average monthly predicted water intake per head per day. The average daily intake is 31.5 L/head/day. With about 949 head-on-feed at the maximum capacity of 999 head, this equates to about 10.6 ML/year for drinking water.

Table 16 – Proposed development – Estimated drinking water usage

Month	Mean daily water intake	Market type Domestic & Export 999 head
	L/head/day	ML
January	34.9	1.0
February	34.5	1.0
March	33.7	1.0
April	31.8	0.9
May	29.0	0.8
June	26.9	0.8
July	26.5	0.7
August	27.5	0.8
September	29.6	0.8
October	31.4	0.9
November	32.9	0.9
December	34.4	1.0
Average	31.1	
Total		10.6

The National Guidelines for Beef Cattle Feedlots (MLA, 2012a) state that as a guide, a proposed feedlot would normally need to demonstrate access to approximately 24 ML of high-security water per annum per 1,000 SCU of feedlot capacity. However, these guidelines include uses such as cattle washing and feed processing which will not be undertaken within the proposed development.

4.5.4.1.2 Feed processing

The proposed development shall utilise a dry grain processing method (dry rolling) therefore no water shall be used for processing of grain.

4.5.4.1.3 Sundry uses

The estimated sundry water usage for the proposed development is outlined in Table 17. Potable water usage is based on 2 FTE persons per day at 100 L/person/day. Water storages shall be enclosed tanks therefore no evaporative losses. Evaporative losses from water troughs

is based on a pan factor of 0.8 and average monthly evaporation taken from SILO data contained Table 28.

An allowance of an average 2,000 L per week for dust control on internal roads based on road watering usage for a beef cattle feedlot based in the same geographical region reported by Davis et al. (2010).

Table 17 – Proposed development – Estimated sundry water usage

Month	Potable 100 L/person/day L/month	Evaporative / Cleaning losses Water Troughs L/month	Unsealed roads - dust control L/month
January	6,200	36,430	10,000
February	6,200	36,346	10,000
March	6,200	36,323	10,000
April	6,200	36,232	10,000
May	6,200	36,157	10,000
June	6,200	36,113	10,000
July	6,200	36,130	10,000
August	6,200	36,192	10,000
September	6,200	36,272	10,000
October	6,200	36,349	10,000
November	6,200	36,383	10,000
December	6,200	36,433	10,000
Total L/year	74,400	435,361	120,000
Total ML/year	0.07	0.44	0.12

4.5.4.1.4 Total water usage

The total annual water demand for the proposed development is estimated to be about 11 ML when at a full capacity of 999 head.

The proposed development has 40 ML of harvestable rights from surface water as outlined in section 5.5.2.1 and shown in Appendix F. Therefore, the total water available under harvestable rights is able to meet the demands of the proposed development.

4.5.5 Solid waste management

4.5.5.1 Solid waste generation

4.5.5.1.1 Manure

McGahan and Tucker (2003) recommend using a mass balance approach to estimate the quality and quantity of solid waste generated by intensive livestock developments. One such method is the predictive model known as BEEFBAL (QPIF, 2004). BEEFBAL can be used to estimate

waste characteristics from a beef cattle feedlot. BEEFBAL is a Microsoft Excel® worksheet model.

BEEFBAL (DAF, 2019) was used to estimate the weight and nutrient content for solid waste from the proposed development. Input data for BEEFBAL was taken from Table 11 and Table 13 for herd data, quantity fed and feed ingredients respectively. The estimated solid waste generated from the proposed development is shown in Table 18.

The BEEFBAL inputs and outputs for the scenarios modelled are provided in Appendix E.

BEEFBAL (DAF, 2019) estimates some 683 t of manure (dry matter) harvested from the pens per year when developed to its full capacity. Based on a scraped manure moisture content of 40%, this translates into some 815 t of wet scraped manure per year to the stockpile. Based on a stockpiled manure moisture content of 20%, this translates into some 590 t of manure available for spreading per year.

Table 18 – Proposed development – Estimated manure generated

Parameter	Units	Market Type
		Mid Fed & Export
Development capacity	Head	999
		t/year
Fresh manure excreted	Dry mass	~683
	t DM/SCU/year	0.85
	Wet mass (85%MC)	~4,450
Manure scraped from pad	Dry mass*	~490
	Wet mass (40%MC)	~815
Manure removed from stockpile	Dry mass	~475
	Wet mass (20%MC)	~590

*50% dry matter loss on the pad

4.5.5.1.2 Mortalities

4.5.5.1.2.1 Typical

The average mortality rate in beef cattle feedlots is around 0.1-1.0% expressed as a percentage of cattle throughput. A mortality rate of about 0.25% expressed as a percentage of cattle throughput as outlined in 4.5.1 has been used for the proposed development as the applicants own cattle shall be fed.

BEEFBAL (DAF, 2019) was used to estimate the mass of mortalities which was then converted to a dry matter basis based on an average carcass moisture content of 60% (Michell et al, 1989). Table 19 the estimated mass of mortalities generated in the proposed development.

BEEFBAL (DAF, 2019) estimates some 6 head or about 381.5 t of mortalities (dry matter) are produced when the proposed developed is operating at its full capacity. Based on a carcass

compost moisture content of 20%, this translates into some 145.0 t of carcass compost available for spreading per year.

Table 19 – Proposed development – Estimated typical mortalities generated

Parameter	Units	Market Type Mid Fed & Export
Development capacity	Head	999
		t/year
Mortalities	Dry mass	~1.0
	Wet Mass (60%MC)	~2.6
Carcass compost removed from stockpile	Dry mass	~1.0
	Wet mass (20%MC)	~1.2

*The fluid content, including water, comprise an average of 60% of the total body weight of a beef animal (Michell et al., 1989).

4.5.5.2 Pen, drain and sedimentation basin cleaning

The proposed development will operate at the equivalent of a Class 1 standard. Consequently, regular cleaning and maintenance in and around the proposed development shall be undertaken in accordance with Class 1 specifications. This level minimises odour emissions and reduces the risk of any amenity impacts on neighbouring sensitive receptors. Regular cleaning:

- reduces manure build up within the pens;
- reduces odours emanating from the proposed development; and
- eliminates wet spots in the pens (production, hospital, induction), which reduces fly breeding areas and reduces odour.

4.5.5.2.1 Drain cleaning

To work effectively, catch drains need to be maintained. When practical, drains shall be cleaned after each runoff producing rainfall event. Cleaning includes removal of manure and vegetation.

4.5.5.2.2 Sedimentation system cleaning and maintenance

Solids within the stormwater runoff settle in the sedimentation basin with the liquid draining into the holding pond.

The sedimentation basin shall be checked for efficacy after each runoff event. Over time, solids build up in the sedimentation basin and, if not removed, will begin to flow into the holding pond. Where practical, the sedimentation basin shall be allowed to dry out prior to removal of sediment. Typically, sediment shall be removed using a front-end loader or similar equipment.

4.5.5.3 Stockpile and carcass composting management

4.5.5.3.1.1 Mortalities

4.5.5.3.1.1.1 Typical

The average mortality rate in beef cattle feedlots is well less than 0.5% expressed as a percentage of cattle throughput. Most mortalities occur relatively early in the feeding period.

Based on an average mortality of 0.25%, the expected number of mortalities per year is approximately 6 animals which equates to about 3 t of carcasses based on the herd data in Table 11. Carcasses are taken to the solid waste stockpile and carcass composting area for disposal.

The construction and management of a carcass compost windrow shall generally comprise the following:

- A bed of at least 300 mm of the material being used as the carbon source (e.g. sawdust or straw) is placed on the base of the composting area. This bed of material absorbs leachate from the carcass;
- A carcass is placed on the straw or sawdust bed and covered with at least 500 mm of manure on all sides;
- The carcass windrow shall be no more than two levels of carcasses high. The second level of carcasses shall be placed on top of 50 mm of manure covering the first level of carcasses and covered with at least 500 mm of manure;
- The top of the windrow shall be shaped to an apex to shed rainfall;
- The windrow shall be periodically checked, and any exposed carcasses recovered. The carcasses must be covered to facilitate the composting process by adding a carbon source, and to control odours and in deterring vermin from disturbing the windrow;
- Composting may last for up to 4-8 months. The windrow shall be turned every 2-3 months;
- After active composting the composted windrow is left to mature for at least 3-4 months; and
- The carcass composting area shall be monitored from scavenging animals and livestock.

Since effective aerobic composting of carcasses is a low odour process, the carcass composting area is not expected to be a significant odour source.

4.5.5.3.1.2 Mass events

Emergency animal disease outbreak and / or mass mortality contingency plans shall be developed as part of the quality assurance program of the proposed development.

In the event of a high number of mortalities at the proposed development, state and local government authorities would be called to investigate the cause of the mortalities and advise and assist with the most suitable disposal method. The following entities will be contacted:

- Emergency Animal Disease hotline (1800 675 888) and NSW Department of Primary Industries (1800 680 244) if there is a suspected reportable or trade-sensitive disease outbreak;
- Northern Tablelands Local Land Services (Glen Innes 02 6732 8800);
- Consultant veterinarian (Glen Innes Veterinary Hospital (02 6732 1988); and
- Glen Innes Severn Council (02 6828 6100) / EPA Armidale (02 6773 7000) to assist in the disposal of the cattle (burial, composting) on or off-farm (land fill site) if required.

All development personnel shall be made aware of the signs of emergency diseases in cattle.

A suitable site for mass burial of mortalities has been identified on the subject land as shown in Figure 11.

The burial pits shall be established in low permeability soils on a site well removed from surface waters, drainage lines, gullies, groundwater bores and the proposed development site. The soils in this location are low permeability grey cracking clays as outlined in section 4.4.4, thus lining of the pits with clay shall not be required. If lining is required, then the pits shall be lined with at least 600 mm of clay.

The site where mass mortalities are buried shall be recorded for future reference.

4.5.5.4 Utilisation

Solid waste shall be applied sustainably to cropping land using a tractor drawn moving bed manure spreader or similar equipment on the subject land.

The minimum land area required was determined by a nutrient mass balance on the removal of the nutrients in the solid waste (manure, sludge, carcass compost) by the types of crops to be grown within the solid waste utilisation area.

The typical composition of aged beef cattle feedlot manure is shown in Table 20.

Table 20 – Lot-fed cattle manure – Typical characteristics (MLA, 2015b)

Parameter		Units	Average	Range
Total Nitrogen	N	%	2.18	1-3
Ammonium Nitrogen	NH_4^+ - N	mg/kg	1,430	0 – 3,800
Nitrate Nitrogen	NO_3^- - N	mg/kg	307	1-1,115
Total Phosphorous	P	%	0.8	0.5 – 1.1
Potassium	K	%	1.9	0.75 – 3.2
Sodium	Na	%	0.3	0.04 – 0.7
Acidity/Alkalinity	pH		7.2	6.3 – 8.7
Electrical Conductivity	EC	dS/m	8.26	0.16 – 17.2

Cereal and forage sorghum crops shall be grown under dryland conditions within the solid waste utilisation area and harvested and reused as grain, straw and silage in the proposed development's feed ration. The typical crops proposed to be grown on the solid waste utilisation areas are outlined in Table 21. The typical yields are based on on-farm averages over the last few years and supplied by the applicant. The typical nutrient analyses of each crop have been sourced from the Feedlot Assessment Spreadsheet V8.4 (DAF, 2019).

Table 21 – Proposed development – Solid waste utilisation area – Typical crops and yields

Crop	Typical DM yield	N	P	K
	t/ha	DM %	DM %	DM %
Oats (silage)	4-6	1.5	0.22	1.5

Prior to the addition of solid waste to the solid waste utilisation area, soil and manure analysis would be undertaken to establish baseline nutrient levels and the required amount of solid waste for the crops to be grown. Currently, representative soil samples are taken from the dryland cropping fields and analysed for a suite of agronomic parameters as shown in Appendix J.

4.5.5.4.1 Nutrient Limited Application Rates

The *National Guidelines for Beef Cattle Feedlots in Australia* (MLA, 2012a) express a mass balance equation in the form of a Nutrient Limited Application Rate (NLAR) equation. Solid waste is applied to the solid waste utilisation area where the biomass accumulation and the quantities of N and P that are removed from the area through crop growth and the export of harvested material are determined.

The mass balance equation in the form of a nutrient limited application rate (NLAR) equation, denoted as:

$$NLAR = \frac{CR+SS+EL}{NW\ x\ 10^{-3}} \quad \text{.....Equation 2}$$

where:

NLAR = nutrient limited application rate of solid waste (t/ha)

CR = crop requirement for the applied nutrient (kg/ha)
SS = soil storage (kg/ha)
EL = allowable nutrient losses to the environment (kg/ha)
NW = available nutrient concentration in the solid waste feedlot manure (mg/kg)

In the assessment of the NLAR, soil storage (SS) and allowable nutrient losses (EL) are ignored as the intention is to only apply nutrients to match crop requirements. The predicted solid waste nutrient concentrations are summarised in Table 20.

The annual application rate for the nitrogen and phosphorus contained in the solid waste were calculated using the NLAR approach.

The NLAR was calculated based on a winter oats crop which was harvested for silage. A 3.0 t/ha winter oats crop could remove about 69 kg/ha Nitrogen (N), 9 kg/ha Phosphorus (P) and 73 kg/ha Potassium (K) as shown in Table 22.

Table 22 – Proposed development – Solid waste utilisation – NLAR summary

Parameter	Units	Code	N	P	K
Crop requirement	kg/ha	CR	69.0	9.0	73.2
Soil storage	kg/ha	SS	0	0	0
Allowable losses	kg/ha	EL	0	0	0
Nutrient concentration	mg/kg	NW	21,800	8,000	19,000
NLAR	t/ha	NLAR	24.45	9.74	26.04
Area required	ha	-	28	70	26

The minimum area required for solid waste utilisation will be the largest calculated for any individual nutrient constituent (MLA 2012a).

The quantity of solid waste able to be applied for nitrogen, phosphorus and potassium removal on the solid waste utilisation area was calculated by dividing the solid waste land area by the NLAR for each nutrient.

Hence, with 685 t/year of solid waste about 70 ha of land would be needed for solid waste utilisation. Phosphorus was found to be the limiting nutrient when growing oaten silage in winter and this corresponds to a maximum solid waste application rate of about 9.7 t/ha (dm).

Consequently, there is sufficient land available on-site to sustainably utilise all the solid waste generated each year.

4.5.6 Liquid waste management

4.5.6.1 Effluent

4.5.6.1.1 Holding pond

The holding pond has been designed to store stormwater runoff prior to application to land. The following general maintenance practices shall be implemented:

- Embankments shall be checked for evidence or indications that erosion has or will take place, wet areas indicating seepage etc;
- All fences shall be maintained in satisfactory condition and livestock proof;
- All inlet and outlet pipework, structures and pumps shall be checked regularly to ensure adequate functioning, e.g. flow rates, leaks;
- Tree and shrubs on the embankment shall be removed to ensure the technical integrity of the embankment is maintained and prevent drying out of the embankment core; and
- Grass cover shall be established and regularly mowed to prevent erosion of embankment slopes and a resting site for flies or habitat for other vermin.

Despite the pre-treatment of settling the suspended solids, the stormwater runoff may still contain a proportion of suspended solids entering the holding pond. Subsequently, after several years each holding pond may need to be desludged.

The holding pond shall be desludged when it is apparent that sludge level in the holding pond is causing loss of detention in the holding pond and degeneration of the effectiveness of treatment. Therefore, the following maintenance practices shall be implemented:

- Sludge levels shall be measured annually;
- Sludge levels shall never exceed more than 10% of the holding pond capacity; and
- Clay lining of the holding pond shall be checked after each desludging to ensure its structure and integrity has not been damaged or compromised. Any damage to lining will need to be repaired before effluent is reintroduced into the holding pond.

If the holding pond fills during abnormal wet weather and an overflow is imminent or spills, it is generally preferable to irrigate effluent onto a wet irrigation area (if practical) rather than allow the pond to spill. Irrigation will assist in dispersing the effluent over a large area and provide a greater opportunity for filtering by vegetation and dilution from stormwater.

4.5.6.1.2 Utilisation

Land has been identified on the subject land as being suitable for application of effluent as shown in Figure 11 along with the proposed buffers to sensitive areas (e.g. watercourses, vegetation communities, drainage lines and property boundaries). The amount of land proposed for irrigation of effluent is approximately 60 ha.

When available, effluent shall be sustainably applied to cropping land using a low pressure overhead irrigation system within the dedicated effluent utilisation area on the subject land.

A sustainable effluent irrigation management system will achieve a balance between the use of effluent for irrigation with the nutrient requirements of the crop while protecting the environment from potential pollution. Additionally, the amenity of the surrounding environment and meeting the needs on a social and ecological level are important considerations in sustainability.

Utilisation of liquid waste will substitute a percentage of the synthetic fertilisers that would otherwise be trucked-in for use in the existing cropping program on the subject land. Various crops shall be grown on the effluent utilisation area with the predominant crop being oats and maize silage will be harvested as silage to use as feed commodities in the proposed development.

4.5.6.1.3 Nutrient Limited Application Rates

Effluent is applied to the effluent utilisation area where the biomass accumulation and the quantities of N and P that are removed from the area through crop growth and the export of harvested material are determined. The annual application rate for the nitrogen and phosphorus contained in the effluent were calculated using the NLAR approach.

The mass balance equation in the form of a nutrient limited application rate (NLAR) equation, denoted as:

$$NLAR = \frac{CR+SS+EL}{NW\ x\ 10^{-3}} \quad \text{.....Equation 3}$$

where:

NLAR = nutrient limited application rate of holding pond effluent (kL/ha)
CR = crop requirement for the applied nutrient (kg/ha)
SS = soil storage (kg/ha)
EL = allowable nutrient losses to the environment (kg/ha)
NW = available nutrient concentration in the holding pond effluent (mg/L)

The annual application rate for the nitrogen and phosphorus contained in the effluent were calculated using the NLAR approach. The minimum area required for effluent utilisation will be the largest calculated for any individual nutrient constituent (MLA 2012a). The minimum land area required for nitrogen and phosphorus was calculated by multiplying by the annual average runoff volume by the NLAR for each nutrient.

The typical crops grown on the effluent utilisation area and nutrient analyses are outlined in Table 23. The typical yields are based on on-farm averages over the last few years and supplied by the applicant.

Table 23 – Proposed development – Effluent utilisation area – Typical crops and yields

Crop	Typical DM yield t/ha	N DM %	P DM %	K DM %
Maize (silage)	20-25	2.0	0.30	1.5

The NLAR was calculated based on a summer maize silage. A 10 t/ha summer maize silage crop could remove about 140 kg/ha N, 29 kg/ha P and 257 kg K/ha as shown in Table 22.

Table 24 – Proposed development – Effluent utilisation area – NLAR summary

Parameter	Units	Code	N	P	K
Crop requirement	kg/ha	CR	600	90	450
Soil storage	kg/ha	SS	0	0	0
Allowable losses	kg/ha	EL	0	0	0
Nutrient concentration	mg/L	NW	220	71	1,092
NLAR	kL/ha	NLAR	2,727	1,268	412
Area required	ha	-	3.6	7.8	24.0

The minimum area required for effluent utilisation will be the largest calculated for any individual nutrient constituent (MLA 2012a).

The quantity of effluent able to be applied for nitrogen, phosphorus and potassium removal on the effluent utilisation area was calculated by dividing the liquid waste utilisation land area by the NLAR for each nutrient.

Hence, with 8.9 ML/year of liquid waste (effluent) about 24 ha of land would be needed for effluent utilisation. Potassium was found to be the limiting nutrient when growing maize silage and this corresponds to a maximum liquid waste application rate of about 0.4 ML/ha. However, since salinity would generally cause environmental problems before potassium on its own, Phosphorus is considered to be the limiting nutrient when sizing the waste utilisation area.

The area available for effluent utilisation is at least 40 ha as shown on Figure 11. Consequently, there is enough land available on-site to sustainably utilise all the phosphorus in the effluent generated each year.

Utilisation of effluent would involve the following principles:

- Effluent shall only be applied to the nominated effluent utilisation areas;
- Annual application rates shall be based on annual soil tests and would not exceed nutrient recommendations for a particular crop, soil type or yield goal;
- Application of effluent shall occur over the crop growing period with timing and application rates based on soil moisture deficit levels;
- A minimum 25 m buffer zone shall be maintained between effluent utilisation areas drainage lines and public spaces;

- A minimum 25 m buffer zone shall be maintained between effluent utilisation areas and property boundaries;
- Neighbouring landholders are not subjected to odour and aerosol nuisance because of poorly timed and managed effluent application practices;
- The application method adopted ensures that no ponding occurs on the soil surface or runoff occurs from the utilisation areas to drainage lines or watercourses; and
- The irrigation system used has a high uniformity of application and the overall management is of a high standard.

4.5.6.2 Sewage

No domestic sewage services are required for the proposed development.

4.5.7 Stormwater management

Stormwater runoff from around the proposed development shall be excluded from entering the controlled drainage area.

Diversion banks and catch drains will redirect upstream clean runoff around the controlled drainage area as shown on Figure 7. The diverted upstream clean runoff will be redirected to flow with the natural drainage lines. Catch drains will be grassed as an erosion preventative measure. The catch drains will be maintained (grazed, removal of weeds which create ponding etc.) to ensure operation at design capacity.

The stormwater runoff from areas outside of the controlled drainage areas is unlikely to be contaminated. The greatest potential impact to stormwater quality from these areas shall be from erosion of exposed surfaces. Consequently, protection of exposed soils shall be the primary erosion control measure. Grass shall be allowed to re-establish as soon as possible after construction. The stormwater runoff within the controlled drainage area during construction shall be directed and captured in the sedimentation basin and holding pond.

Erosion and sediment control measures will be implemented during and after construction of the proposed development. The overriding objectives for erosion and sediment control measures are to:

- Control and minimise erosion activity on the site during construction and operation; and
- Implement preventative measures to minimise sediment movement from the site during construction and operation.

Erosion and sediment control measures will ensure the construction and operation of the proposed development does not have a detrimental impact on the land and surface water quality.

Erosion and sediment control measures will apply to all construction activities undertaken on the site, particularly where vegetation is removed, or soil is exposed. Care will be taken in erosion sensitive areas, such as steeper slopes and fill areas.

4.5.8 Workforce

The proposed development shall provide employment for two (2) full time personnel when fully developed. This includes staff undertaking administrative, livestock handling, feed storage, preparation and delivery and waste management activities.

All staff shall reside on-site within existing dwellings on adjoining land. No additional accommodation shall be provided on-site for staff. All staff shall be trained to uphold strong guidelines in animal health and welfare and the environment.

4.5.9 Hours of operation

The proposed development shall operate 12 hours per day between 6.00 am and 6.00 pm, 7 days per week including public holidays. Operating hours will be applied with any noise limitations and requirements taken into consideration. Staff shall be on-site 24 hours a day, 7 days a week.

Typically, cattle shall be inducted between 7:00 am and 5:00 pm on weekdays. As far as practical, cattle are transported out of the development to slaughter five days per week between 6:00 am and 3:00 pm on Monday to Friday inclusive.

Periodically, heavy vehicle movements do occur outside of normal operating hours (e.g. in summer), as it is desirable to transport cattle either at night or in the early hours of the morning for animal welfare reasons.

As far as practical, delivery of feed commodities occurs between 7:00 am and 5:00 pm on Monday to Friday.

4.5.10 Access

The proposed development shall continue to utilise the entrance that is currently used to access the subject land off Newsomes Road as shown in Figure 6. The existing entrance can accommodate the number and type of vehicles servicing the proposed development and therefore does not need to be upgraded. An internal road connects the subject land entrance to the proposed development site.

4.5.11 Traffic and transport

Traffic generated by the proposed development shall consist of heavy vehicles bringing feed commodities to the site and livestock vehicle transporting cattle from the site (see section 4.5.1 for details of cattle numbers out). All cattle for the proposed development shall be bred on the subject land and be walked in. A proportion of the silage for the feed ration shall be grown on

the subject land. Solid waste shall be utilised on the subject land or land adjoining the subject land.

Typically, livestock are transported in a 2-deck cattle livestock trailer in semi-trailer (2-deck) configuration. Commodities are typically delivered in semi-trailer and truck and dog configuration.

Livestock are transported in accordance with Land Transport of Livestock (Animal Health Australia (AHA) 2012).

4.5.11.1 Haulage route

The proposed development shall continue to utilise exactly the same haulage route as the existing agricultural enterprise on the subject land. The principal haulage route to the proposed development shall be:

- Route A - from the east (New England Highway) to the proposed development via Wellington Vale Road and Newsomes Road. Route A is used by heavy vehicles transporting agricultural enterprise inputs (seed, fertiliser etc) onto the subject land and agricultural production outputs (cattle) off the subject land. The New England Highway is a State (Road Number: 0000009). Wellington Vale Road is a sealed Regional Road (Road Number 0000136) under the control of Glen Innes Severn Council and is approved for 26 m B-double vehicles under the NSW Livestock Loading Scheme. This route is frequently used by semi-trailer vehicles to transport livestock from the subject land.

- Route B - from the west (Emmaville) to the proposed development via Wellington Vale Road and Newsomes Road. Route B is used by heavy vehicles transporting agricultural enterprise inputs (feed grain etc) onto the subject land. Wellington Vale Road is a sealed Regional Road (Road Number 0000136) under the control of Glen Innes Severn Council and is approved for 26 m B-double vehicles under the NSW Livestock Loading Scheme. This route is frequently used by semi-trailer vehicles to transport feed grain to the subject land.

The principal haulage route is shown on Figure 3 and is a well-maintained local road.

To access the wider road network, the proposed development traffic would use the New England Highway north to Tenterfield then traffic would split onto the Bruxner Highway or continue north or travel south to Glen Innes.

Further afield, the minor volumes of semi-trailers associated with the development disperse to Inverell, Warialda, Warwick, Brisbane amongst other destinations, on various routes. Given the minor volumes and the dispersion, the traffic generated by the proposed development is unlikely to have any significant impact on haulage routes further afield.

4.5.11.2 Traffic generation

The subject land has an existing agricultural enterprise consisting of beef production. The subject land typically produces feeder cattle which are sold off-farm to lot feeding enterprises in the region or finished cattle sold direct to slaughter.

As outlined in section 1.1, the subject land and adjoining land can produce about 3,000 head of cattle per year. All cattle shall be walked into the proposed development.

The traffic movements for the proposed development are summarised in Table 25 based on a typical short-fed 90-day market type and long fed export market type. One vehicle movement is defined as the sum of an inbound and outbound trip.

The proposed development shall be operated by existing staff currently employed on the subject land. All staff shall reside on neighbouring land.

Table 25 shows that there are about 85 heavy vehicle movements per year or about 1 movement per week on average for movement of cattle. These data do not account for the livestock currently transported off the subject land as grass-fed beef. Table 25 shows that there are estimated to be about 175 heavy vehicle movements per year or about 3.4 per week on average for commodity delivery as all silage is grown on the subject land or adjoining land. All solid waste generated within the proposed development shall be utilised on the subject land as fertiliser for dryland and irrigated crops and vehicles are not proposed to access the local road network. Table 25 shows that the proposed development shall generate 260 heavy vehicle movements per year or about 5 movements per week on average.

Table 25 – Proposed development – Traffic movements

Stage				**1**	**1**	**1**
Development capacity		**Head**		**999**	**999**	**999**
Activity	**Vehicle type**	**GVM t**	**Capacity**	**Movements per day**	**Movements per week**	**Movements per year**
Incoming cattle	Semi-trailer 2 deck	42.5	62-67 head	0	0	0
Outgoing cattle	Semi-trailer 2 deck	42.5	29 – 44 head	0.23	1.64	85
Grain	Semi-trailer	42.5	23.4 t	0.36	2.50	130
Protein	Semi-trailer	42.5	23.4 t	0.08	0.57	30
Roughages*	Semi-trailer	42.5	23.4 t	0.00	0.00	0
Liquids (Oil, Molasses)	Semi-trailer	42.5	23.4 t	0.00	0.00	0
Supplements (dry)	Semi-trailer	42.5	23.4 t	0.04	0.28	15
Outgoing solid waste**	Semi-trailer	42.5	23.4 t	0.00	0.00	0
Employees#	Light vehicles	<4.5	-	4.13	29.00	1508
Support services	Light vehicles	<4.5	-	0.14	1.00	52
Total Heavy Vehicles				0.71	4.99	260
Total Light and Heavy Vehicles				4.99	35.0	1820

* All roughages (silage) produced on subject land and does not use local road network.
** On-farm trucks do not use local road network – internal roads on subject land only.
# Staff reside on adjoining land and predominantly use Newsomes Road from CH1.66 km to CH5.1 km.

4.5.12 Hazardous materials

Industry codes of practice, best management practices and regulations apply to the storage, use and disposal of hazardous materials.

There shall be limited quantities of hazardous materials stored and used on-site during operation. To minimise the risk of environmental harm from liquid spills and leaks, all hazardous materials required to be stored on-site shall have a spill containment system appropriate for the nature and pollution risk of that liquid in accordance with relevant guidelines and Australian Standards. Liquids that may be stored during the operation of the development include:

- agricultural chemicals – herbicides, pesticides etc;
- veterinary chemicals;
- cleaning and sanitising agents;
- engine coolant;
- oil, grease, lubricants;
- diesel, petrol fuels; and
- solvents.

All spill containment systems shall be routinely inspected to ensure their technical integrity meets the intended requirements. A routine inspection and maintenance program shall be tailored to suit the specific installation.

The proposed development shall require limited quantities of hazardous materials during operation. Diesel fuel is the primary hazardous material required for utilisation in mobile plant and equipment. Due to its rural location the subject land has 5,000 L of fuel storage on-site to service the existing agricultural operations. The proposed development shall utilise the existing storage and no additional diesel fuel storage is proposed.

Very limited quantities (<200 L) of other hazardous materials such as oils, solvents, pesticides and veterinary chemicals etc are required for use at the proposed development. All agricultural chemicals shall be stored in accordance with relevant standards and regulations such as Australian Standard AS 2507 The storage and handling of agricultural and veterinary chemicals. Only development personnel with chemical user accreditation shall be permitted to handle and apply chemicals.

Veterinary chemicals will also be stored in properly designed and lockable containers. Only development personnel with veterinary chemical user accreditation shall be permitted to handle and apply/administer veterinary chemicals.

4.5.13 Fire management

A fire is an emergency that causes the greatest concern for personnel. A fire management strategy shall be developed for fire developing from a range of sources. These include bushfires (e.g. planned controlled burning that escapes the original burn zone, embers from a cigarette or unattended campfire, lightning strikes, or deliberate arson), fires originating from the development such as from flammable hazardous material storage, machinery use, electrical faults, maintenance activities or feed storage and processing where hay and/or grain dust is present etc.

The risk of fire is offset by strategies that reduce fire risk. Suitable access and adequate infrastructure to support suppression of fire is provided by way of adequate water supply (storage tanks, irrigation pumps), fire breaks and portable extinguishers.

A grassed fire break shall be maintained around the proposed development outside of the controlled drainage area that will also provide access for fire-fighting vehicles. The grass shall be regularly slashed and a height of no greater than 5 cm maintained.

The water supply storages (tanks) shall be used as fire-fighting water in the event of fire.

4.5.14 Emergency animal disease

Emergency animal diseases (EADs) include diseases that are exotic to Australia, new and emerging diseases that are of national significance and include serious outbreaks of prohibited matter, for example foot and mouth disease.

A few serious animal diseases can be transmitted to people (e.g. rabies and bovine spongiform encephalopathy). These are known as zoonoses.

The Department of Primary Industries under the NSW State Emergency Management Plan (EMPLAN) is responsible for the management of an emergency animal disease in New south Wales. Prohibited matter animal diseases are listed in Schedule 2 of the Biosecurity Act 2015.

All emergency animal diseases must be reported to the Local Land Services or the EAD hotline on 1800 675 88 as soon as they are suspected. All development personnel involved in the daily monitoring and handling of livestock should be aware of unusual signs or signs of emergency animal diseases of concern to beef cattle.

AUSVETPLAN Enterprise Manual for beef cattle feedlots and other supporting AUSVET documents provide guidelines on the responsibilities and actions during an EAD outbreak, as required by the relevant government authorities, and the strategies that may be adopted to improve preparedness for, or to handle, a suspected EAD.

Standard operating procedures for each government jurisdiction, agency support plans for the involvement of other areas of emergency management (e.g. police, local government), diagnostic resources and training materials also support the AUSVETPLAN core materials. All these documents can be accessed from the Animal Health Australia website.

If an emergency disease is identified within the proposed development, the requirements of the AUSVETPLAN and any directions from the relevant authority shall be followed as far as relevant to the proposed development.

4.5.15 Environmental management and standards

The applicant is committed to conducting activities associated with the operation of the proposed development in an environmentally responsible manner and aim to implement best practice environmental management as part of a program of continuous improvement. This will be achieved by addressing issues systematically and consistent with a range of environmental procedures.

The applicant intends to apply for accreditation under the Aus-meat National Feedlot Accreditation Scheme (NFAS).

5 Environmental setting and potential impacts

5.1 Climate

The closest meteorological stations to the subject land which collect climate data are the Bureau of Meteorology (BoM) station at Pindari Dam and Glen Innes Airport located about 50 km west and 22km south south-west of the proposed development complex site. The Pindari Dam (Site number: 054104) (BoM, 2024a) commenced recording climate data (rainfall, temperature, wind speed and direction) since 1971. Climate data at the Glen Innes Airport (Site number: 056243) has been continuously recording climate data since 1996.

A summary of the rainfall data from the Pindari Dam (Site number: 054104) (BoM, 2024a) and Glen Innes Airport AWS (Site number: 056243) (BoM, 2024b) is provided in Table 26 and Table 27 respectively.

The wind direction, frequency and intensity at the site are influenced by several factors including the local terrain and land use. On a relatively small scale, winds would be largely affected by the local topography. At larger scales, winds are affected by synoptic scale winds, which are modified by sea breezes near the coast in the daytime in summer (also to a certain extent in the winter) and also by a complex pattern of regional drainage flows that develop overnight.

However, given the distance and terrain, these data may not be truly representative of the proposed development complex site. Consequently, the long-term daily climate data for the area (Latitude -29^{O} 28'S, Longitude 151^{O} 44'E) were derived from the Department of Science, Information Technology and Innovation (DSITIA) Silo Data Drill database (Department of Science, Information Technology and Innovation (DSITIA, 2024). The Data Drill accesses data on a 5 km grid derived by interpolation from point observations by the Bureau of Meteorology station records. The data in the Data Drill are all synthetic; there are no original meteorological station data left in the calculated grid fields (Jeffrey et al. 2001). The data are supplied as an individual file of interpolated daily rainfall, maximum and minimum temperature, potential evapotranspiration and radiation at the nominated point location for the period 01/01/1924 to 31/12/2023 (DSITIA, 2024). A summary of the data used is included in Table 28.

Under the Köppen-Geiger climate classification system the climate of the region is classified as temperate oceanic climate (Cfb), and mild to warm summers and cold, windy winters with regular frosts and occasional snowfalls.

Rainfall varies with time of year due to the latitude of the region (-29^{0}28') and tends to be summer dominant. Summer rainfall patterns are linked to high pressure systems over northern parts of Australia and rainfall typically occurs as thunderstorms or short and intense storm events during summer with the occasional cold fronts that brings periods of prolonged light rainfall during winter.

Table 26 shows that the average rainfall recorded at the Pindari Dam for the period 1971 to 2024 was 723.1 mm with approximately 57% falling in the five months between November and March. Monthly rainfall over the autumn and winter months averages between 35 and 50 mm per month. The lowest rainfall totals are in the winter months (Table 26).

Table 27 shows that the average rainfall recorded at the Glen Innes Airport for the period 1996 to 2024 was 890.7 mm with approximately 56% falling in the five months between November and March. Monthly rainfall over the autumn and winter months averages between 35 and 50 mm per month. The lowest rainfall totals are in the winter months (Table 26). Glen Innes Airport recorded a higher average over the last 25 years than Pindari Dam.

Table 28 shows that the average annual rainfall interpolated by SILO for the period 1924 to 2023 is approximately 789 mm/year lower than that measured by BoM at the Glen Innes Station Airport. The annual evaporation is approximately 1,373 mm/year. The region has nett deficit rainfall with rainfall less than the evaporation and transpiration rates.

The climatic influence on temperatures results in mild summers and cold winters, regularly reaching single digit temperatures.

Table 28 shows that the mean maximum temperature derived by SILO for the period 1924 to 2023 is 26.8^0C in January and a mean minimum temperature of about 0.4^0C for July.

Relative humidity in the area is typically below 50% and slightly higher during the summer months when temperatures are higher compared to winter months. Average relative humidity 9 am readings range from 39.8% in November to 48% in May.

Table 26 – Climatic data from Pindari Dam (1971-2024) (BoM, 2021a)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Rainfall (1971-2024)													
Mean rainfall (mm)	91.0	75.5	68.3	45.0	42.3	38.5	41.2	36.8	47.7	63.9	85.0	88.9	723.2
Median rainfall (mm)	82.9	71.8	51.6	39.0	35.0	34.5	33.0	32.6	43.5	53.2	78.2	93.0	-
Lowest rainfall (mm)	10.4	12.4	1.1	0.0	0.8	0.0	1.8	0.0	0.0	8.4	3.0	5.8	234.8
90% yrs at least rainfall (mm)	28.3	22.6	10.8	2.1	8.5	8.5	6.9	6.8	3.1	18.8	32.5	34.9	-
10% yrs at least rainfall (mm)	163.9	122.3	150.1	103.7	88.2	83.4	85.5	70.8	100.8	123.1	141.1	143.0	-
Highest rainfall (mm)	283.7	248.8	235.2	216.4	169.6	108.6	152.2	100.2	156.0	175.8	245.6	186.4	1162.8
Temperature, Humidity (1971-2010) and Pan evaporation (1971-2022)													
Mean pan evaporation (mm)	232.5	190.4	182.9	126	83.7	57	65.1	89.9	126	170.5	195	223.2	1752.0
Mean maximum temperature (deg C)	31.3	30.6	29.0	25.5	21.6	18.0	17.2	18.9	22.3	25.4	27.5	30.2	24.8
Mean minimum temperature (deg C)	17.6	17.1	14.7	10.7	6.8	3.2	1.9	2.8	6.3	10.2	13.4	16.0	10.1
Mean 9am Relative Humidity (%)*	68	72	70	71	80	85	84	75	67	61	65	65	72
Wind speed (1971-2010)													
Mean 9am wind speed (km/h)	8.2	7.1	7.1	6.7	4.8	3.9	4.1	6.0	8.3	9.4	8.9	8.3	6.9

Table 27 – Climatic data from Glen Innes Airport (1996-2024) (BoM, 2024b)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Rainfall (1996-2024)													
Mean rainfall (mm)	99.1	86.7	89.9	50.2	47.7	52.8	53.1	48.9	56.7	79.9	117.7	108.2	890.7
Median rainfall (mm)	78.1	86.5	65.8	44.4	42.6	43.0	39.7	37.2	44.3	77.5	101.3	103.9	-
Lowest rainfall (mm)	27.6	3.0	1.0	1.2	1.6	9.4	3.4	3.0	4.8	0.0	19.6	16.2	369.8
90% yrs at least rainfall (mm)	51.1	29.1	14.5	12.2	11.4	17.3	8.1	12.8	10.3	22.1	44.4	39.2	-
10% yrs at least rainfall (mm)	180.0	143.0	193.0	82.3	91.4	113.3	98.1	98.7	101.4	143.1	245.4	169.6	-
Highest rainfall (mm)	233.4	166.8	297.8	221.8	156.0	150.0	211.0	152.0	171.8	203.4	264.8	178.4	1458.4
Temperature and Humidity (1996-2024)													
Mean maximum temperature (deg C)	26.7	25.9	24.1	20.7	16.9	13.8	13.4	15.1	18.5	21.3	23.2	25.3	20.4
Mean minimum temperature (deg C)	13.1	12.9	11.1	6.8	2.2	0.2	-0.9	-0.7	2.5	5.8	9.0	11.4	6.1
Mean 9am Relative Humidity (%)*	73	78	81	73	78	84	81	73	66	62	71	72	74
Wind speed (1996-2024)													
Mean 9am wind speed (km/h)	18.3	17.7	17.1	17.5	16.0	15.9	16.3	18.1	18.8	18.5	18.0	16.8	17.4

Table 28 – Climatic data derived from SILO (1924-2023) (DSITIA, 2024)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Rainfall													
Mean rainfall (mm)	99.9	88.3	65.9	37.6	44.5	44.8	48.8	44.0	49.2	76.9	90.0	99.2	789.0
Median rainfall (mm)	88.9	80.0	55.3	30.1	33.3	36.0	42.7	41.5	41.2	63.8	84.5	94.9	785.1
Lowest rainfall (mm)	13.5	0.7	0.3	0	0.6	0	0	0.2	0.6	8.4	3.4	1.9	241.6
90% yrs at least rainfall (mm)	42.3	28.8	13.0	5.6	8.5	12.0	10.7	9.4	10.5	27.7	29.5	41.0	598.7
10% yrs at least rainfall (mm)	162.9	169.2	133.1	69.4	92.8	101.8	88.1	79.0	94.1	138.5	159.3	168.6	995.8
Highest rainfall (mm)	341.1	282.2	296.3	212.7	172.2	154.8	154.4	140.3	197	262.1	242.3	228.3	1,251.3
Temperature, Humidity and Pan evaporation													
Mean pan evaporation (mm)	175.8	141.5	131.8	94.6	64.2	46.2	53.3	78.5	110.9	142.7	156.6	176.9	1,373.0
Mean maximum temperature (deg C)	26.8	26.3	24.5	21.4	17.5	14.5	14.1	15.4	18.5	21.5	23.9	26.0	20.9
Mean minimum temperature (deg C)	14.2	14.2	12.2	8.0	4.3	1.5	0.4	1.3	4.0	7.7	10.3	12.7	7.6
Relative Humidity (%) maxT	43.5	46.3	46.2	46.0	48.0	48.7	45.5	42.1	40.1	40.0	39.8	41.4	44.0

5.1.1 Wind direction

The wind direction, frequency and intensity at the site are influenced by several factors including the local terrain and land use. On a relatively small scale, winds would be largely affected by the local topography. At larger scales, winds are affected by synoptic scale winds, which are modified by sea breezes near the coast in the daytime in summer (also to a certain extent in the winter) and by a complex pattern of regional drainage flows that develop overnight.

Consequently, the meteorological model – The Air Pollution Model (TAPM) (Version 4) was used to predict local wind speed and direction data. The use of TAPM is consistent with standard methods, including DEHP (2021).

TAPM, developed by the Commonwealth Scientific and Industrial Research Organisation (CSIRO) is a prognostic model which is used to predict three-dimensional meteorological data and air pollution concentrations. A detailed description of the TAPM model can be found in Hurley (2008a). The development of the TAPM development and underlying equations can be found in Hurley (2008b). Details of validation studies performed for TAPM can be found in Hurley et. al (2008c).

TAPM software allows users to generate synthetic observations by referencing in-built databases (e.g. terrain information, synoptic scale meteorological observations, vegetation and soil type etc.) which are subsequently used in generating site-specific hourly meteorological observations. TAPM allows key meteorological aspects including the influence of terrain induced flows to be predicted both locally and regionally.

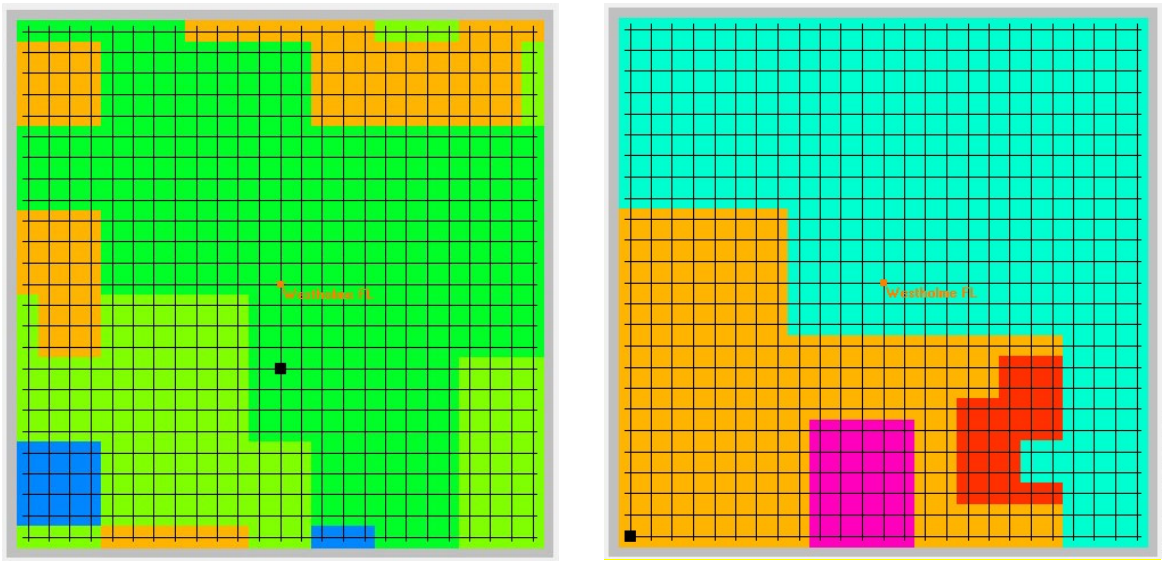
The TAPM meteorological data was be used to calculate frequency of winds blowing towards the direction of sensitive receptors in accordance with the s-factor assessment methodology outlined in the National Guidelines for Beef Cattle Feedlots in Australia (3rd Edition) (MLA, 2012).

The model setup is summarised in Table 29. The modelling was centred on the closest grid point to the proposed development site and was configured with a 25 x 25 x 25 grid. In total, five domains were set up with grid spacings of 30km, 10 km, 3 km, 1 km and 0.3 km. Five (5) years data were modelled from 2018 to 2022. This setup is consistent with good practice and the guidance detailed in Approved Methods for the Modelling and Assessment of Air Pollutants in NSW (NSW Environment Protection Authority, 2022).

Table 29 – Proposed development complex site – TAPM Input data

Parameter		Value
Years		2018-2022
Grid centre		29° 28.5'S; 151°45'E
Grid parameters		
	Grid points	25 x 25
	Outer grid spacing	30 km
	Nested grid spacing	10 km, 3 km, 1 km, 300 m
	Vertical grid levels	25
Surface type	Grid domain – 10 km, 3 km, 1 km	Default – Vegetation
	Grid domain – 300m	Custom – Industrial/Permanent lake/Pasture/Woodland (Figure 12)

Figure 12 illustrates the default TAPM settings for surface type and the custom surface type used for the innermost grid.



Default – Surface type **Custom – Surface type**

Figure 12 – Proposed development complex site – TAPM Input data – Grid domain vegetation

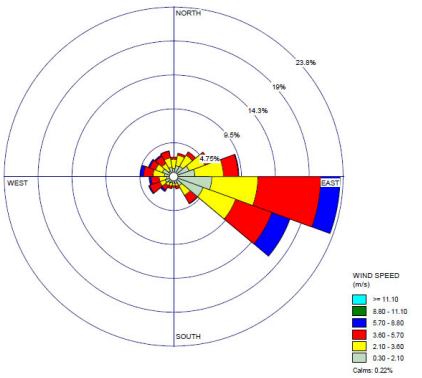
Wind speed and direction information obtained from TAPM modelling is presented in the form of wind roses. Wind roses are a way of presenting a summary of wind speed and directional data for a particular time and location and show the frequency of occurrence of winds by direction and strength.

The annual wind rose developed for the proposed development site from TAPM in year 2019-2023 is shown in Figure 13. Figure 14 presents the wind rose plot for all years combined. All years modelled result in similar wind directions. Each bar shown on the wind rose represents winds blowing from that direction. The length of the bar represents the frequency of occurrence

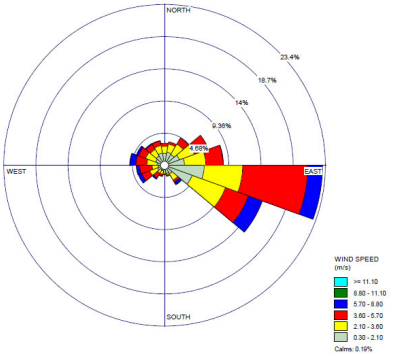
of winds from that direction, and the colour and width of the bar sections correspond to wind speed categories as outlined in the legend.

Figure 12 shows that wind direction is predominantly from the north-easterly to east-southeasterly sectors with light to moderate wind speeds (3.6 – 5.7 m/s) observed for most of the year.

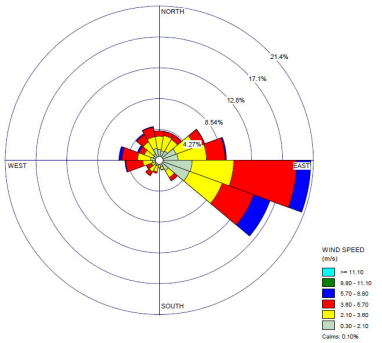
Analyses of the TAPM data shows that about 40% of the winds blow from ±40° from the general direction of east to southeast.



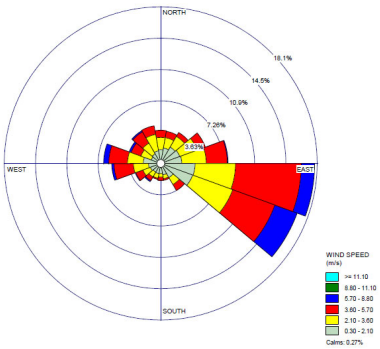
2018



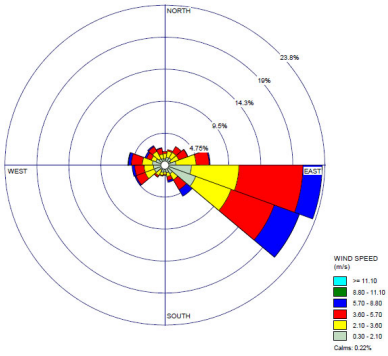
2019



2020



2021



2022

Figure 13 – Proposed development site – Annual Windroses (TAPM)

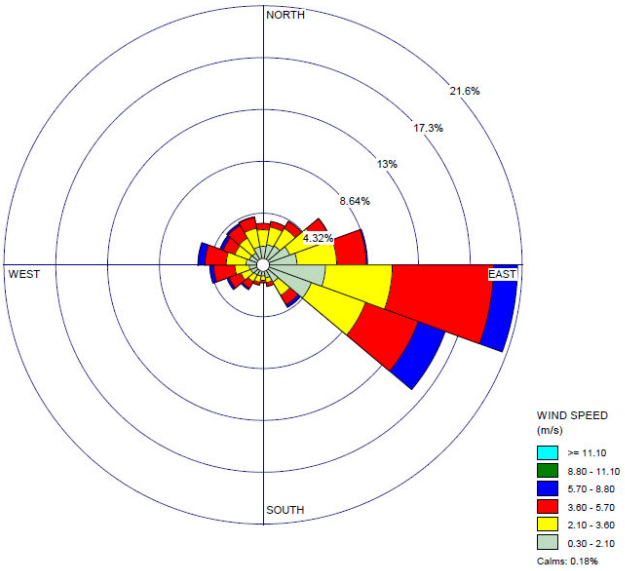


Figure 14 – Proposed development complex site – Annual windrose (TAPM 2018-2022)

5.1.2 Design rainfalls

Annual Exceedance Probability (AEP) and Intensity-Frequency-Duration (IFD) design rainfalls for the proposed development site were obtained from the Bureau of Meteorology (BoM, 2024c; BoM, 2024d). The rainfall total accumulated over a given duration and probability that it will be exceeded in any one year (AEP) is provided in Table 30. Rainfall depth for durations and average recurrence interval are shown in Table 31. The probability that a given rainfall total accumulated over a given duration will be exceeded in any one year when the ARI is expressed in years, is given by the relationship:

$$AEP = 1 - \exp\left(\frac{-1}{ARI}\right)$$

Consequently, a one in 20-year, 24-hour storm event correlates to an AEP of 5%.

Table 30 – Proposed development complex site – Intensity-Frequency-Duration design rainfalls (AEP) (BoM, 2024c)

Duration	Annual Exceedance Probability						
	63.2%	50%	20%	10%	5%	2%	1%
5 min	83.3	93.8	127.0	151.0	174.0	204.0	228.0
10 min	65.7	74	101	120	139	165	185
15 min	54.7	61.7	84.2	100	116	138	156
30 min	37.4	42.1	57.4	68.2	79.1	93.9	106
1 hour	23.9	26.9	36.5	43.2	50	59	66
2 hours	14.8	16.5	22.2	26.1	30.1	35.4	39.5
3 hours	11.1	12.3	16.4	19.3	22.2	26.1	29.2
6 hours	6.7	7.5	9.8	11.5	13.2	15.6	17.5
12 hours	4.1	4.5	6.0	7.0	8.0	9.5	10.7
24 hours	2.5	2.8	3.6	4.3	4.9	5.8	6.5
48 hours	1.5	1.7	2.2	2.6	3.0	3.5	3.9
72 hours	1.1	1.2	1.6	1.9	2.2	2.6	2.8

*Design storm event mm/hr

Table 31 – Proposed development complex site – Intensity-Frequency-Duration design rainfalls (ARI) (BoM, 2024d)

Duration	Annual Return Interval						
	1	2	5	10	20	50	100
5 mins	69.1	90.5	119	138	163	198	226
6 mins	64.4	84.3	111	128	151	184	210
10 mins	52.6	68.7	89.7	103	122	147	167
20 mins	38.5	50	64.4	73.5	85.9	103	117
30 mins	31.2	40.4	51.6	58.7	68.4	81.8	92.5
1 hour	20.9	27	34.1	38.6	44.8	53.2	60
2 hours	13.6	17.5	21.9	24.7	28.5	33.7	37.8
3 hours	10.5	13.4	16.8	18.8	21.7	25.6	28.6
6 hours	6.69	8.55	10.6	11.8	13.6	15.9	17.8
12 hours	4.2	5.37	6.64	7.43	8.51	10	11.2
24 hours	2.55	3.27	4.09	4.61	5.31	6.27	7.05
48 hours	1.46	1.89	2.42	2.76	3.22	3.85	4.37
72 hours	1.02	1.33	1.73	1.99	2.33	2.81	3.19

*Design storm event mm/hr

5.2 Landform and drainage

5.2.1 Landform

The subject land is situated in the Rangers Valley district of the New England Tableland on the western fall of the Great Dividing Range. The New England Tableland is a stepped plateau of hills and plains with elevations between 600 and 1500 m on Permian sedimentary rocks, intrusive granites and extensive Tertiary basalts. Rainfall, temperature and soils change with topography and bedrock, and the vegetation is very diverse with a high degree of endemism. The region includes parts of the western flowing river catchments of the MacIntyre and Gwydir Rivers and the eastern flowing river catchments of the Macleay, Namoi and Manning Rivers.

The geologic history and its climate contrasts are reflected in the landforms of the region. The New England fold belt in the northeast of the state is composed of sedimentary rocks of Carboniferous and Permian age that were extensively faulted during a period of rapid continental plate movement associated with granite intrusions in the late Carboniferous. Much of the bedrock is now overlain by Tertiary basalt flows rarely exceeding 100m in thickness that lie on river gravels and sands or on lake sediments. As the basalt erodes the sands are exposed and have been mined for the sapphires, diamonds, gold and tin ore that they contain. NPWS (2003)

The geology of the Rangers Valley district has been mapped by Henley et.al. *(*2001), Henley et.al. (2000), Geological Survey of NSW 1995) with published geological plans.

The Middle Permian Wandsworth Volcanic Group occurs over large portions of the subject land and throughout the district. The Group includes the Dundee Rhyodacite (Dundee Adamellite-Porphyrite) which itself is differentiated into numerous informally named, geographically separate masses.

All of the subject land is underlain by ignimbritic rhyodacite of the Dundee Mass (map unit Pad). This volcanic rock is described as a pyroxene and hornblende bearing, porphyritic ignimbrite with distinctive microgranite groundmass and blue-grey colour. The unit has also been informally referred to as Blue Granite. This unit forms most of the undulating landforms in the region.

The structure of the unit in the region has produced a generally undulating landforms with rolling topography and gentle slopes with limited areas of outcropping rocks. There are no areas of steeper slopes.

There is no evidence of any large scale landslides on the subject land which could influence the stability of the proposed development and formation of associated drainage.

5.2.2 Drainage

The region lies entirely within the NSW Border Rivers catchment of the Murray–Darling Basin and is made up of a group of waterways that flow in a generally south-westerly direction draining the western side of the Great Dividing Range in far north NSW. The NSW Border Rivers catchment is made up of the catchments of the Dumaresq, Severn and Macintyre rivers.

The subject land lies on the watershed of the Beardy River and Severn River catchments within the Dumaresq and Macintyre River drainage network respectively. The subject land is dissected by intermittent creeks that drain ultimately to the north and south to One Mile Creek and the Severn River respectively. The majority of the subject land is in the One Mile Creek subcatchment of the Beardy River. The Beardy River rises approximately 14 km north northwest of Deepwater and flows generally in a southwest, west northwest and then north northwesterly direction before its confluence with the Dumaresq River, about 16 km southeast of Bonshaw. The Dumaresq Rivers forms the NSW/QLD Border for part of its length.

The Severn River rises on the western slopes of the Great Dividing Range, north of Glen Innes and flows generally westerly, joined by eleven tributaries, including Beardy Waters before it is impounded by Lake Pindari, near Ashford. From Lake Pindari, the river flows in a northwesterly direction before its confluence with the Macintyre River, northeast of Wallangra in the Kwiambal National Park.

The Dumaresq River confluences with the Macintyre River 25 km upstream of Goondiwindi (QLD) to form the Macintyre River. The Macintyre River forms the NSW/QLD Border for part of its length. Like many Australian inland systems the Macintyre River is an allogenic river, originating in a well-watered area but flowing for most of its length across a dry flat landscape (Thoms et. al. 2005).

The Barwon River is formed by the junction of the Macintyre River and the Weir River upstream of Mungindi (NSW). The Barwon River is joined by a number of major tributaries – the Gwydir, Namoi, Castlereagh, Macquarie and Bogan Rivers from the south, and the Culgoa River from the north.

Downstream of the Culgoa junction the river becomes the Darling. The Warrego and Paroo Rivers are the only significant tributaries that join the Darling River downstream of Bourke,

and these flow into the river only during major flooding. Downstream of Wilcannia the Darling River flows into the Menindee Lakes Scheme, a series of seven large, shallow lakes that have been modified for water storage.

The proposed development is located in the centre south of the subject land where the land is gently undulating and drainage is largely defined by natural landforms and localised drainage lines in a north-westerly direction. One Mile Creek dissects the property in an east to west direction and is considered a stream order three. All the drainage lines in the area are ephemeral and intermittent flowing only during periods of rainfall.

The proposed development complex site is sited on the northern side of a low rise and due to its location in the upper catchment is not subject to riverine flooding.

5.3 Topography

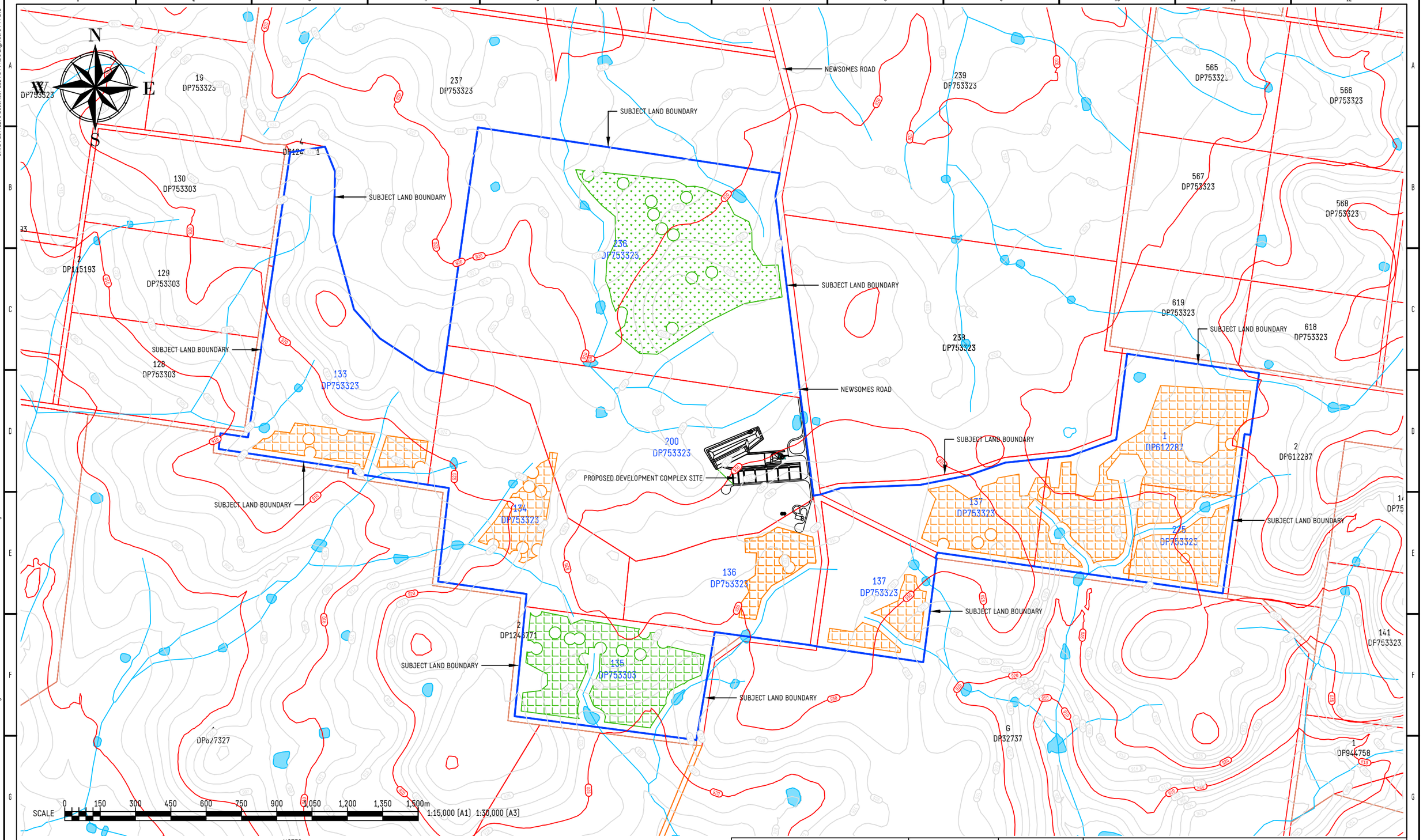
The subject land is located within the Emmaville (9239-S) 1:50,000 topographic map sheet in the northern tablelands of NSW. The topography at a regional scale is generally undulating with elevations from 960 m to 1030 m AHD with a landscape comprising of gently undulating tablelands with intermittent peaks with slopes in the order of 0-15%. Overall the landscape is gently undulating with intermittent rises and low peaks.

A topographic plan of the subject land was prepared from topographic data at a scale of 1:15,000 with a 5 m contour interval and is shown in Figure 15. This shows that the subject land is located on a local plateau with low topographic relief landforms from approximately 910 m AHD to approximately 940 m AHD. There are few topographic highs. The higher elevations occur in the south of the subject land.

The proposed development complex site is located geographically to the centre-south of the subject land on a north facing gently sloping terrain.

The proposed effluent utilisation area shall be located to the centre of the subject land on relatively flat land as shown on Figure 15. The solid waste utilisation areas are located across the subject land where the land is flat to gently undulating as shown on Figure 15.

The subject land has retained its historical topography. There has been no modification to the natural landform from mining, quarrying or other groundworks which may have altered its topography through the removal of soil or other materials.



LEGEND

- SUBJECT LAND BOUNDARY
- LAND PARCEL BOUNDARY
- EFFLUENT UTILISATION AREA
- SOLID WASTE UTILISATION AREA
- EXISTING GROUND CONTOUR - MAJOR (10m)
- EXISTING GROUND CONTOUR - MINOR (2m)
- HYDROAREA
- HYDROLINE

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CLIENT: NARRIE HOLDINGS PTY LTD ATF NEWSOME FAMILY TRUST
PROJECT: PROPOSED 999 HEAD BEEF CATTLE FEEDLOT
TITLE: DEVELOPMENT APPLICATION FOR INTENSIVE LIVESTOCK AGRICULTURE
STATEMENT OF ENVIRONMENTAL EFFECTS
SUBJECT LAND - TOPOGRAPHIC PLAN

REPORT REFERENCE	SUPPLIED DRAWING NUMBER		DRAWING NUMBER	REV.
FIGURE 15		A3	G4-116-00-15	B

5.4 Land resources

5.4.1 Soils

The Australian Soil Classification map (1:250,000) for NSW (DCS, 2022) revealed several soil types exist within the subject land including Kurosols and Rudosols. Kurosols are texture contrast 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 is strongly acid. Rudosols are non-texture contrast soils with negligible (rudimentary), if any change in colour or texture, apart from the minimal development of an A1 horizon or the presence of less than 10% of B horizon material.

A broad scale land evaluation of the region has been previously undertaken as part of the Soils of the Central Portion of the New England Region New South Wales at a scale of 1:250 000 by Jessup (1965). Jessup (1965) recognised 30 soil families within five major categories of soils. Soil families were determined on the basis of aerial photograph interpretation combined with ground traverses for field sampling and description. Each soil family has a characteristic aerial photography pattern which is influenced to varying degrees by its geology, relief, topography and native vegetation.

The soil category over the subject land is mapped as podzolics. In the new Australian Soils Classification (ASC) these soils are known as a Chromosols or Kurosols. These are duplex soils which have a loamy sand or sandy loam surface horizon, a bleached sub-surface horizon and a sandy clay mottled subsoil of variable nature (specifically clay content and colour). Kurosols have a strongly acid subsoil, Chromosols do not.

The soil assessment by Jessup (1965) is considered high data quality, midscale or imprecise mapping. The mapping provides an inventory of soil and landscape properties of the 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, allowing major soil and landscape qualities and constraints to be identified.

Gray (2007) as part of the Border Rivers Gwydir 5/10 Clive Survey (1004969) collected several soil profiles from adjacent to Newsomes Road in 2007. Soils are described using the Australian Soil Classification (Isbell, 2002) and the Great Soil Groups systems (GSG) (Stace et. al., 1968). Gray (2007) described these soils as Grey Chromosol; (ASC 2nd Edition) and Yellow Podzolic Soil (GSG) (Stace et. al., 1968).

The subject land has a varying landscape and a range of soil types ranging from grey to grey-brown loamy sand to sandy loam soils derived from granite type rocks to clay loams drainage depressions. The grey chromosol soils comprise 90% of the soils found on the subject land.

Chromosols are amongst the most widespread soils used for agriculture in Australia, particularly chromosols with medium clay subsoils, because they have moderate chemical fertility and water-holding capacity.

An overlay of the Australian Soil Classification (ASC) soil type map on the subject land was prepared based on digital data obtained from The Central Resource for Sharing and Enabling Environmental Data in NSW (SEED) portal. The map identifies the dominant soil types across NSW using the ASC Order level and uses the best available soil resource mapping coverage incorporating over 55 different datasets of multiple scales across NSW.

An overlay of cadastral, ASC order and the proposed development was prepared and is shown in Figure 16. There are two (2) soil classifications mapped within the subject land as shown in Figure 16. These are Kurosols and Rudosols. The Rudosols are located within drainage lines. Gray (2007) demonstrated that the mapped Kurosols are Chromosols.

The proposed development complex and waste utilisation areas are located within the Kurosols soil classification. An illustration of the soils of the proposed development complex and waste utilisation areas are shown in Photograph 15, Photograph 16, Photograph 17. The loamy topsoil of the proposed development complex site will need to be stripped and a gravel capping placed to provide durability of the pen surface. The B horizon is well suited to the construction of the proposed development complex drainage infrastructure as the clay material is highly impermeable.

Table 32 – Subject land – Typical soil profile description

Horizon	Typical description
A_1 0.05 – 0.150m	Sandy loam, grey brown (10YR5/2) to dark grey (10YR4/1); non-sticky to slightly sticky consistence, weak structure, small numbers of ferro- manganiferous nodules up to 3mm in size, no gravel; field pH 5.5-6.0; gradual to -
A_2 0.75 – 0.300m	Silty/sandy light clay, Light brown-grey (10YR6/2) to pale brown (10YR6/4). Few ferro- manganiferous nodules, field pH 6.0-6.5
B 0.3 – 1.0m	Sandy clay, light brown (10YR6/2) to dark brown (10YR5/3) mottled medium clay, weakly to moderately developed angular or subangular block structure. Trace gravel, few ferro-manganiferous nodules, field pH 7.0-8.0

Photograph 15 – Proposed development complex site – Characteristic soil profile

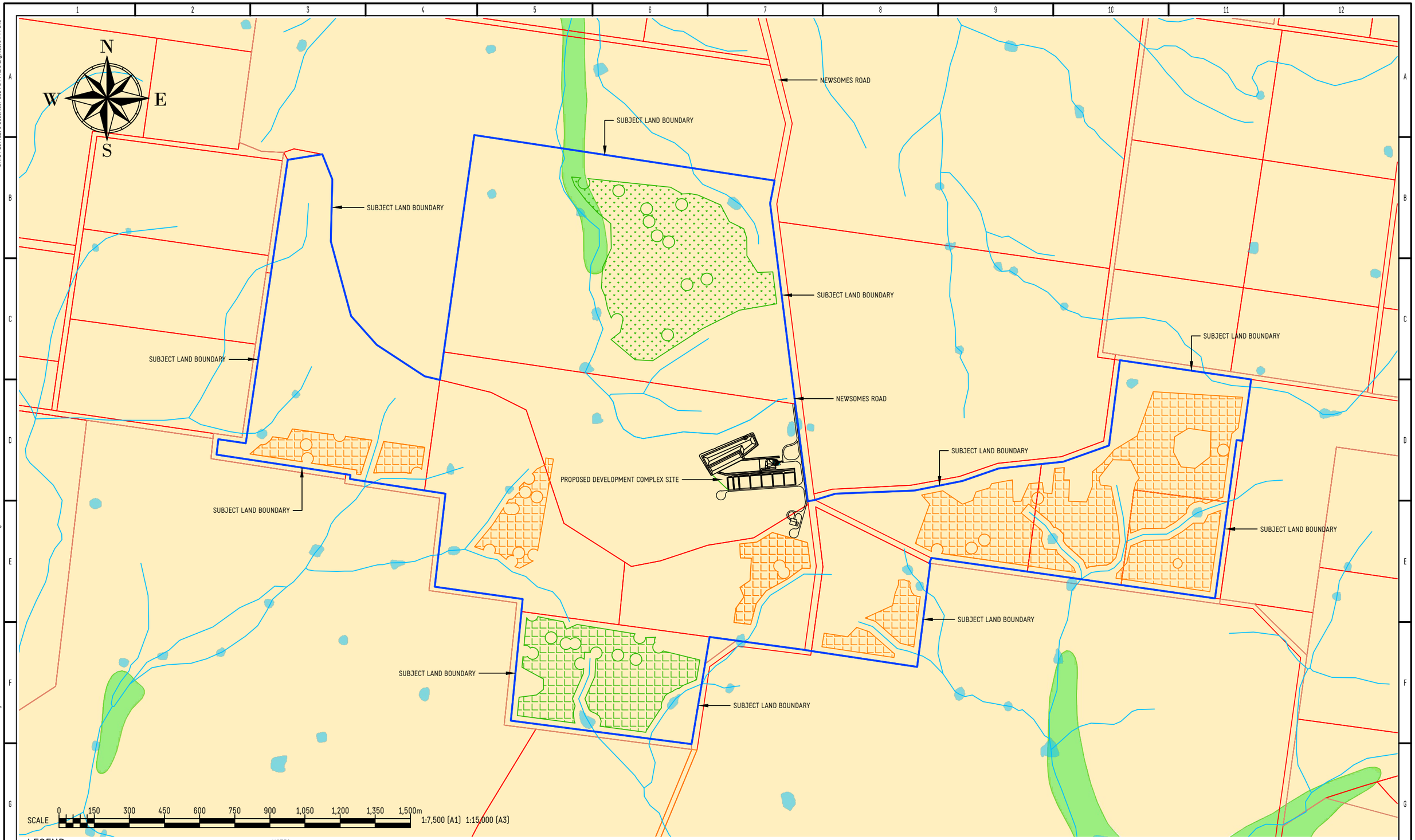
All soils within on the subject are very similar as shown in Photograph 15, Photograph 16 and Photograph 17. The soils are typical texture contrast soils comprising a loamy topsoil of between 100 and 200mm with gradual to abrupt change to medium sandy clay subsoil up to at least 1 m in depth. The current dryland cropping program is undertaken across these soils with great success.

The applicant routinely analyses the dryland cropping soils on the subject land for various agronomic parameters. A copy of the most recent soil analyses results is provided in Appendix J.

These data show that the soils have low to medium levels of organic carbon and a low pH in the topsoil. Sustainable application of solid waste and effluent to these soils would result in no adverse impacts to the long term capability of these soils or the environment.

Photograph 16 – Proposed solid waste utilisation area – Characteristic soil profile

Photograph 17 – Proposed effluent utilisation area – Characteristic soil profile



LEGEND

- SUBJECT LAND BOUNDARY
- LAND PARCEL BOUNDARY
- EFFLUENT UTILISATION AREA
- SOLID WASTE UTILISATION AREA
- HYDROLINE
- ASC - KUROSOLS
- ASC - RUDOSOLS

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3. SOILS MAPPING FROM THE AUSTRALIAN SOIL CLASSIFICATION SOIL TYPE MAP OF NSW DEPARTMENT OF CLIMATE CHANGE, ENERGY, THE ENVIRONMENT AND WATER.
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STATEMENT OF ENVIRONMENTAL EFFECTS
SUBJECT LAND - AUSTRALIAN SOIL CLASSIFICATION OVERLAY

REPORT REFERENCE: FIGURE 16
SUPPLIED DRAWING NUMBER:
A3
DRAWING NUMBER: G4-116-00-16
REV.: B

DATE PLOTTED: 5 December 2024 BY : RDC Engineers PTY LTD
FILE NAME: G4-116 BRN MASTERPLAN-00-20240825 v8.dwg
FILE PATH: C:\RDC Engineers\RDCE - Projects\G4-116 Newsome 999 head Feedlot\05 - ACAD MasterPlan\05.1 Drawings - CURRENT

5.4.2 Acid sulphate soils

Soils and sediments containing iron sulphides, most commonly pyrite, are called acid sulphate soils (ASS). ASS which have not been oxidised by exposure to air are known as potential acid sulfate soils (PASS). When exposed to air due to drainage or disturbance, these soils produce sulphuric acid, often releasing toxic quantities of iron, aluminium and heavy metals and are known as Actual Acid Sulfate soils (AASS). ASS are harmless when left in a waterlogged, undisturbed environment.

ASS commonly occur on coastal wetlands as layers of Holocene marine muds and sands deposited in protected low-energy environments such as barrier estuaries and coastal lakes. In similar environments, they are still being formed. In New South Wales, ASS frequently occur in low-lying and groundwater dependent wetlands, backswamps, former seashores, estuaries, salt marshes and tidal flats, although they are not limited to coastal regions. Due to their estuarine origin, ASS are usually found at elevations less than 5 m above sea level. ASS also underlie floodplains and levees.

When ASS are exposed to air (that is, no longer in a waterlogged anaerobic state), the iron sulphides in the soil react with oxygen and water to produce a variety of iron compounds and sulphuric acid. These compounds may contaminate land and adjacent waterways.

Acid sulfate soils are widespread in coastal areas in New South Wales, especially where mangroves are present. The soils in the subject land are inland and therefore have yet to be classified in relation to risk or potential risk of acid sulfate soils.

The subject land is located within the upper Beardy River catchment in the Northern Tablelands region of far north NSW, over 150 km from the coast at an elevation of 910-940 m AHD as shown on Figure 1 and Figure 15 respectively. There has been little history of acid generation from regolith material within this region. There is no Potential Acid Sulfate Soil (PASS) mapping available over the subject land.

As estuaries, wetlands and shallow groundwater conditions do not occur within the subject land, and the physiography and geology are not conducive to the presence of ASS it is unlikely that the proposed development area will contain PASS. However, as the proposed development involves works excavating and filling of soil, any PASS leachate, can potentially have significant adverse effects on surrounding natural environments.

Consequently, the Acid Sulfate Soils Manual 1998 (Stone et al. 1998) will be used as a source of general advice on the level of investigation, level of treatment and management of ASS should PASS be disturbed.

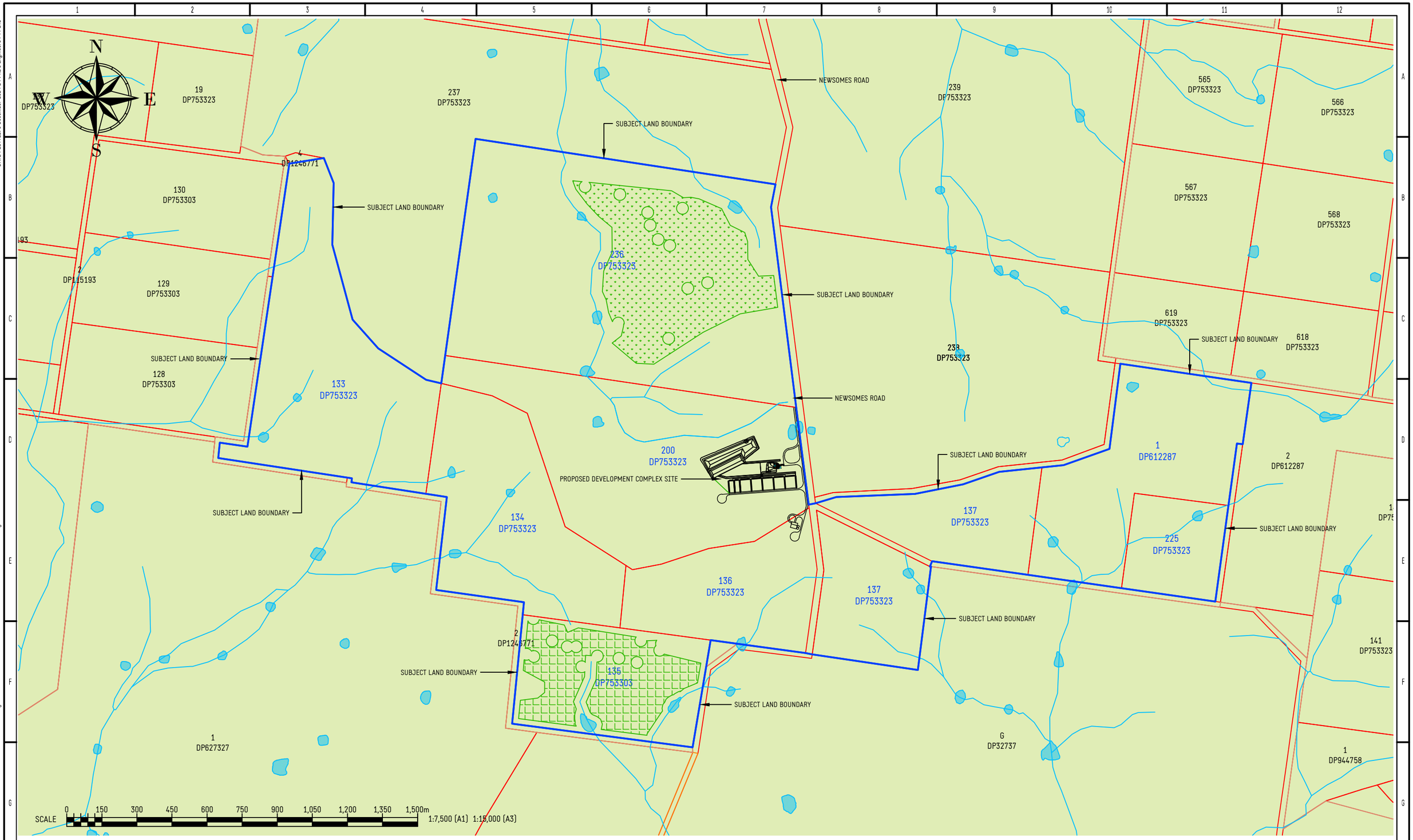
5.4.3 Land capability

The broadscale land and soil capability overlay of the subject land was obtained from the NSW Department of Climate Change, Energy, the Environment and Water Land and Soil Capability (LSC) v4.5 dataset via SEED the NSW Government's central resource for Sharing and Enabling Environmental Data online mapping system and is provided in Figure 17. Figure 17 shows the LSC overlay of the subject land along with cadastre and the proposed development.

The LSC dataset uses the best available soils natural resource mapping across New South Wales. Figure 17 shows that the subject land is mapped as Class 4 land and soil capability.

Class 4 LSC is categorised as Moderate Capability Land with moderate to severe limitations. Land generally not capable of sustaining high impact land uses unless using specialised management practices with a high level of knowledge, expertise, inputs, investment and technology.

The proposed development complex and waste utilisation areas are located on land mapped as Class 4 LSC. On the proposed development complex site, the shallow clay loam topsoil shall be stripped to expose the medium clay subsoil. The main limitation with Class 4 land is surface sealing, low infiltration rate, sodic and dispersive subsoils. Consequently, minimum tillage techniques, stubble retention and fallowing shall be adopted management measures for the effluent and solid waste utilisation area to reduce production risk.



LEGEND

- SUBJECT LAND BOUNDARY
- LAND PARCEL BOUNDARY
- 2 - SLIGHT BUT SIGNIFICANT LIMITATIONS
- 3 - MODERATE LIMITATIONS
- 4 - MODERATE TO SEVERE LIMITATIONS
- 5 - SEVERE LIMITATIONS
- HYDROLINE
- HYDROAREA

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SUBJECT LAND - LAND AND SOIL CAPABILITY

REPORT REFERENCE: FIGURE 17
SUPPLIED DRAWING NUMBER:
A3
DRAWING NUMBER: G4-116-00-17
REV.: B

5.4.4 Contaminated land

Land contamination can occur as a result of poor environmental management and waste disposal practices or accidental spills in industrial, agricultural or mining activities. In some cases, land was contaminated in the past by activities now known to be hazardous. Often these cases involve chemicals which have since been banned or are now subject to stricter controls.

Contamination can be present in one or more environmental media at a site (such as soil, soil gas, ambient air, groundwater and surface water). It may be present in the solid, liquid or gaseous phases (for example soil or groundwater contamination giving rise to contaminant vapours in soil pore spaces).

In New South Wales, contaminated land is managed under and regulated by the *Contaminated Land Management Act 1997*.

The Environment Protection Authority (EPA) regulates the investigation, remediation, and ongoing monitoring of contaminated land to protect human health and the environment.

Section 5 of the *Contaminated Land Management Act 1997* defines *'contaminated'* as the presence in, on or under the land of a substance at a concentration above the concentration at which the substance is normally present in, on or under (respectively) land in the same locality, being a presence that presents a risk of harm to human health or any other aspect of the environment.

The EPA contaminated land public record of notices is a searchable database of contaminated land notified under section 60 of the *Contaminated Land Management Act 1997.* These have been assessed by the EPA as being contaminated but may not always require regulation under the *Contaminated Land Management Act 1997*.

A search of the EPA contaminated land public record was undertaken for the Glen Innes Severn Local government area. There is one EPA contaminated land record of notices within the Glen Innes Severn Council being Lot 2 Lang Street, Glen Innes. That record is not associated with the subject land.

The current and historical activities on the subject land include cattle and sheep grazing and dryland fodder cropping. Consequently, the subject land has not been used or is currently used for any activity which may cause contamination. Therefore, it is high unlikely that the subject land contains unidentified contaminated sites.

5.4.5 Unexploded ordnance

Unexploded Ordnance (UXO) is explosive ordnance such as artillery shells, mortars or grenades that did not explode when used.

Most UXO is found on land formerly used by Australian and Allied Defence Forces for the live firing of explosive ordnance, particularly during World War II.

The Commonwealth's Department of Defence has categorised areas of land as having a 'substantial' potential to be affected by residual unexploded ordnance and has developed an online mapping application 'Defence UXO Mapping Application' to allow members of the public and other interested parties to identify land parcels potentially affected by UXO.

An overlay of areas with substantial potential for UXO relating to the subject land was obtained from the 'Defence UXO Mapping Application' system and is shown in Figure 18. The subject land does not contain any areas with substantial potential for UXO.

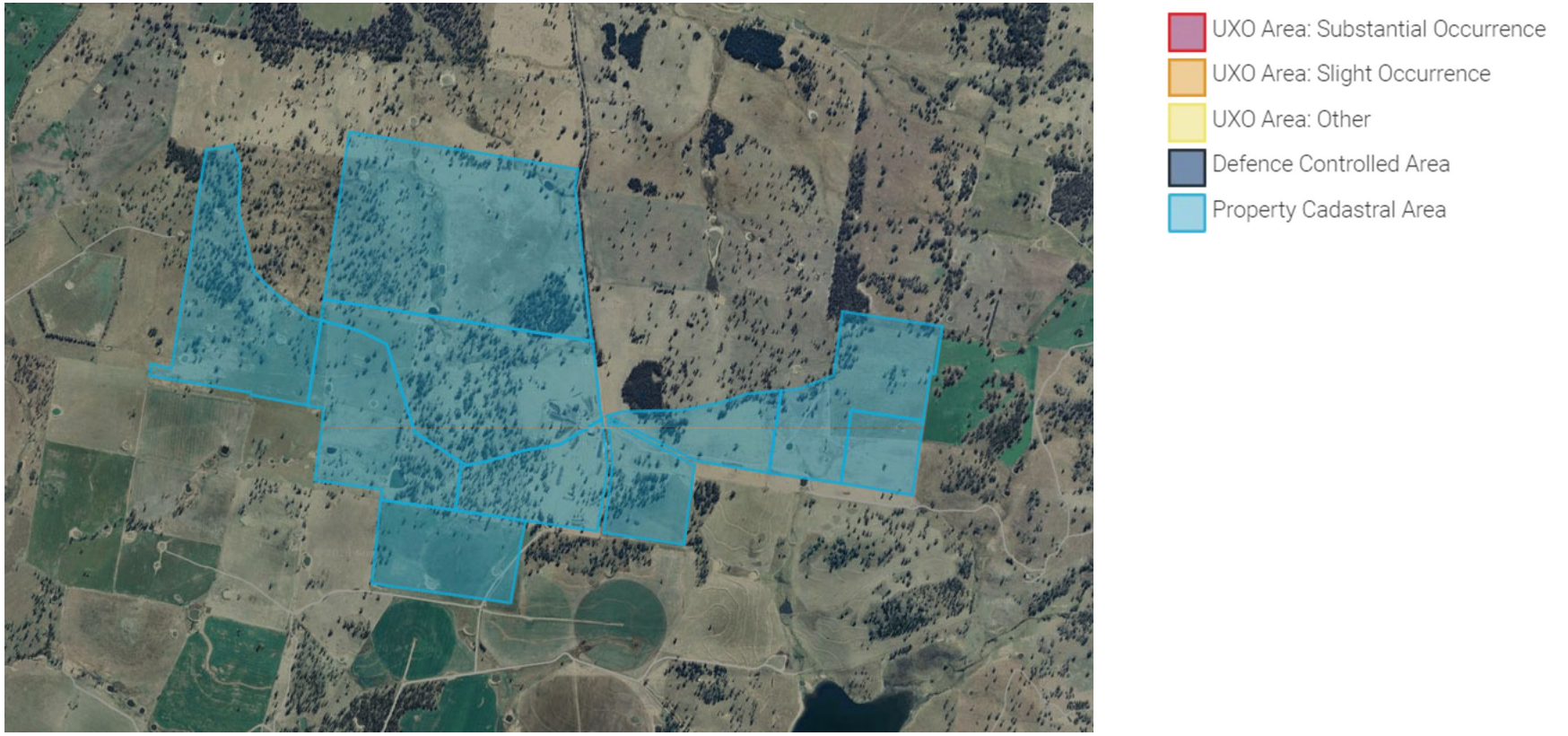


Figure 18 – Subject land – Potential UXO Areas overlay

5.5 Water resources

Management of water resources in NSW relies on a range of legislation, initiatives and cooperative arrangements with the Commonwealth and other state governments. The key pieces of legislation for the management of water in NSW are the *Water Management Act 2000, Water Management Amendment Act 2014 and* the *Water Act 1912*.

The *Water Act 1912* came into force at the turn of the last century and represented a different era in water management in NSW. This Act is being progressively phased out and replaced by the *Water Management Act 2000.* However, some provisions are still in force.

The object of the *Water Management Act 2000* is the sustainable and integrated management of the state's water for the benefit of both present and future generations and is based on the concept of ecologically sustainable development.

The water resources planning framework provides a catchment and underground water area based approach to water resources management and uses various documents to deliver water planning outcomes.

There are several drainage basins (catchments) in New South Wales. Following the introduction of the Water Management Act 2000, water sharing plans are being progressively developed for rivers and groundwater systems across New South Wales.

Water sharing plans establish rules for the equitable and sustainable sharing of water between the environmental needs of the river or aquifer and water users, and also between different types of water use such as basin landholder rights, town supply, rural domestic supply, stock watering, industry and irrigation.

The subject land is located within the NSW Murray-Darling Basin. The Murray - Darling Basin is the catchment of Australia's largest river system and comprises a number of distinct geographical and physical landscape units. The eastern boundary is Australia's most substantial mountain range and the third longest land based range in the world, the Great Dividing Range. The Great Dividing Range extends along the entire NSW eastern coastline containing a complex of mountain ranges, plateaus, upland areas and escarpments typically ranging from 300 to 1,600 m in elevation and 160 to 300km wide. The elevated plateau areas in NSW have three regional divisions comprising the Northern, Central and Southern Tablelands, each with a corresponding western slope region that progressively transitions into broad flat plains in the west.

The Murray–Darling Basin Authority's (MDBA) Basin Plan was adopted in 2012 by the Commonwealth Government. The plan sets long-term average sustainable diversion limits (SDLs) in 29 surface water and 80 groundwater resource units across four states.

Surface water and groundwater are managed under water plans for catchment areas in the NSW section of the Murray–Darling Basin region.

5.5.1 Groundwater

The subject land is located in the eastern area of the NSW Murray-Darling Basin. Groundwater within the entire NSW Murray Darling Basin is managed by the NSW Murray - Darling Basin Fractured Rock Water Resource Plan.

The NSW Murray-Darling Basin Fractured Rock Water Resource Plan covers groundwater stored within the fractures, joints, bedding planes, faults and cavities within the geological rock mass of the NSW Murray-Darling Basin as well as alluvial sediments that overlie these fractured rock systems that have not been separately mapped out and incorporated into other water resource plans as individual SDL resource units explicitly captured elsewhere.

The NSW Murray-Darling Basin Fractured Rock Water Resource Plan area comprises nine SDL resource units. These are:

- Adelaide Fold Belt (GS10);
- Inverell Basalt (GS18);
- Kanmantoo Fold Belt (GS19);
- Lachlan Fold Belt (GS20);
- Liverpool Ranges Basalt (GS22);
- New England Fold Belt (GS37);
- Orange Basalt (GS39);
- Warrumbungle Basalt (GS49); and
- Young Granite (GS51).

Figure 19 illustrates the location of the nine SDL resource units (DPE, 2022)

The subject land is located in the fractured rock groundwater system known as the New England Fold Belt. In NSW all outcropping and sub-cropping rocks contain a mixture of fractures, joints, bedding planes and faults that contain and transmit small and occasionally large amounts of groundwater. Examples of fractured rock aquifers include the Alstonville Basalt, Molong Limestone and the Young Granite. The groundwater in these systems may support base flows to rivers, wetlands, caves, terrestrial vegetation and hypogean ecosystems (WaterNSW, 2024).

Groundwater from systems in higher elevation areas, having higher rainfall, may discharge water as springs and provide some baseflow along the upper catchments of the Macintyre, Gwydir, Namoi, Castlereagh, Macquarie and Murray River Systems. Typically, the surface water systems overlying the NSW Murray-Darling Basin Fractured Rock Water Resource Plan are considered to be in low hydraulic connection with groundwater in the fractured rock due to the degree of fracturing extending to the bed of the overlying surface water features, or to the base of more permeable weathered profile that connects with surface water feature. Hence the surface and groundwater systems are managed separately (DPE, 2022).

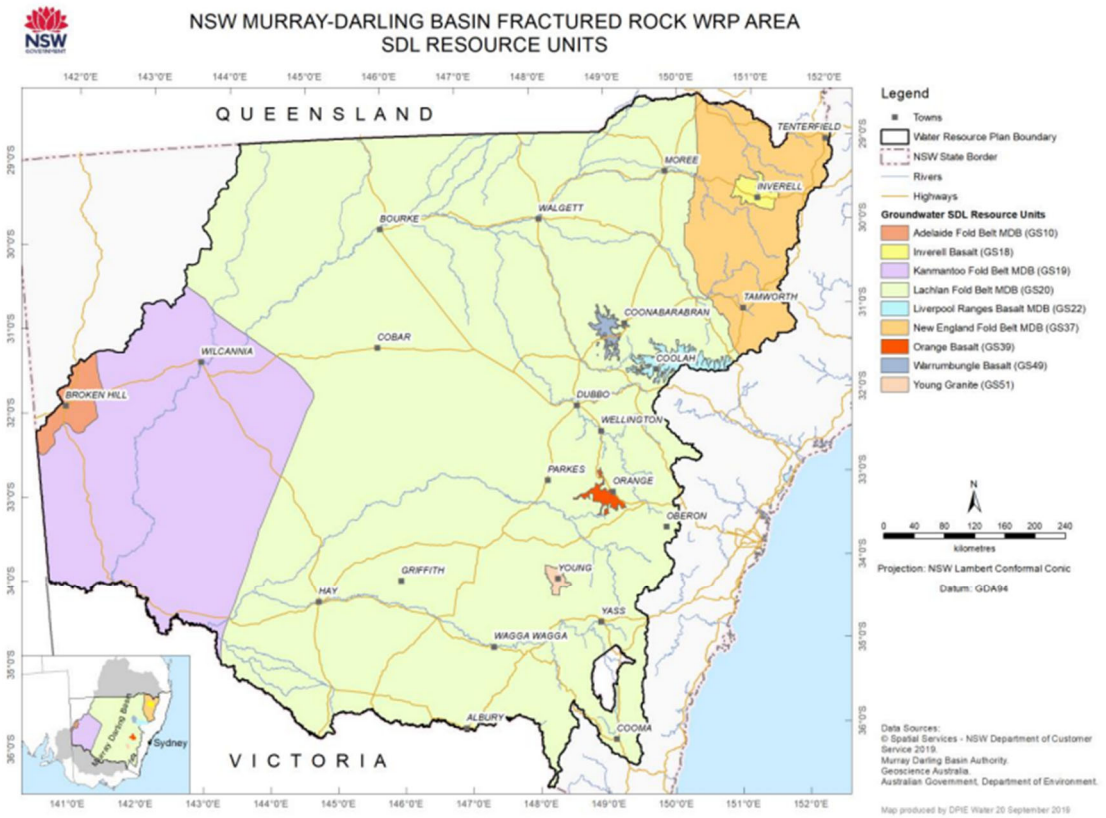


Figure 2-1. Map of MDB Fractured Rock WRP

Figure 19 – Murray-Darling Basin – Fractured Rock WRP Area

The New England Fold Belt can be sub-divided into:

- a shallow unconfined aquifer that is typically weathered and fractured; and
- deeper confined system to semiconfined with highly variable jointing and fracturing formed from tectonic structural deformation. It is these fractures that provides for the interconnection between the shallow and deep aquifers and the mixing of groundwater. The New England Fold Belt MDB consists predominantly of low yielding stock and domestic supplies.

Groundwater development across the New England Fold Belt is relatively limited and there is significant variation in groundwater availability and water quality. Groundwater extraction in the New England Fold Belt is used for towns, stock, domestic use and to a lesser degree irrigation.

The area is not characterised by a high density of bores. Whilst the New England Fold Belt is more elevated, the lack of bore yield suggests that any structural deformation has not resulted in significant fracture permeability. For this reason these SDL units are listed as being less productive and do not exhibit a significant connection with the overlying surface water systems. Typically the surface water systems within the WRP area are considered to be in low hydraulic connection with groundwater in the fractured rock.

Due to the broad range in geology and depositional environment of the sediments that make up New England Fold Belt, water quality is variable. The higher annual rainfall with relatively higher

recharge combined with high elevation creates steeper hydraulic gradients improving the groundwater through flow. Groundwater salinity is typically low in the shallow aquifer systems and more variable in the deeper aquifers subject to longer residence times (DPIE, 2019). Typically, the transient soil water flows move down-slope and above either an impervious clay layer or bedrock. These can break-out on the surface giving rise to springs but typically feed directly into waterways which have intersected the soil layers.

Figure 20 depicts the location of groundwater bores within and adjacent to the subject land.

As shown on Figure 20, the subject land has one registered bore (GW051522) located on the eastern edge of the property and is described as a well. The drillers log on the works summary for this registered bore states that it is about 10 m deep with a standing water level of about 3 m.

There are several shallow monitoring and test bores located on the adjoining land associated with the environmental monitoring of the Rangers Valley Feedlot development.

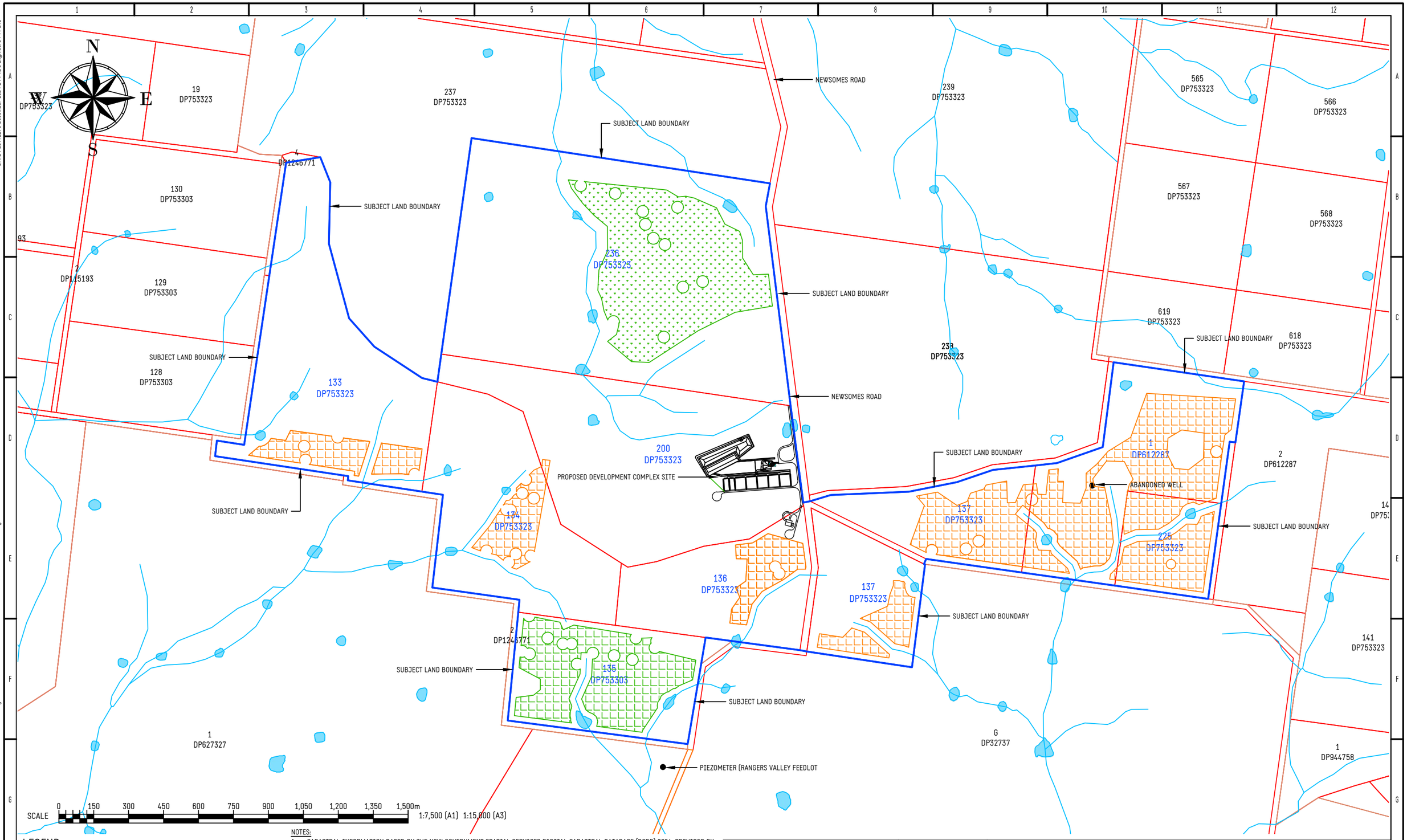
5.5.1.1 Quantity

The applicant does not hold a water access licence which authorises the use of groundwater on the subject land for any purpose.

Groundwater shall not be used as a source of water for the proposed development.

Due to the impermeable insitu clay material under the proposed development complex site and lack of commercial water bearing aquifers, it is unlikely that the proposed development shall have adverse impacts to the quality of groundwater resources in the area.

Any limitations caused by the landscape on the subject land (e.g. thin soil layers, low quality soils etc) have been identified and can be accommodated in the design of the feedlot and careful management of the utilisation of manure and effluent. State of the art design for feedlot pens and use of suitable materials in pen floor construction will ensure that ponds and pen surfaces are rendered impervious to underlaying ground waters. Similarly, the careful selection of suitable paddocks for irrigation with the deepest possible soil profiles (including clay subsoil) and carefully designed irrigation systems will assist in the protection of both surface and ground waters.



LEGEND

- SUBJECT LAND BOUNDARY
- LAND PARCEL BOUNDARY
- GROUNDWATER BORE
- HYDROLINE
- HYDROAREA
- EFFLUENT UTILISATION AREA
- SOLID WASTE UTILISATION AREA

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5. SITE SURVEY CONDUCTED BY ANTHONY GRAHAM VERTICAL DATUM AHD DERIVED
6. HORIZONTAL DATUM - MGA2020 ZONE 55.

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CLIENT: NARRIE HOLDINGS PTY LTD ATF NEWSOME FAMILY TRUST
PROJECT: PROPOSED 999 HEAD BEEF CATTLE FEEDLOT
TITLE: DEVELOPMENT APPLICATION FOR INTENSIVE LIVESTOCK AGRICULTURE
STATEMENT OF ENVIRONMENTAL EFFECTS
SUBJECT LAND - GROUNDWATER AREA AND GROUNDWATER BORES

REPORT REFERENCE	SUPPLIED DRAWING NUMBER		DRAWING NUMBER	REV.
FIGURE 20		A3	G4-116-00-20	B

DATE PLOTTED: 5 December 2024 BY : RDC Engineers PTY LTD
FILE PATH: C:\RDC Engineers\RDCE - Projects\G4-116 Newsome 999 head FeedLot\05 - ACAD MasterPlan\05.1 Drawings - CURRENT FILE NAME: G4-116 BRM MASTERPLAN-00-20240625 v8.dwg

5.5.1.2 Groundwater dependent ecosystems

Groundwater dependent ecosystems (GDEs) require groundwater to maintain their composition and functioning. GDEs include terrestrial vegetation that are dependent on the sub-surface presence of groundwater, surface water ecosystems which may have a groundwater component, such as rivers, wetlands and springs, and subterranean ecosystems which includes cave and aquifer ecosystems.

The Groundwater Dependent Ecosystems Atlas (GDE Atlas) was developed as a national dataset of Australian GDEs to inform groundwater planning and management. An overlay of GDE relating to the subject land was obtained from the Groundwater Dependent Ecosystems Atlas and are shown in Figure 21, Figure 22 and Figure 23 for aquatic, terrestrial and subterranean respectively.

A review of the subject land and GDE Atlas shows that the native vegetation on the subject land is mapped as a moderate potential terrestrial GDE as shown in Figure 22. There are no aquatic GDE on or adjacent to the subject land and no data exists for subterranean GDE as shown in Figure 21 and Figure 23 respectively.

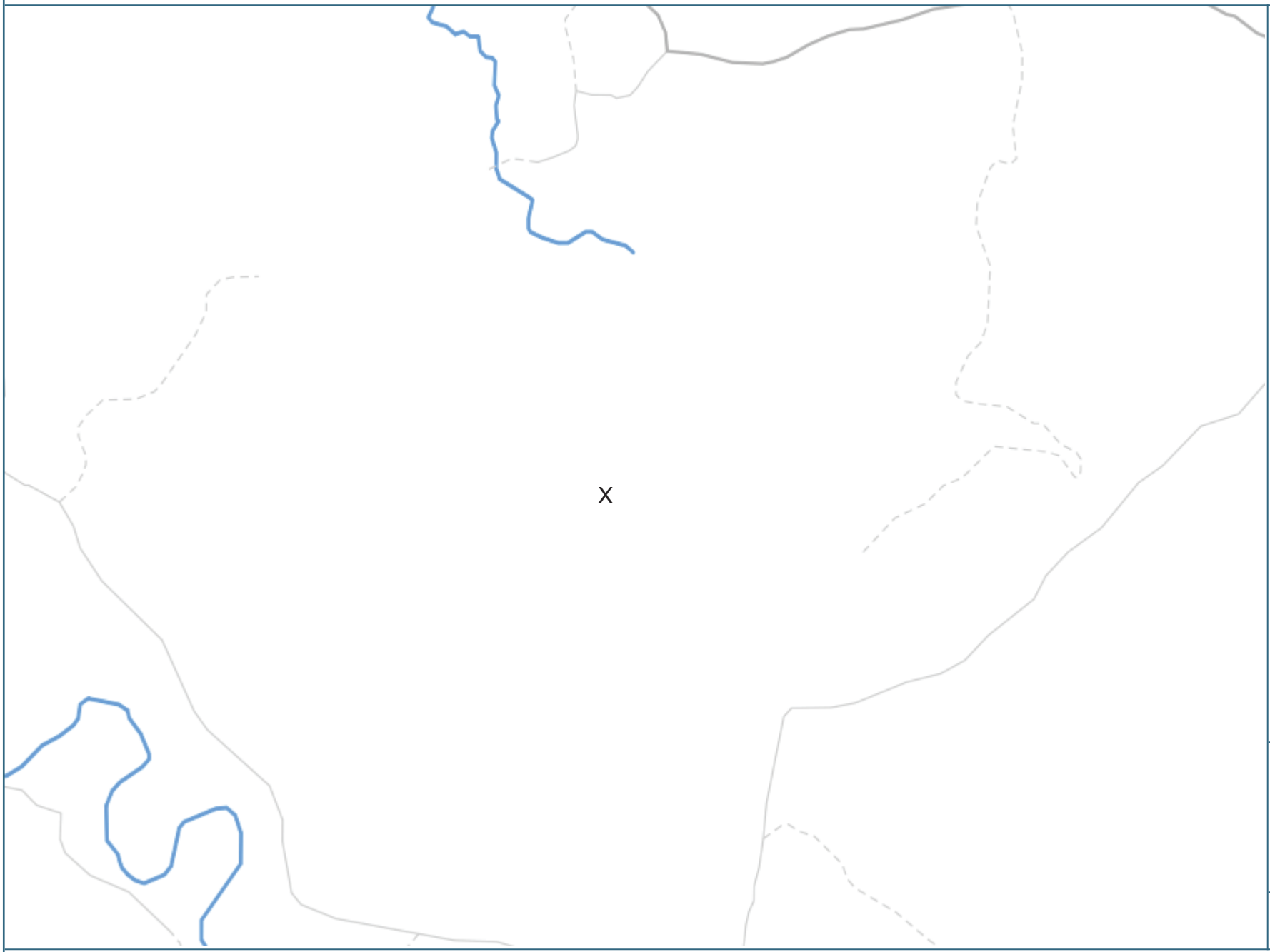
The proposed development shall not impact the native vegetation on the subject land as outlined in section 5.6. Further, groundwater shall not be used as a source of water for the proposed development.

Consequently, no groundwater dependent ecosystems shall be impacted within or adjacent to the subject land if any were to exist.

Australian Government
Bureau of Meteorology

Groundwater Dependent Ecosystems Atlas

Westholme FL



Aquatic GDE

- Known GDE (regional study)
- High potential GDE (regional study)
- Moderate potential GDE (regional study)
- Low potential GDE (regional study)
- Unclassified potential GDE (regional study)
- High potential GDE (national assessment)
- Moderate potential GDE (national assessment)
- Low potential GDE (national assessment)
- Unclassified potential GDE (national assessment)

Islands

- Islands

N

1:64,267

Kilometres 1 2

Data Source: Bureau of Meteorology, Geoscience Australia and State/Territory lead water agencies. Refer to metadata for further information: Click here

FIGURE 21

Australian Albers GDA94

X - PROPOSED DEVELOPMENT COMPLEX SITE

Date: 10 October, 2024

Australian Government
Bureau of Meteorology

Groundwater Dependent Ecosystems Atlas

Westholme FL

Terrestrial GDE (no data)

No ecosystems analysed

Terrestrial GDE

- Known GDE (regional study)
- High potential GDE (regional study)
- Moderate potential GDE (regional study)
- Low potential GDE (regional study)
- Unclassified potential GDE (regional study)
- High potential GDE (national assessment)
- Moderate potential GDE (national assessment)
- Low potential GDE (national assessment)
- Unclassified potential GDE (national assessment)

N

1:64,267

Kilometres 1 2

Data Source: Bureau of Meteorology, Geoscience Australia and State/Territory lead water agencies. Refer to metadata for further information: Click here

FIGURE 22

Australian Albers GDA94

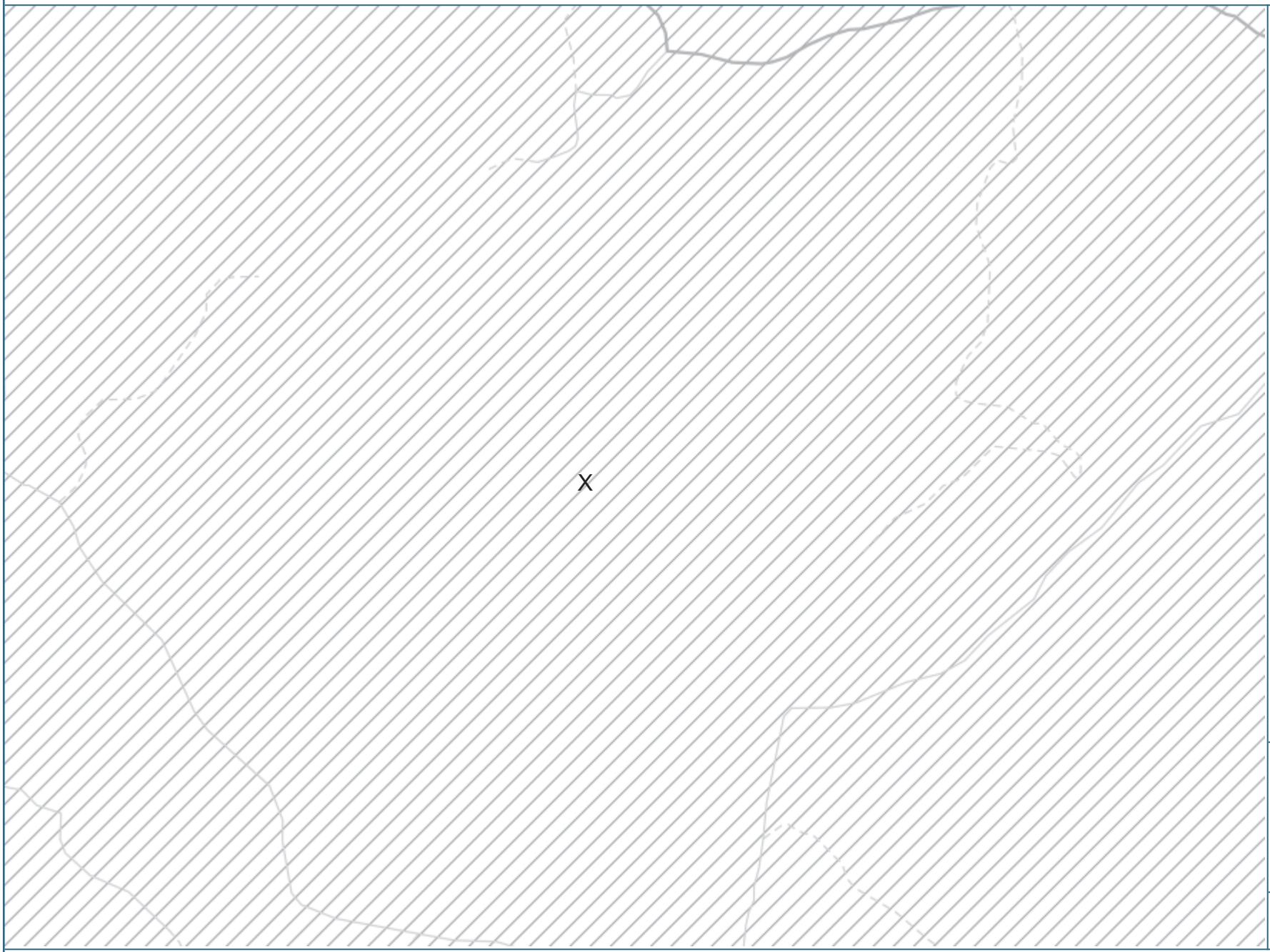
X - PROPOSED DEVELOPMENT COMPLEX SITE

Date: 10 October, 2024

Australian Government
Bureau of Meteorology

Groundwater Dependent Ecosystems Atlas

Westholme FL



Subterranean GDE

- Known GDE (regional study)
- High potential GDE (regional study)
- Moderate potential GDE (regional study)
- Low potential GDE (regional study)
- Unclassified potential GDE (regional study)

Subterranean GDE (no data)

- No ecosystems analysed

Islands

- Islands

Mainland

- Mainland

N

1:64,267

Kilometres 1 2

Data Source: Bureau of Meteorology, Geoscience Australia and State/Territory lead water agencies. Refer to metadata for further information: Click here

FIGURE 23

Australian Albers GDA94

X - PROPOSED DEVELOPMENT COMPLEX SITE

Date: 10 October, 2024

5.5.2 Surface water

The subject land is located in the eastern margin of the NSW Murray-Darling Basin on an elevated plateau known as the Northern Tablelands. The Murray - Darling Basin is the catchment of Australia's largest river system and comprises a number of distinct geographical and physical landscape units. The Murray - Darling Basin is made up of several river catchments. On a regional scale, the subject land is located in the NSW Border Rivers catchment which comprises the catchments of the Dumaresq, Severn, Macintyre and Barwon rivers.

At a local scale, the subject land lies in the One Mile Creek sub-catchment of the Beardy River and the Cam Creek sub-catchment and unnamed tributary sub-catchment of the Severn River within the Dumaresq and Macintyre River drainage network respectively. The subject land is dissected by intermittent creeks that drain ultimately to the north and south to One Mile Creek and the Severn River respectively. The majority of the subject land is in the One Mile Creek subcatchment of the Beardy River.

Surface water within the NSW Border Rivers catchment is managed under the *Water Management Act 2000* through the gazetted Water Sharing Plan for the NSW Border Rivers Unregulated River Water Sources 2024 and the Water Sharing Plan for the NSW Border Rivers Regulated River Water Source Order 2021.

At a local scale, surface water is predominately comprised of overland flow captured in small dams. The predominant waterways on the subject land are ephemeral unnamed tributaries of One Mile Creek. The majority of drainage depressions in the area only flow during large rainfall events. The closest declared regulated river system is the Pindari Dam water storage downstream to the Pindari Dam wall and the Severn River from the Pindari Dam wall downstream to its junction with the Macintyre River.

Consequently, the surface water resources of the subject land are managed under the Water Sharing Plan for the NSW Border Rivers Unregulated River Water Sources 2024.

The NSW Hydrography web service provides access to topographic data of New South Wales showing hydrography-related features and drainage. An overlay of hydrography-related features relating to the subject land was obtained from The Central Resource for Sharing and Enabling Environmental Data in NSW (SEED) Open Data portal. An overlay of cadastral, hydrolines and hydrography-related features, and the proposed development was prepared and is shown in Figure 24. Figure 25 also shows the stream order of each hydroline based on the Strahler system.

The Strahler system is based on the confluence (joining) of streams of the same order. A first order stream has no other streams flowing into it. When two streams with different orders join, the resulting stream has the same order as the highest order of the two joining streams. When two streams with the same order join, the resulting stream has the next highest order than the joining streams.

Wholly artificial waterbodies such as irrigation channels, urban drains and ponds, salt and evaporation ponds are excluded.

As shown in Figure 24, surface runoff from the subject land drains in one of three general directions:

- North to One Mile Creek via unnamed tributaries;
- South to Cam Creek, a tributary of the Severn River via unnamed tributaries; and
- Southwest to towards the Severn River via unnamed tributaries.

Figure 25 shows there are stream orders 1 and 2 mapped on the subject land a reflection of the location of the subject land in the upper reaches of the catchment, rainfall pattern experienced in the region combined with no base flow resulting from groundwater expression.

Figure 24 shows that there are no named or well defined watercourses mapped on the subject land. The various overland flow paths and drainage lines originating from the upper slopes of the subject land drain north, south or southwest towards the Beardy River or Severn River respectively. There are several water storage dams on the property which collect overland flow. The water from these dams shall be utilised as the supply for the proposed development as Harvestable rights. Harvestable rights allow landholders (owners or occupiers of land) to capture and store a proportion of the rainfall runoff from their landholding in one or more harvestable rights dams without a water access licence, water supply work approval or water use approval.

An overlay of cadastral, hydrolines and hydrography-related features, and the proposed development complex site was prepared and is shown in Figure 25. Figure 25 shows that the closest hydroline is a stream order 1 located some 55 m to the north of the proposed development complex. This hydroline does not exhibit the features of a defined channel with bed and banks as shown in Photograph 18 and therefore is not considered a watercourse.

There are also 2 hydroareas comprising stock dams some 130 m to the east of the Holding Pond 1 as shown in Figure 25.

The subject land does not have access to surface water and there are no water access licences attached to the subject land.

Photograph 18 – Proposed development complex site – 1st Order Hydroline

5.5.2.1 Harvestable rights

"Harvestable rights" represent one of three basic landholder water rights established under the Water Management Act 2000. Harvestable rights allow landholders (owners or occupiers of land) in most rural areas of NSW to collect a proportion of the rainfall run-off on their property and store it in one or more farm dams up to a certain size. To do this, a water access licence, water supply work approval or water use approval is not required.

Harvestable rights dams can be located on 'minor streams' (the harvestable rights orders published in NSW Government Gazette, No. 40, 31 March 2006, page 1628) being:

- non-permanent minor streams;
- hillsides; and
- gullies.

but cannot be located:

- within 40 metres of a third-order or higher order stream
- within 3 kilometres upstream of a wetland of international importance (listed under the Ramsar Convention).

The volume of water a landholder can capture and store as a harvestable right is expressed as a maximum harvestable right dam capacity for a landholding. The water from a harvestable rights dam could be used for any purpose.

The combined volume of all dams (or parts thereof) that capture and store harvestable rights water on a landholding cannot exceed the maximum dam capacity. The subject land has 22 existing gully dams for stock purposes.

The maximum dam capacity for the subject land was calculated as 40 ML using the Maximum Harvestable Rights Dam Capacity Calculator. The calculator considers the size and location of the landholding. The harvestable rights calculator output is presented in Appendix F.

5.5.2.2 Waterfront land

A controlled activity approval is required for controlled activities on waterfront land. 'Waterfront land' means the bed of any river, lake or estuary, and the land within 40 m of the river banks, lake shore or estuary mean high water mark.

The waterfront land e-tool (https://www.industry.nsw.gov.au/water/licensing-trade/approvals/controlled-activities/waterfront-land-e-tool) was used to determine if a controlled activity approval is required for the works.

The subject land is not located on a watercourse, lake or estuary within the area marked in orange in any of the waterfront land maps outlined below:

- Botany Bay;
- Brisbane Water;
- Hunter River;
- Lake Macquarie;
- Lake Mulwala;
- Port Hacking;
- Port Jackson;
- Port Stephens;
- Tuggerah Lakes; and
- Wallis Lakes.

The proposed development complex is not located with 40 m of a highest bank of the river, lake or estuary as shown on Figure 25. The hydroline is classed as a Stream Order 1 and therefore minor stream under Water Management (General) Regulation 2018.

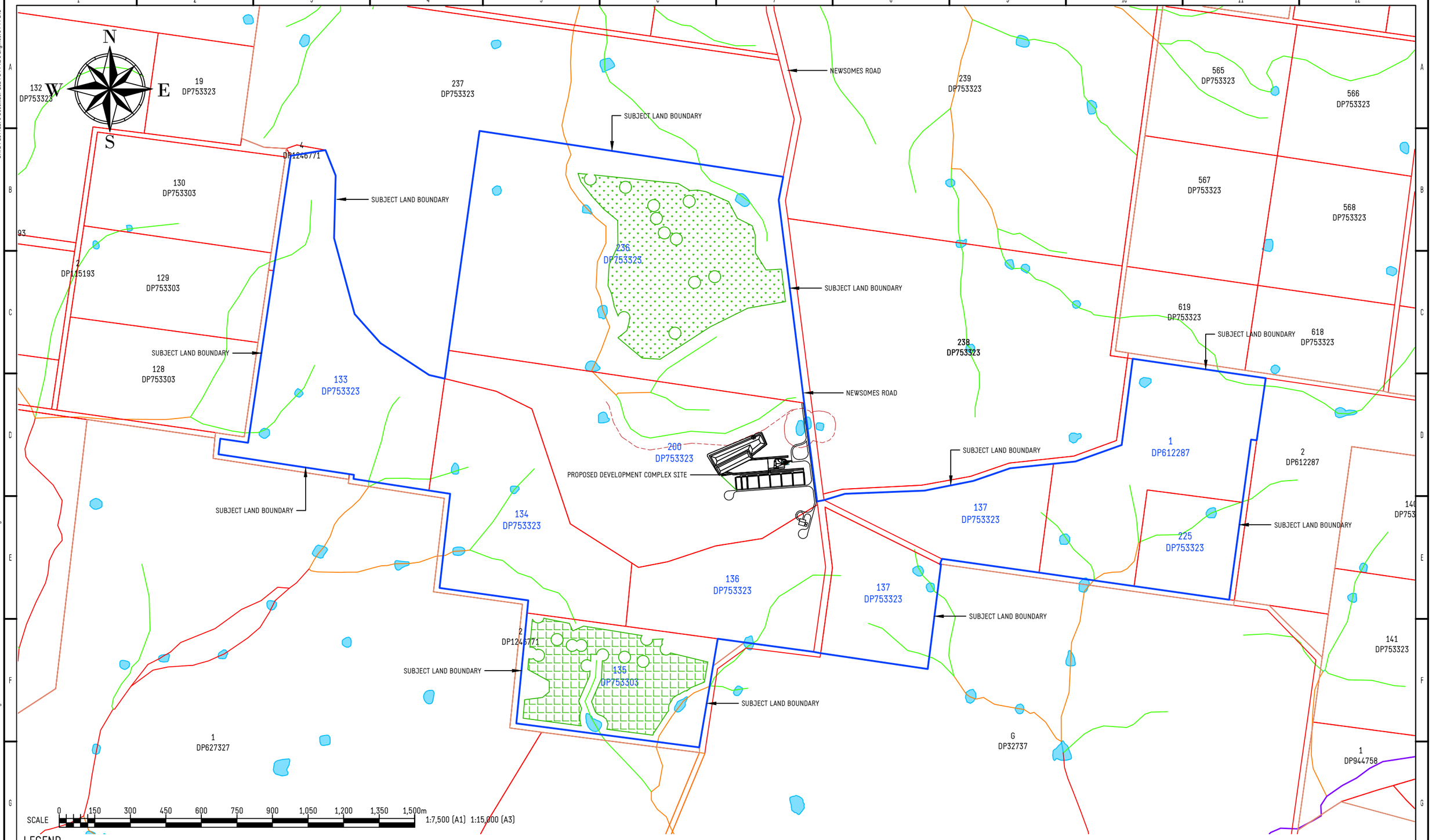
The definition of a minor stream from the Water Management (General) Regulation 2018 is reproduced below.

minor stream means—

(a) any stream or part of a stream—
  (i) the location of which is specified in the hydroline spatial data, and
  (ii) that is identified as a first or second order stream, or part of such a stream, as determined in accordance with the system set out in Schedule 2, and
  (iii) that does not maintain a permanent flow of water, being a visible flow that occurs on a continuous basis, or would so occur if there were no artificial abstractions of water or obstruction of flows upstream, and
  (iv) that does not at any time carry flows emanating from a third or higher order stream as determined in accordance with the system set out in Schedule 2, or

(b) any stream or part of a stream the location of which is not specified in the hydroline spatial data.

Consequently a controlled activity approval is not required. The waterfront land e-tool assessment is provided in Appendix G.



LEGEND

- SUBJECT LAND BOUNDARY
- LAND PARCEL BOUNDARY
- EFFLUENT UTILISATION AREA
- SOLID WASTE UTILISATION AREA
- HYDRO AREA - WATERBODY
- 50m BUFFER TO HYDROLINE
- STREAM ORDER 1
- STREAM ORDER 2
- STREAM ORDER 3
- STREAM ORDER 4
- STREAM ORDER 5
- STREAM ORDER 6
- STREAM ORDER 7
- STREAM ORDER 8

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CLIENT: NARRIE HOLDINGS PTY LTD ATF NEWSOME FAMILY TRUST
PROJECT: PROPOSED 999 HEAD BEEF CATTLE FEEDLOT
TITLE: DEVELOPMENT APPLICATION FOR INTENSIVE LIVESTOCK AGRICULTURE
STATEMENT OF ENVIRONMENTAL EFFECTS
SUBJECT LAND - HYDROLINE OVERLAY

REPORT REFERENCE: FIGURE 24
SUPPLIED DRAWING NUMBER:
A3
DRAWING NUMBER: G4-116-00-24
REV.: B

DATE PLOTTED: 5 December 2024, BY : RDC Engineers PTY LTD
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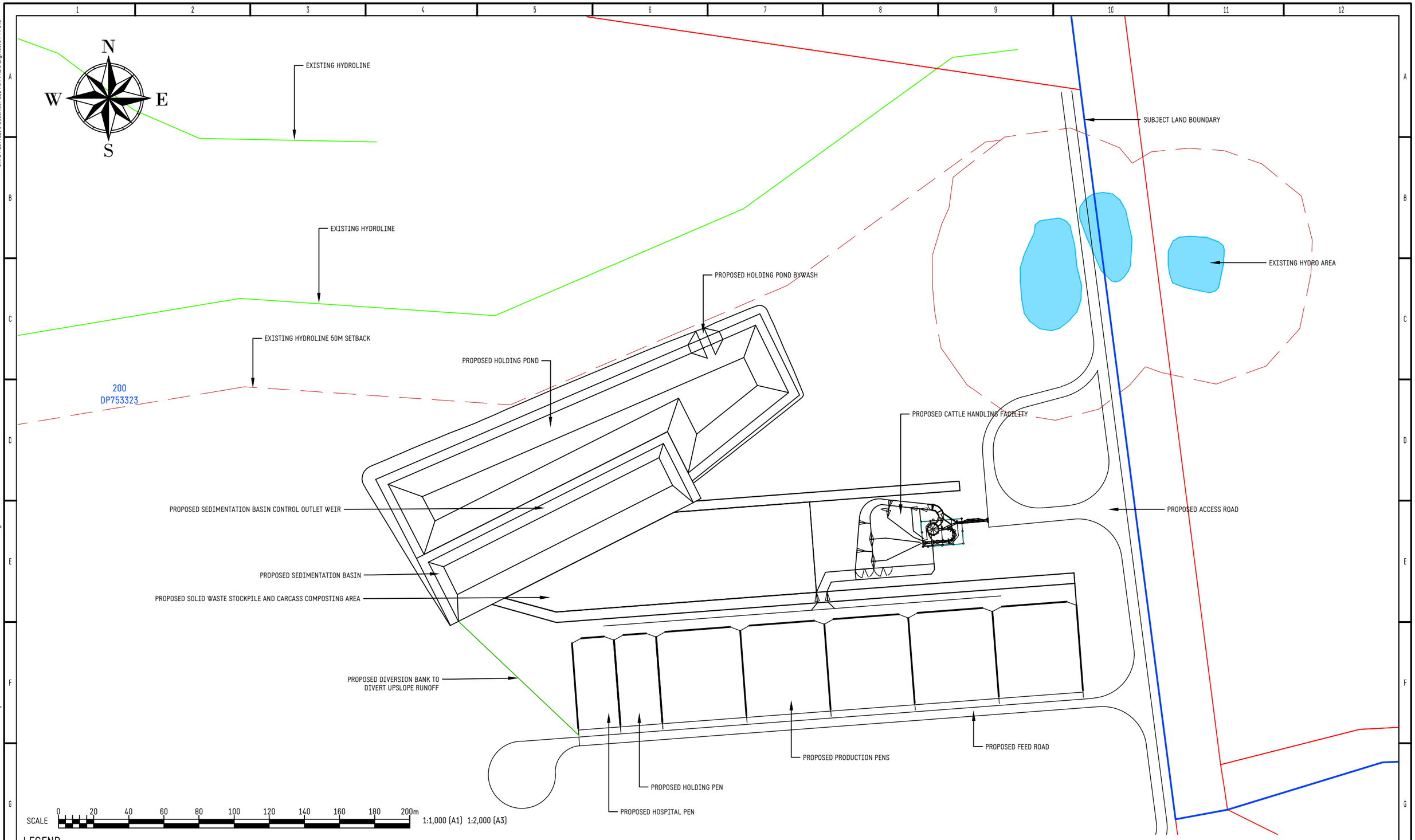

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STATEMENT OF ENVIRONMENTAL EFFECTS
PROPOSED DEVELOPMENT COMPLEX SITE - HYDROLINE OVERLAY

REPORT REFERENCE: FIGURE 25
SUPPLIED DRAWING NUMBER:
A3
DRAWING NUMBER: G4-116-00-25
REV.: B

5.5.3 Flooding

The climate and topography of the region results in some degree of flooding in all streams during heavy or prolonged rain events. Bank overflows are rare however in the upper reaches of the catchment.

5.5.3.1 Riverine flooding

The subject land does not contain a major river and is not located in a low lying area.

A flood planning overlay of the subject land from the NSW Planning ePlanning Spatial Viewer is provided in Figure 26.

The flood planning spatial dataset identifies the land where development implications exist due to the risk of flood as designated by the relevant NSW environmental planning instrument (EPI). The specific EPI which defines the planning requirement is described in the dataset. This shows that the subject land is not subject to inundation. Since 2021, the Glen Innes Severn Local Council is responsible for accurate flood mapping as it pertains to their local area. There are no flood planning overlays associated with the Gunnedah Local Environment Plan 2012.

Consequently, the proposed development shall not be sited within a 1% AEP flood level. The proposed development complex has been sited on elevated land rising away from drainage lines plains and shall not affect or be subject to inundation during flood events as shown in Figure 26.

Consequently, the proposed development shall not increase the potential for flood damage on-site or to other property and the risk to life, property, community, economic activity and the environment during flood events remains at the same level as that exists pre-development.

5.5.3.2 Local catchment

The subject land does not contain several drainage catchment areas directing rainfall runoff to waterways. A hydroline overlay of the subject land is shown in Figure 24.

Due to the rainfall and topography of the area, local catchment flooding from rainfall over the local catchment draining to drainage infrastructure (e.g. bridges, culverts, causeways etc) in isolation of regional flooding behaviour is rare.

Figure 25 shows that there are no stream order 2 or higher waterways within the vicinity of the proposed development complex.

There is no defined stormwater drainage infrastructure due to the rural setting and undeveloped nature of the site.

Impacts associated with the proposed development will include a reduction in the catchment area draining to receiving environment due to capture of runoff from the controlled drainage areas. This reduction in catchment area will have a negligible impact on the volume and peak of stormwater runoff from the subject land. The point of discharge of catchment flows shall remain the same as pre-development.

The proposed development complex shall be developed in one stage and is shown in Figure 7.

Further, the infrastructure of the proposed development has been sited and designed to:

- minimise concentration or restriction of local catchment flows; and
- avoid diversion of flow to adjoining landholders.

Consequently, the proposed development shall have no adverse impacts to stormwater drainage on the subject land.

Figure 26 – Subject land – Flood overlay

5.6 Biodiversity

5.6.1 Native vegetation

Native vegetation provides many benefits, including controlling erosion and salinity, maintaining water quality, providing habitat, supporting agricultural productivity, and acting as carbon sinks absorbing greenhouse gases. Conversely, clearing of native vegetation contributes to a decrease in native species, land degradation, increased salinity, and the disruption of many ecosystems.

Native vegetation is defined in Part 5A, Division 1, clause 60B of the *Local Land services Act 2013* as:

1) any of the following types of plants native to New South Wales-
- *a) trees (including any sapling or shrub or any scrub),*
- *b) understorey plants,*
- *c) groundcover (being any type of herbaceous vegetation),*
- *d) plants occurring in a wetland.*

2) A plant is native to New South Wales if it was established in New South Wales before European settlement.

3) native vegetation extends to a plant that is dead or that is not native to New South Wales if-
- *a) the plant is situated on land that is shown on the native vegetation regulatory map as category 2-vulnerable regulated land, and*
- *b) it would be native vegetation for the purposes of this Part if it were native to New South Wales.*

4) native vegetation does not extend to marine vegetation (being mangroves, seagrasses or any other species of plant that at any time in its life cycle must inhabit water other than fresh water).

The clearing of native vegetation in NSW is regulated by both Australian (*Environment Protection and Biodiversity Conservation Act 1999*) and New South Wales legislation. The *Local Land Services Act 2013* and the *Biodiversity Conservation Act 2016* and other associated regulations, policies and codes regulate clearing of native vegetation in New South Wales.

The land that is regulated for land management (native vegetation) activities in New South Wales is shown on the Native Vegetation Regulatory Map. The transitional Native Vegetation Regulatory Map was prepared by the Department of Planning, Industry and Environment under Part 5A of the amended Local Land Services Act 2013 and supporting regulation. The various categories of land are outlined in Table 33. The transitional NVR Map currently displays Category 2 – vulnerable regulated land, Category 2– sensitive regulated land and land that is excluded from the LLS Act.

Table 33 – NVR Map Categories

Category	Definition
Category 1 – exempt land	is land where native vegetation clearing is allowed without approval from Local Land Services.
Category 2 – regulated land	is land where authorisation may be required from Local Land Services for native vegetation clearing. This may include clearing under the Land Management (Native Vegetation) Code 2018.
Category 2 – sensitive regulated land	is land that has been designated as environmentally sensitive. Clearing under the Land Management (Native Vegetation) Code 2018 is not permitted in these areas, although there is a limited list of allowable clearing activities available
Category 2 – vulnerable regulated land	is land designated as steep or highly erodible lands, protected riparian land or special category land. Use of the Land Management (Native Vegetation) Code 2018 and allowable clearing activities are restricted in these areas.
Excluded land	refers to land outside of the land management framework. Other clearing controls may exist in these areas.

The transitional arrangements remain in place until a comprehensive NVR Map with all the land categories is published by the Department of Planning, Industry and Environment. The categorisation of Category 1 and Category 2 – regulated land needs to be determined in accordance with section 60F of the LLS Act during the transitional period.

A transitional NVR map of the subject land was obtained from the NVR Map Viewer and is shown in Figure 27. Figure 27 shows that there is no Category 2 – vulnerable regulated land mapped on the subject land. Figure 27 shows that there is no Category 2– sensitive regulated land or land that is excluded from the LLS Act within the subject land. Figure 27 shows that the closest mapped Category 2 – vulnerable regulated land to the subject land is mapped along Cam Creek and Rangers Valley Dam on the adjoining land over1km away.

While this map does not currently include mapping of Category 1 Land, Figure 27 confirms that the proposed development site and the surrounding land are not currently mapped as Category 2 Land.

NSW GOVERNMENT

Transitional native vegetation regulatory map

Legend

- Cadastre
- Local Land Services Regions
- Local Government Area
- Werriwa & Monaro CEEC Advisory Layer
- Land excluded from LLS Act

Transitional native vegetation regulatory map

- steep or highly erodible land, protected riparian land or special category land (category 2-vulnerable regulated land)
- category 2-sensitive regulated land
- category 2-sensitive regulated land and steep or highly erodible land, protected riparian land or special category land (category 2-vulnerable regulated land)

X - PROPOSED DEVELOPMENT COMPLEX SITE

N

0 0.56 1.1 2.24 kilometres

If you consider there could be an error on the transitional NVR map please contact us at: map.review@environment.nsw.gov.au

Map extract date: 08-Nov-2024

FIGURE 27

The categorisation of Category 1 and Category 2 land on the subject land was undertaken through the assessment of historical disturbance, current land use, regional context, native vegetation extent and included a desktop analysis and visual assessment. The methodology followed is presented in the following sections.

5.6.1.1 Disturbance area

The total area of land to be disturbed by the proposed development is about 5.15 ha. The disturbance area is within the subject land boundary as shown on Figure 4.

5.6.1.2 Disturbance history

The subject land has a history of past disturbance (clearing) from land-uses associated with rural settlement including ringbarking, sheep production (wool and meat) and dryland cropping and infrastructure associated with those land uses.

The primary land use types within the subject land include pastoral activities associated with sheep (wool and meat) production, beef production and dryland cropping activities. The characteristic of the subject land is open grassy woodland some of which has been cleared. There are some areas of denser woodland remaining on areas less suitable for agricultural pursuits.

The proposed development shall be established on land which has been previously used for pastoral activities and infrastructure and is currently grazed.

The proposed development complex area contained several mature trees and understorey species. Trees present consisted of Fuzzy Box (*Eucalyptus conica*), New England Peppermint (*E. nova-anglica*) and Buloke (*Allocasuarina leuhmanii*). No midstorey species are present. Common understorey species within the treeless pastureland included native species being Couch (*Cynodon dactylon*), Jersey Cudweed (*Psuedognaphalium luteo-album*), Native Geranium (*Geranium solanderi*), and Swamp Dock (*Rumex brownii*) and exotic species including African Lovegrass (*Eragrostis curvula*); Prairie Grass (*Bromus catharticus*), Common Peppercress (*Lepidium africanum*), Wire Weed (*Polygonum* sp.), Purpletop (*Verbena bonariensis*) and Prickly Lettuce (*Lactuca serriola*).

5.6.1.3 Regional context

The subject land is situated within the Northern Tablelands Local Land Services region and Glen Innes Severn Council. The Glen Innes Severn Council local government area's natural environment consists of grassy woodlands, cleared cropping land, riparian communities, and wetlands. District and regional conservation areas include the Fladbury Nature Reserve, Torrington State Forest, Bolivia Hill Nature Reserve, Capoompeta National Park and Butterleaf National Park.

Biogeographically, the subject land is in the New England Tableland Bioregion bioregion (Revision of the Interim Biogeographic Regionalisation of Australia (IBRA) and the

Development of Version 5.1)). The bioregion lies between the North Coast and Nandewar bioregions in northeast NSW, extending north just into Queensland. In NSW, the bioregional boundary extends from north of Tenterfield to south of Walcha and includes towns such as Armidale and Guyra, with Inverell just outside the boundary. The bioregion includes parts of the MacIntyre, Clarence, Gwydir, Macleay, Namoi and Manning River catchments.

On a local scale, the subject land is in the northern extent of the New England Tablelands bioregion in a sub-region known as the Deepwater Downs IBRA Subregion. The sub-region forms part of the northern area of the New England Tablelands bioregion.

5.6.1.4 Vegetation communities

Several broadscale vegetation mapping studies have been undertaken across the region including broad scale mapping of the New England Tablelands.

A desktop assessment was undertaken to identify threatened ecological communities listed under the NSW *Threatened Species Conservation Act 1995* (TSC Act) the NSW *National Parks and Wildlife Act 1974* (NPW Act) and the NSW *Fisheries Management Act 1994* (FM Act), in addition to MNES listed under the EPBC Act that may be affected by the proposed development. Biodiversity databases pertaining to the proposed development area and locality (i.e. within 5 km of the proposed development site) were reviewed.

The results of the database searches are summarised below with further detail provided in Appendix I. Table 34 show the results of searches and the status of each vegetation community identified as locally occurring, under the Threatened Species Conservation Act 1995 (TSC) and the Environment Protection and Biodiversity Conservation (EPBC) Act.

Table 34 – Listed Threatened Ecological Communities in the region

Name	Status TSC	Status EPBC
Natural grasslands on basalt and fine- textured alluvial plains of northern New South Wales and southern Queensland	-	Critically Endangered
New England Peppermint (Eucalyptus nova-anglica) Grassy Woodlands	Critically Endangered	Critically Endangered
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Critically Endangered

The distribution of the vegetation communities is controlled largely by soil type and topography.

New England Peppermint Woodland is typically an open forest or woodland that occurs at high elevations on valley flats and depressions that are subject to cold air drainage. Soils are poorly drained loam-clays derived from basalt, fine-grained sedimentary or acid volcanic substrates. The tree layer, when present, is usually 8 to 20m tall and dominated by New England Peppermint (*Eucalyptus nova-anglica*), occasionally in association with other tree species including mountain gum (*E. dalrympleana subsp. heptantha*) and Blakely's red gum (*E. blakelyi*). The shrub layer is either sparse or absent. There is usually a dense ground cover of mixed grasses, herbs and forbs dominated by snow grass (*Poa sieberiana*), common woodruff

(*Asperula conferta*), kangaroo grass (*Themeda australis*), the rush Juncus filicaulis, kidney weed (*Dichondra repens*), Veronica calycina, Carex inversa, bidgee-widgee (*Acaena novae-zelandiae*), Rumex brownii, Acaena ovina, Desmodium varians, native geranium (*Geranium solanderi var. solanderi*), tussock (*Poa labillardierei var. labillardierei*), Cymbonotus lawsonianus, Lespedeza juncea subsp. sericea and Viola betonicifolia.

White Box-Yellow Box-Blakely's Red Gum Woodland is an open grassy woodland characterised by the presence or prior occurrence of White Box (*Eucalyptus albens*), Yellow Box (*Eucalyptus melliodora*) or Blakely's Red Gum (*Eucalyptus blakelyi*). It has a ground layer of native tussock grasses and herbs, and a sparse, scattered shrub layer. In more natural sites, a diversity of native grasses and herbs occurs, including Kangaroo Grass (*Themeda australis*), Poa Tussock (*Poa sieberiana*), Wallaby grasses (*Austrodanthonia spp*.), Common Everlasting (*Chrysocephalum apiculatum*), Scrambled Eggs (*Goodenia pinnatifida*) and Small St John's Wort (*Hypericum gramineum*).

New England Fuzzy Box Grassy Forest is a tall to very tall sclerophyll open forest with a sparse mid-stratum and a mid dense, grassy groundcover. The canopy includes a high cover of Fuzzy Box (*Eucalyptus conica)*, which is often the only tree species present. However it can be associated with Cabbage Gum (*Eucalyptus amplifolia*), Broad-leaved Stringybark (*Eucalyptus caliginosa*), Grey Box (*Eucalyptus moluccana*) or Hillgrove Box (*Eucalyptus retinens*). A very sparse mid-stratum has scattered individuals of Urn Heath (*Melichrus urceolatus*), Fringed Wattle (*Acacia fimbriata*) and Lightwood (*Acacia implexa*). The mid-dense to dense ground layer mainly comprises grasses and forbs with some twiners and hardy ferns. The more prominent species are Mulga Fern (*Cheilanthes sieberi subsp. Sieberi*), austral's Crenes-bill (*Geranium solanderi*), Weeping grass (*Microlaena stipoides*), Kangaroo grass (*Themeda triandra*), Snow Grass (*Poa sieberiana*), *Desmodium varians*, Glycine Pea (*Glycine tabacina*) and Rough Raspwort (*Haloragis heterophylla*).

5.6.1.4.1 Plant Community Types

Plant Community Type vegetation mapping for the Border Rivers Gwydir / Namoi Region was completed in 2016 by the NSW Office of Environment and Heritage (OEH) (NSW Office of Environment and Heritage, 2016) and released as the State Vegetation Type Map: Border Rivers Gwydir / Namoi Region Version 2.0 VIS_ID 4467. This dataset was superseded by the State Vegetation Type Map on 24.06.2022.

The NSW State Vegetation Type Map dataset contains vegetation extent polygons from the mapping of vegetation communities in NSW. Plant community types are identified from satellite imagery, aerial photography and vegetation survey.

The NSW dataset was obtained from The Central Resource for Sharing and Enabling Environmental Data in NSW (SEED) open data portal in ESRI shapefile format. An overlay of the subject land, plant community types, and the proposed development was prepared and is shown in Figure 28.

A large proportion of the native vegetation on arable land has been cleared for agricultural pursuits and the remaining woodland is floristically diverse but fragmented. Most of this

vegetation occurs along drainage depressions, areas less suitable for agricultural pursuits, higher land and along property boundaries.

Three Plant Community Types (PCT's) were recorded within the subject land as shown in Figure 28 and they are described in Table 35. Figure 28 shows that the cleared and cropped areas of the subject land are mapped as not native.

One PCT is mapped over the proposed development complex site. This is PCT 3358 New England Fuzzy Box Grassy Forest. Grassy Woodlands.

The solid waste and effluent utilisation areas shall be located on land that contains no native vegetation having been previously cleared and currently used for cropping. Consequently, no native vegetation will be disturbed as a result of the proposed development.

5.6.1.5 Biodiversity assessment

Dr Tom Pollard, Ecologist of Birdwing Ecological Services, undertook a field assessment of the proposed development complex area on the 31st October 2024. A series of quadrats were undertaken across the proposed development complex area. A copy of the Birdwing Ecological Services report is presented in Appendix I.

Birdwing Ecological Services found that nearly all of the proposed development complex area consists of pastureland, varying in native species composition and cover from areas of nearly complete exotic dominance to mixed native and exotic dominated areas. Trees where present consisted of Fuzzy Box (*Eucalyptus conica*), New England Peppermint (*E. nova-anglica*) and Buloke (*Allocasuarina leuhmanii*).

The best-fit plant community type was determined by Birdwing Ecological Services to be *PCT 3358 New England Fuzzy Box Grassy Forest*. This is not an endangered ecological community (EEC). Treeless areas on the site consist of a heavily disturbed ecosystem with no native overstorey (i.e. derived ecosystem), which is a mix of native and exotic cover.

Birdwing Ecological Services found that the proposal would potentially remove 0.79 ha of native vegetation. As the area of native vegetation removal is less than 1 ha, the area clearing threshold is not exceeded and a BDAR is not required.

Birdwing Ecological Services found no threatened flora species in the traverse of the site, and it was determined that no endangered ecological communities occur at the site. Furthermore, considering that the proposal will primarily remove highly disturbed pastureland, with only a few mature eucalypt trees requiring removal, the likelihood that the proposal would result in a significant impact on any threatened fauna species is very low. Therefore, the NSW BOS is not triggered for the proposal.

Table 35 – Subject land – Plant Community Types

PCT Code	PCT Name	Description	Class
0	Non-native		
3344	New England Ribbon Gum Grassy Forest Grassy Woodlands	A tall sclerophyll open forest with scattered, soft-leaved shrubs and a mid-dense to dense, grassy groundcover, widespread on undulating terrain on the New England Tableland from Niangala to Bolivia Hill. The canopy of this PCT includes a diverse suite of trees, with *Eucalyptus viminalis* commonly present. The remaining eucalypts typically have a frequency of 30% or less however at least one of them will usually be present at a site. These include *Eucalyptus dalrympleana*, *Angophora floribunda*, *Eucalyptus melliodora*, *Eucalyptus nova-anglica*, *Eucalyptus blakelyi* and *Eucalyptus caliginosa*. The shrub layer is very sparse and commonly includes the scrambling Rubus parvifolius, rarely accompanied by the low-growing shrubs *Pimelea curviflora* and *Lespedeza juncea* subsp. sericea. The mid-dense to dense ground layer is mainly comprised of grasses and forbs with some twiners, almost always including Poa sieberiana and very frequently *Desmodium varians*, *Geranium solanderi*, *Themeda triandra*, *Asperula conferta*, *Hydrocotyle laxiflora* and *Sorghum leiocladum*. This PCT primarily occurs in small, often disturbed patches in an agricultural landscape, often on metasediments however also granite, acid volcanics and basalt substrates. It typically occurs above 930 metres asl in cold, moist environments however is known to occur at lower elevations of around 800 metres. This PCT has a weak floristic relationship to PCT 3339 which occurs nearby in colder areas on basalt, however differs in that Eucalyptus pauciflora is common, whereas in PCT 3344 it only occurs rarely.	Tableland Clay Grassy Woodlands
3358	New England Fuzzy Box Grassy Forest.	A tall or very tall open forest or woodland with a very sparse mid-stratum and a grassy, forb-rich ground cover found on fertile soils of the north-eastern New England Tableland. It is characterised by combinations of box and red gum eucalypts typically occurring as remnants within extensive undulating agricultural landscapes. *Eucalyptus conica* is very frequently present among the canopy, commonly with one of the red gum species Eucalyptus amplifolia or *Eucalyptus blakelyi*. Other box eucalypts commonly include *Eucalyptus melliodora* or *Eucalyptus moluccana* and rarely *Eucalyptus bridgesiana*. The mid-stratum is almost always very sparse or absent with occasional	New England Grassy Woodlands

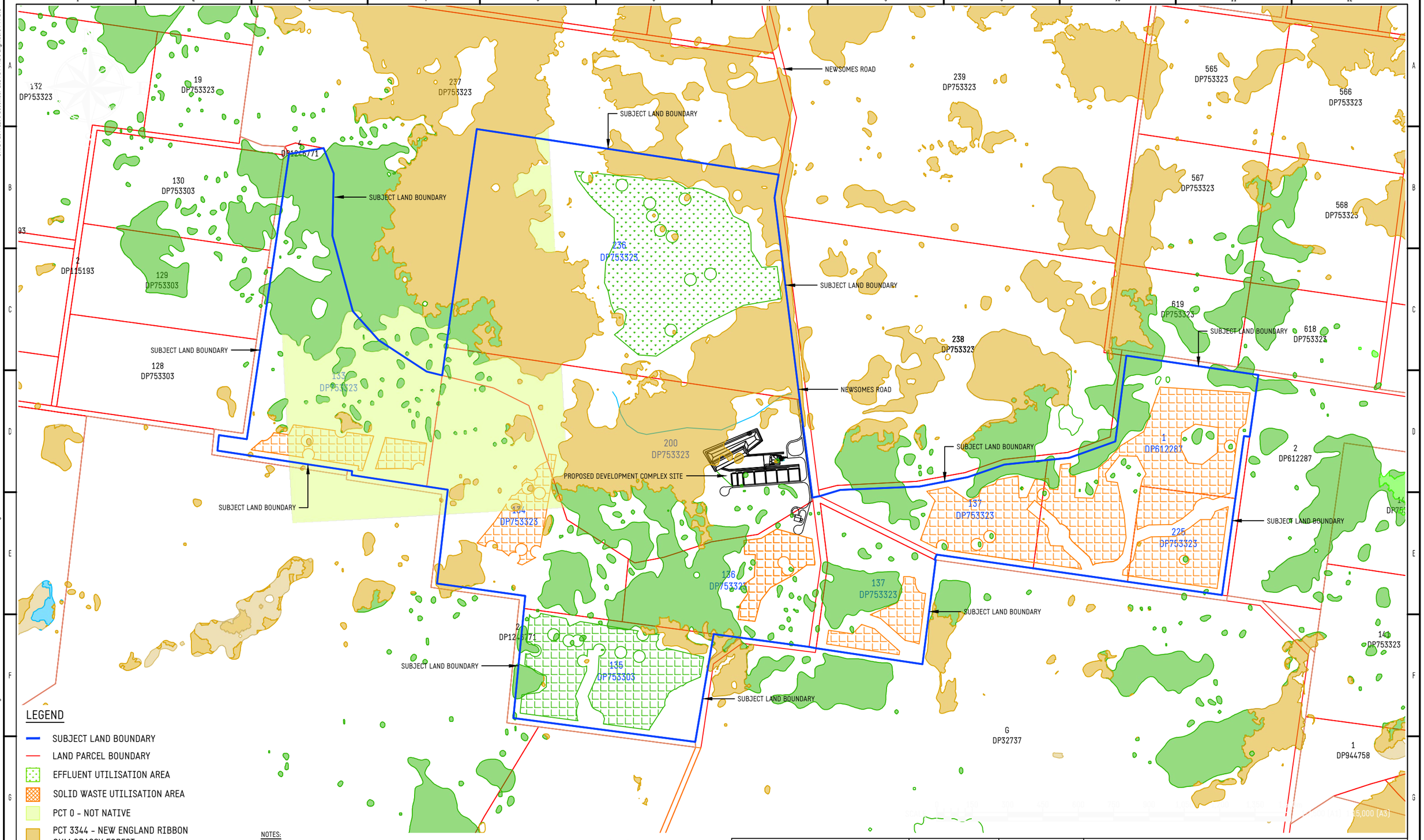
		isolated small trees including *Allocasuarina luehmannii* or *Acacia implexa*, with lower shrubs commonly including *Lissanthe strigosa*. The ground layer is distinctively grassy and very frequently a continuous cover that includes *Microlaena stipoides*, *Themeda triandra*, *Cymbopogon refractus*, *Dichelachne micrantha*, *Poa sieberiana*, *Aristida ramosa*, *Sorghum leiocladum* and *Bothriochloa macra*. Forbs and climbers are also very frequent and may include *Calotis cuneifolia*, *Geranium solanderi*, *Haloragis heterophylla*, *Glycine tabacina* and *Desmodium varians*. Graminoids, including *Dianella longifolia*, and the small fern Cheilanthes sieberi subsp. sieberi are also common. This PCT is widespread in the Tenterfield district where it extends south from the Queensland border to north of Glen Innes on granites and igneous lithologies. The distribution appears to be interrupted until the Wollomombi area where it occupies similar environmental gradients to the Tenterfield area but on granodiorites, siltstone and metamorphic geologies. This PCT grades into PCT 3344 on the central New England Tableland. It shares many ground cover species but almost always has a high cover of *Poa sieberiana* and is frequently distinguished by the tall cool-climate gums *Eucalyptus viminalis*, *Eucalyptus dalrympleana* or *Eucalyptus pauciflora* rather than *Eucalyptus conica*.	
3722	Western New England Box-Tumbledown Gum Grassy Forest	A tall sclerophyll open forest with a mid-stratum of dry and soft-leaved species and patchy, grassy ground layer that occurs on mid to lower slopes of the hills from Nundle to north of the Torrington plateau on the western New England Tableland and the North-west Slopes of NSW. Collectively, red gums and box eucalypts are both commonly present however the primary characteristic of the canopy is that no species is clearly dominant and that all trees known from this PCT are individually occasional to rare. The red gums are represented by *Eucalyptus dealbata* and *Eucalyptus blakelyi* and the boxes by *Eucalyptus moluccana*, *Eucalyptus albens* and *Eucalyptus melliodora*. Other species comprising the canopy are Angophora floribunda, stringybarks (*Eucalyptus macrorhyncha, Eucalyptus laevopinea) and ironbarks (Eucalyptus sideroxylon, Eucalyptus caleyi*). The sparse mid-stratum is layered with the small trees	Northern Tableland Dry Sclerophyll Forests

almost always featuring Acacia species, usually Acacia implexa or *Acacia neriifolia*, commonly with scattered *Notelaea microcarpa*.

Smaller shrubs in the mid-stratum almost always include *Hibbertia obtusifolia*, very frequently *Melichrus urceolatus* with *Olearia elliptica* subsp. elliptica and *Cassinia laevis* both commonly occurring. The sparse to mid-dense ground layer is mainly comprised of grasses, forbs, twiners, graminoids and hardy ferns.

Cymbopogon refractus is almost always present with Cheilanthes sieberi subsp. sieberi, *Aristida ramosa*, *Desmodium varians*, *Dichelachne micrantha*, *Oxytes brachypoda*, *Lomandra multiflora* subsp. multiflora and Dichondra repens all very frequently occurring. It occurs on a variety of substrates in a warm, dry environment with a mean annual rainfall typically below 800 mm.

It is related floristically to PCT 3363 which occurs in similar environments, however its canopy and mid-stratum differs in that *Eucalyptus blakelyi* is very frequent, Acacias are occasional and *Notelaea microcarpa* and *Olearia elliptica* subsp. elliptica are both rare.



LEGEND

- SUBJECT LAND BOUNDARY
- LAND PARCEL BOUNDARY
- EFFLUENT UTILISATION AREA
- SOLID WASTE UTILISATION AREA
- PCT 0 - NOT NATIVE
- PCT 3344 - NEW ENGLAND RIBBON GUM GRASSY FOREST
- PCT 3351 - ARMIDALE CREEKFLAT SNOW GUM WOODLAND-SCRUB
- PCT 3358 - NEW ENGLAND FUZZY BOX GRASSY FOREST
- PCT 3507 - TENTERFIELD PLATEAU STRINGYBARK SHELTERED FOREST
- PCT 3722 - WESTERN NEW ENGLAND BOX-TUMBLEDOWN GUM GRASSY FOREST
- PCT 3944 - NEW ENGLAND TABLELAND CAREX FANS

NOTES:

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3. PLANT COMMUNITY TYPE DATA BASED ON STATE VEGETATION TYPE MAP. THIS DATASET WAS DEVELOPED AS PART OF THE OEH STATE VEGETATION MAP TO PROVIDE GOVERNMENT AND COMMUNITY WITH REGIONAL-SCALE INFORMATION ABOUT NATIVE VEGETATION.
4. INFORMATION MAY HAVE BEEN CAPTURED AT DIFFERENT ACCURACIES AND SCALES. IMAGERY OBTAINED FROM NSW DEPARTMENT OF LANDS.
5. HORIZONTAL DATUM - MGA2020 ZONE 56.

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REV.	DATE	REVISION DESCRIPTION	DRAWN	CHECK	APPROVED
A	24/11/24	DRAFT ISSUE TO CLIENT	RJD	RJD	RJD
B	06/12/24	FINAL ISSUE FOR LODGEMENT TO GLEN INNES SEVERN COUNCIL	RJD	RJD	RJD

SCALE	1:15,000 (A3)
DRAWN	RJD
DATE	06/12/2024
CHECKED	RJD
DATE	06/12/2024
APPROVED	RJD
DATE	06/12/2024

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CLIENT: NARRIE HOLDINGS PTY LTD ATF NEWSOME FAMILY TRUST
PROJECT: PROPOSED 999 HEAD BEEF CATTLE FEEDLOT
TITLE: DEVELOPMENT APPLICATION FOR INTENSIVE LIVESTOCK AGRICULTURE
STATEMENT OF ENVIRONMENTAL EFFECTS
SUBJECT LAND - PLANT COMMUNITY TYPE OVERLAY

REPORT REFERENCE	SUPPLIED DRAWING NUMBER		DRAWING NUMBER	REV.
FIGURE 28		A3	G4-116-00-28	B

5.6.2 Land use

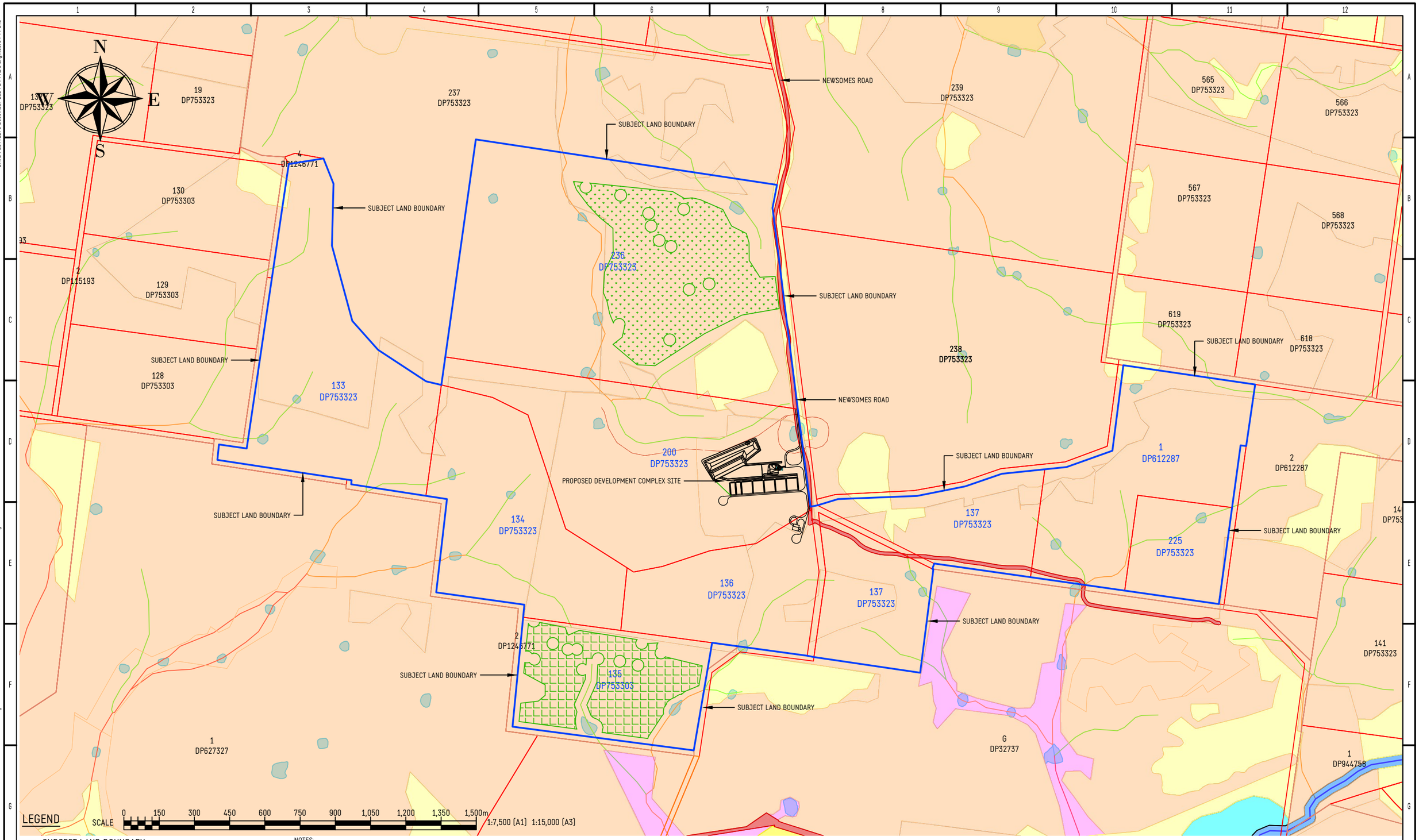
The 2017 Landuse dataset captures how the landscape in NSW is being used for food production, forestry, nature conservation, infrastructure and urban development.

The 2017 Landuse map for the subject land was obtained from SEED open data portal in ESRI shapefile format. An overlay of the subject land, 2017 Landuse map, and the proposed development was prepared and is shown in Figure 29.

The following land uses are mapped on the subject land:

- 2.1.0 Grazing native vegetation;
- 3.2.0 Grazing modified pastures; and
- 5.7.0 Transport and Communication.

The proposed development site is mapped as 3.2.0 Grazing native vegetation as shown on Figure 29. Grazing modified pastures is consistent with Category 1 Land.



- SUBJECT LAND BOUNDARY
- LAND PARCEL BOUNDARY
- 1.3.0 OTHER MINIMAL USE
- 2.1.0 GRAZING NATIVE VEGETATION
- 3.2.0 GRAZING MODIFIED PASTURES
- 4.3.0 IRRIGATED CROPPING
- 5.7.0 TRANSPORT AND COMMUNICATION
- 6.2.0 RESERVOIR DAM
- STREAM ORDER 1
- STREAM ORDER 2
- STREAM ORDER 3
- STREAM ORDER 4
- STREAM ORDER 5
- STREAM ORDER 6

NOTES:
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SCALE	1:15,000 (A3)
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DATE	06/12/2024
CHECKED	RJD
DATE	06/12/2024
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DATE	06/12/2024

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CLIENT: NARRIE HOLDINGS PTY LTD ATF NEWSOME FAMILY TRUST
PROJECT: PROPOSED 999 HEAD BEEF CATTLE FEEDLOT
TITLE: DEVELOPMENT APPLICATION FOR INTENSIVE LIVESTOCK AGRICULTURE
STATEMENT OF ENVIRONMENTAL EFFECTS
SUBJECT LAND - LAND USE OVERLAY

REPORT REFERENCE: FIGURE 29
SUPPLIED DRAWING NUMBER:
A3
DRAWING NUMBER: G4-116-00-29
REV.: B

5.6.3 Biodiversity values map

The Biodiversity Values Map and Threshold (BMAT) tool was used to obtain a Biodiversity Values overlay of the subject land as a guide to determine if the Biodiversity Offsets Scheme Threshold is exceeded. The Biodiversity Values Map overlay of the subject land is shown in Figure 30. Figure 31 is a riparian lands and watercourses map of the subject land provided by Glen Innes Severn Council.

There are no Biodiversity Values mapped on the subject land as shown in Figure 30 and Figure 31.

5.6.4 Woody Vegetation Extent

The NSW Woody Vegetation Extent map layer was obtained from SEED open data portal in ESRI shapefile format. An overlay of the subject land, NSW Woody Vegetation Extent map layer and the proposed development was prepared and is shown in Figure 32.

The NSW Woody Vegetation Extent map layer confirms no woody vegetation is present in the proposed development site. The entire proposed development site and the majority of subject land are mapped as a value of 100 meaning the site is mapped as ‘not woody’ as shown on Figure 32.

Figure 30 – Subject land – Biodiversity land use

Glen Innes Severn Local Environmental Plan 2012

Riparian Lands and Watercourses Map - Sheet WCL_002

Watercourse

Watercourse

Cadastre

Cadastre 08/06/2022 © Spatial Services

X - PROPOSED DEVELOPMENT COMPLEX SITE

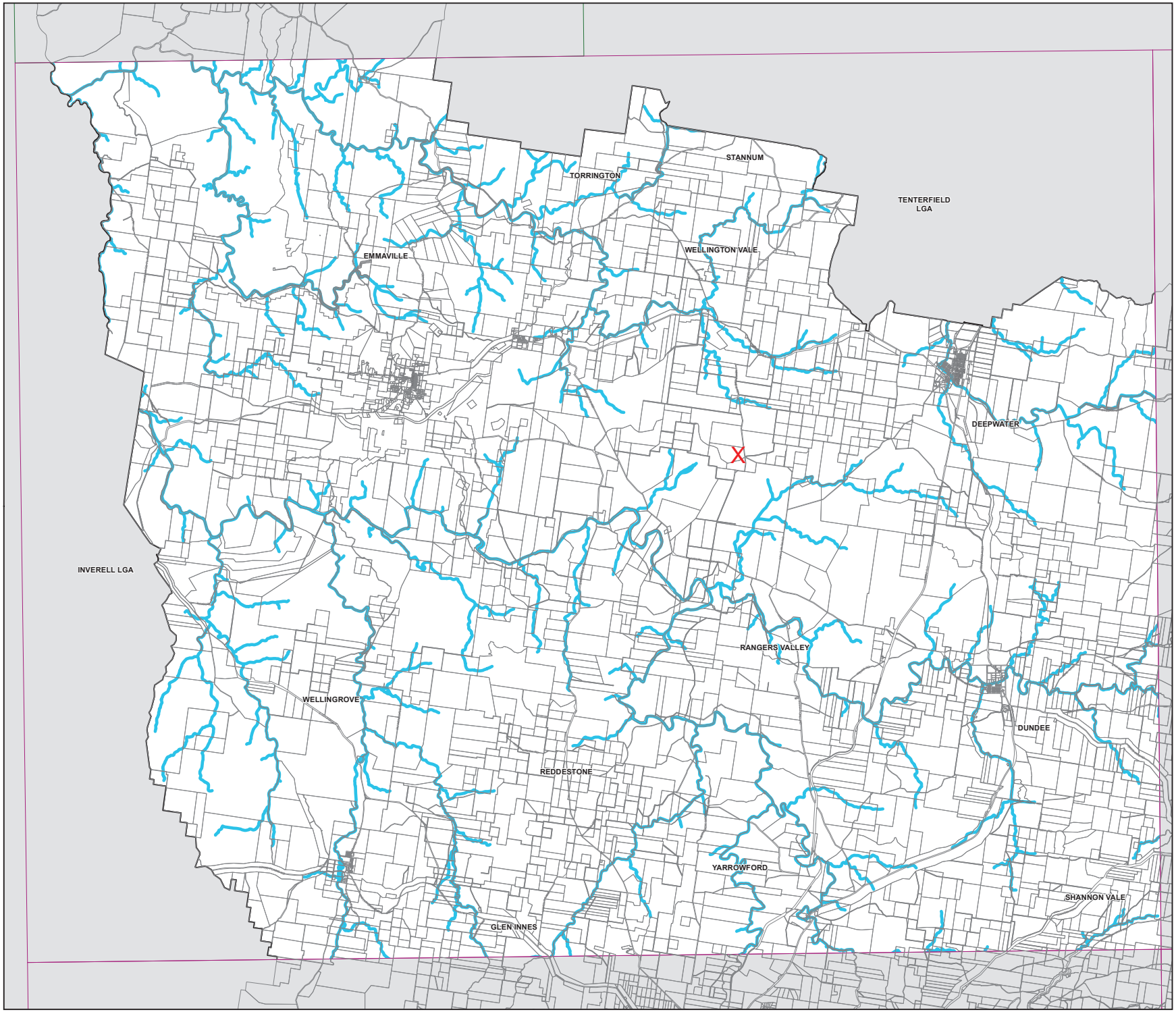
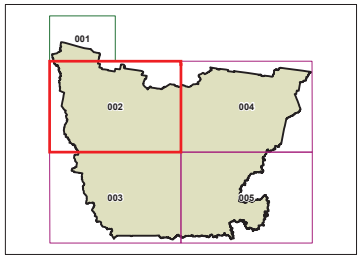


FIGURE 31



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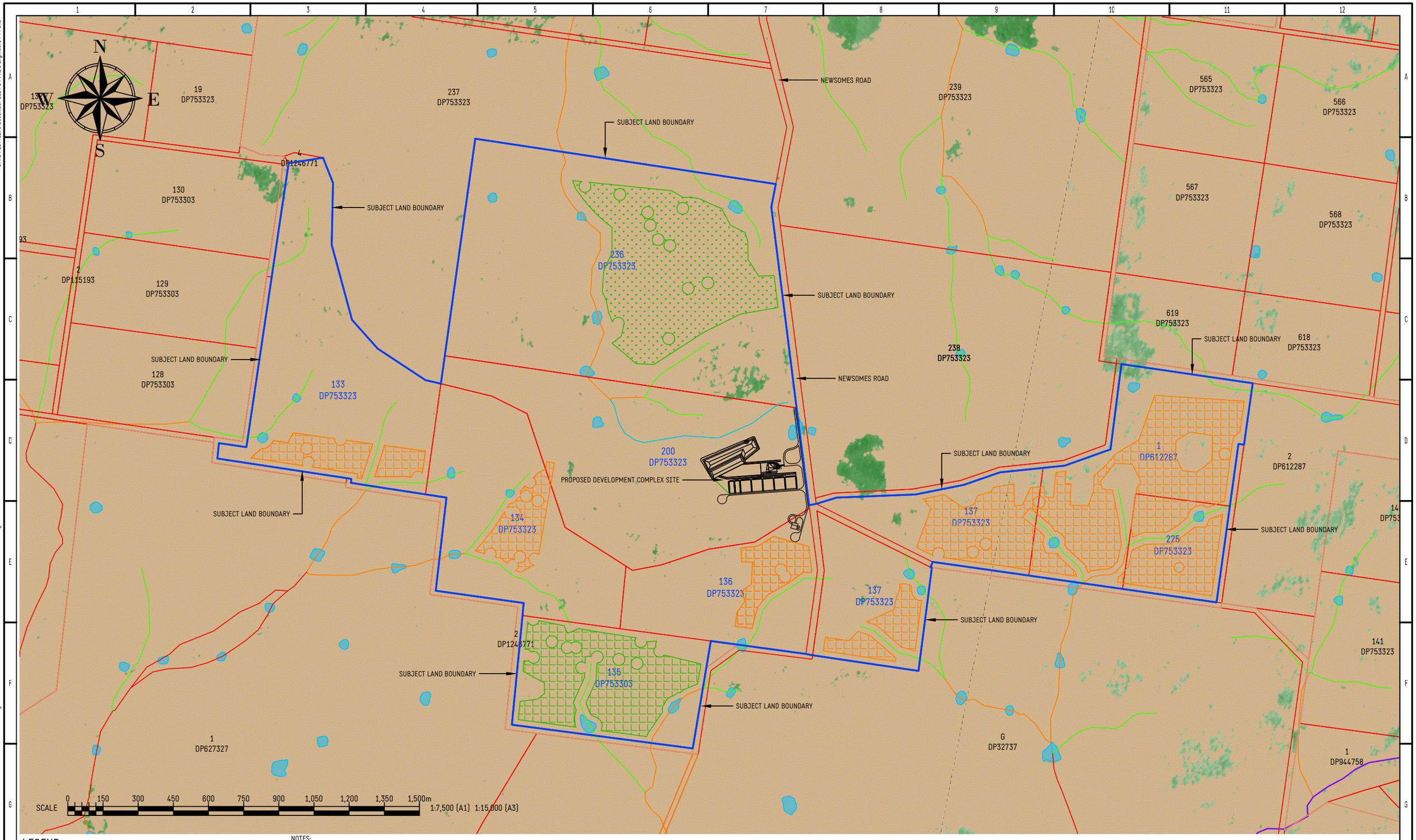
Kilometres

Projection: GDA 1994 MGA Zone 56

Scale: 1:160,000 @ A3

Map Identification Number: 3010_COM_WCL_002_160_20220608



LEGEND

- SUBJECT LAND BOUNDARY
- LAND PARCEL BOUNDARY
- EFFLUENT UTILISATION AREA
- SOLID WASTE UTILISATION AREA
- WOODY VEGETATION
- NON WOODY VEGETATION
- STREAM ORDER 1
- STREAM ORDER 2
- STREAM ORDER 3
- STREAM ORDER 4
- STREAM ORDER 5
- STREAM ORDER 6

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3. NSW WOODY VEGETATION EXTENT BASED ON NSW WOODY VEGETATION EXTENT 2011 DATA PROVIDED BY NSW DEPARTMENT OF PLANNING, INDUSTRY AND ENVIRONMENT VIA SEED (THE CENTRAL RESOURCE FOR SHARING AND ENABLING ENVIRONMENTAL DATA) PORTAL.
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5. HORIZONTAL DATUM - GDA2020 ZONE 56.

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STATEMENT OF ENVIRONMENTAL EFFECTS
SUBJECT LAND - NSW WOODY VEGETATION EXTENT OVERLAY

REPORT REFERENCE	SUPPLIED DRAWING NUMBER		DRAWING NUMBER	REV.
FIGURE 32		A3	G4-116-00-32	B

5.6.5 Wildlife corridors

Historical disturbance and surrounding agricultural development have resulted in isolated patches and strips of native open woodland vegetation on land along drainage lines and areas less suited to cropping. As a result, the vegetation within the subject land does provide continuous connectivity along drainage lines and stepping stone corridors across the isolated patches for a range of highly mobile species, particularly birds.

The land assessment has demonstrated that the proposed development site is Category 1 Land from database and field assessment. Consequently, no further assessment is recommended for the proposed development.

5.6.6 Koala Habitat

Koala habitat conservation is part of the NSW Koala Strategy. The Koala Habitat Information Base offers the best available statewide spatial data on koala habitat, likelihood, koala preferred trees and koala sightings for New South Wales.

The Koala Habitat Information Base (KHIB) map layer was obtained from SEED open data portal in ESRI shapefile format. An overlay of the subject land, Koala Habitat Information Base map layer and the proposed development was prepared and is shown in Figure 33.

The KHIB map layer shows that the woody vegetation present in and adjacent to the proposed development complex site is very low Koala Habitat. Photographs of the proposed development site (Photograph 19) confirm that there are no designated koala food trees or tree species that a koala is known to use for shelter present on the site as outlined below.

- Forest red gum (*Eucalyptus tereticornis),*
- Tallowwood (*Eucalyptus microcorys);*
- Grey Gum (*Eucalyptus punctata);*
- Ribbon or manna gum (*Eucalyptus viminalis);*
- River red gum *Eucalyptus camaldulensis);*
- Broad leaved scribbly gum (*Eucalyptus haemastoma);*
- Scribbly gum (*Eucalyptus signata) ;*
- White box (*Eucalyptus albens);*
- Bimble box or poplar box (*Eucalyptus populnea);*
- Swamp mahogany (*Eucalyptus robusta)*.

The KHIB shows that the proposed development site has no likely koala habitat, no koala preferred trees and no koala sightings. Consequently, the direct impact to Koalas is considered to be low or absent as no native woody vegetation is not being impacted and no koala trees are proposed to be removed by the proposed development.

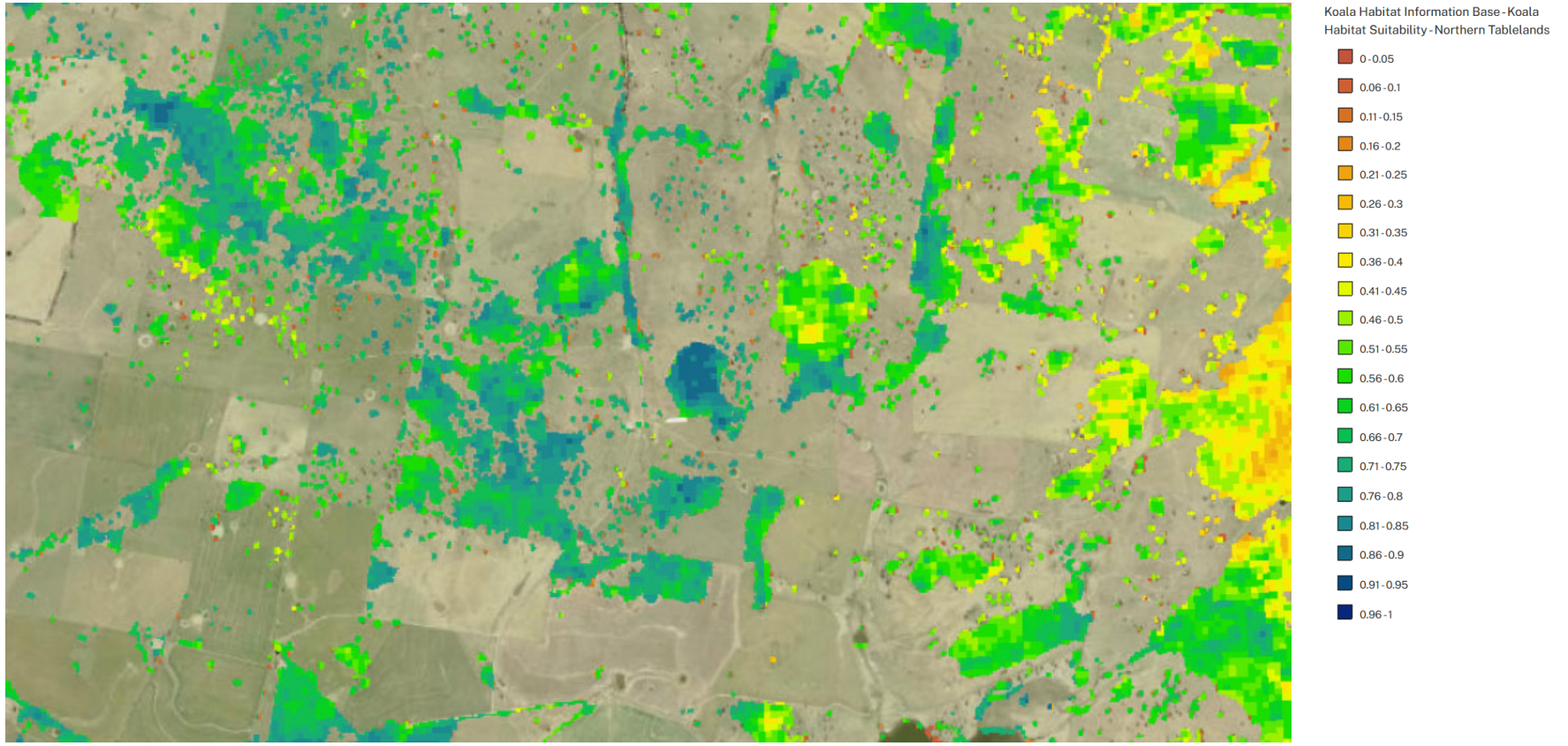

Figure 33 – Subject land – Koala habitat overlay

5.6.7 Conclusion

The proposed development site is mapped on the NSW Landuse 2017 map as *Grazing native pasture*. It is not mapped as Category 2 Land on the Native Vegetation Regulatory Map and is also not mapped on the Biodiversity Values Map. All other database searches suggest the proposed development site is consistent with the definition of Category 1 Land.

The Category 1 Land assessment confirms the land on which the development is proposed had land use and biodiversity values consistent with the requirements for Category 1 Land as described in the *Local Land Services Act 2013.*

Land classified as Category 1 Land requires no further pre-development biodiversity assessment.

A biodiversity assessment concluded that nearly all of the proposed development complex area consists of pastureland, varying in native species composition and cover from areas of nearly complete exotic dominance to mixed native and exotic dominated areas. Further the best-fit plant community type was determined to be *PCT 3358 New England Fuzzy Box Grassy Forest* which is not an endangered ecological community (EEC).

A BDAR is not required as the proposal would potentially remove 0.79 ha of native vegetation which is less than clearing threshold of 1 ha.

No threatened flora species in the traverse of the site, and it was determined that no endangered ecological communities occur at the site and therefore, the NSW BOS is not triggered for the proposal.

5.7 Wetlands

Wetlands are distinctive ecosystems and a critical part of the environment and deliver many ecosystem services such as coastal protection, water and food supply, reducing the impacts of floods, absorb pollutants, improve water quality. They provide habitat for animals and plants and many contain a wide diversity of life.

Broadly, wetlands are areas of land that are wet by surface water or groundwater, or both, for long enough periods that the plants and animals in them are adapted to, and depend on, moist conditions for at least part of their lifecycle. They are neither just land, nor just water and can be both at the same time, or seasonally aquatic, or terrestrial. They include areas that are inundated cyclically, intermittently or permanently with fresh, brackish or saline water, which is generally still or slow moving.

New South Wales has unique and diverse wetlands from seagrass beds, lagoon estuaries and billabongs, to lakes, floodplains, swamps and marshes which are rich in ecological and cultural values and form an integral part of the natural environment of the state.

The responsibility for the protection, conservation and management of wetlands in New South Wales is shared between various government agencies. The Department of Biodiversity, Conservation and Attractions is responsible for managing wetlands under the Ramsar Convention.

The conservation of wetlands is guided by the NSW Wetlands Policy, the Ramsar Convention and state and national programs. The Department of Planning, Industry and Environment is the lead agency for managing most wetlands.

The Department of Planning, Industry and Environment coordinates mapping of New South Wales wetlands. Wetlands within NSW have been mapped digitally at a scale of 1:100,000-250,000 using a combination of classification of spectral classes of Landsat MSS and TM imagery and ancillary wetland information to create information classes of broad wetland groups (floodplain wetlands, freshwater lakes, saline lakes, reservoirs, estuarine wetlands and coastal lagoons and lakes) (Kingsford, et al, 2004). These data are provided in the NSW Wetlands dataset.

The Directory of Important Wetlands in Australia dataset contains wetlands cited in the "A Directory of Important Wetlands in Australia" Third Edition (Environment Australia, 2001), plus various additions for wetlands listed after 2001.

The Ramsar Wetlands of NSW dataset contains the boundaries of wetlands designated under the Ramsar Convention in NSW.

The NSW Wetlands, Directory of Important Wetlands in Australia and Ramsar Wetlands of NSW datasets were obtained from the SEED Open Data portal in ESRI shapefile format. An overlay of the subject land, NSW wetlands, Important Wetlands in Australia, Ramsar Wetlands of NSW and the proposed development was prepared and is shown in Figure 34.

Figure 34 confirms that there are no wetlands mapped on and adjacent to the subject land under the NSW Wetlands mapping.

The closest Ramsar Wetland to the subject land is the Banrock Station wetland complex located 1100 km downstream.

Consequently, the proposed development will not be located within or adjacent to any wetlands.

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DP753323

4
DP1246771

130
DP753303

93

2
DP115193

129
DP753303

128
DP753303

236
DP753323

238
DP753323

133
DP753323

200
DP753323

1
DP612287

2
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134
DP753323

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137
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225
DP753323

2
DP1246771

135
DP753303

1
DP627327

G
DP32737

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DP944758

141
DP753323

NEWSOMES ROAD

SUBJECT LAND BOUNDARY

PROPOSED DEVELOPMENT COMPLEX SITE

SCALE 0 150 300 450 600 750 900 1,050 1,200 1,350 1,500m
1:7,500 (A1) 1:15,000 (A3)

LEGEND

- SUBJECT LAND BOUNDARY
- LAND PARCEL BOUNDARY
- EFFLUENT UTILISATION AREA
- SOLID WASTE UTILISATION AREA
- NSW WETLANDS
- STREAM ORDER 1
- STREAM ORDER 2
- STREAM ORDER 3
- STREAM ORDER 4
- STREAM ORDER 5
- STREAM ORDER 6
- STREAM ORDER 7
- STREAM ORDER 8

NOTES:

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STATEMENT OF ENVIRONMENTAL EFFECTS
SUBJECT LAND - WETLANDS OVERLAY

REPORT REFERENCE	SUPPLIED DRAWING NUMBER		DRAWING NUMBER	REV.
FIGURE 34		A3	G4-116-00-34	B

5.8 Heritage

The protection of New South Wales items of environmental heritage (natural and cultural) is provided for under the *Heritage Act 1977 (NSW) and Environment Protection and Biodiversity Conservation Act 1999 (Cth).*

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places. These are defined as matters of national environmental significance. The EPBC Act defines 'environment' as both natural and cultural environments and therefore includes Aboriginal and historic cultural heritage sites. Under the EPBC Act, nationally significant heritage items are protected through listing on the Commonwealth Heritage List or the National Heritage List.

5.8.1 Aboriginal

The assessment of Aboriginal Cultural Heritage involved identification of heritage places and cultural values in the area of the proposed development, an assessment of the potential impacts to Aboriginal heritage as a result of the proposed development, and development of recommendations to minimise, manage and mitigate these potential impacts. The assessment followed a due diligence process and involved the following:

- An aboriginal site search of the NSW Environment and Heritage Aboriginal Heritage information Management System (AHIMS). The possible existence of previously recorded Aboriginal Cultural Heritage Sites within a wider regional area, surrounding the proposed development were examined to develop an awareness and predictive model of what site types may be within the proposed development site;
- A search of section 2 NSW Heritage Act database – (https://www.hms.heritage.nsw.gov.au/App/Item/SearchHeritageItems?_ga=2.165972984.714120821.1658117920-344545924.1656901875# accessed 3 July 2024)
- Assessment of Landscape – Assess the subject land for the presence of potentially culturally significant landscapes, based primarily on topography, nature and level of disturbance, nature of soils, proximity to water;
- Walkover of the site to assess the potential for Aboriginal cultural heritage significance; and
- Identification and provision of management measures on future Aboriginal cultural heritage issues within the proposed development area.

The following guidelines and documents were used as advisory documents and guidelines for the assessment:

- Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 (DECCW, 2010a);

- Due Diligence Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (DECCW, 2010b);
- Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW (Office of Environment and Heritage (NSW), 2011);
- Code of Practice for the Archaeological Investigation of Aboriginal Objects in New South Wales (DECCW, 2010c); and
- Aboriginal Cultural Heritage: Standards and Guidelines Kit (NSW National Parks and Wildlife Service, 1997).

A search of section 2 of the NSW Heritage Act database returned two records in the Glen Innes Severn Council local government area as shown in Table 37.

Table 36 – State Heritage Inventory – Glen Innes Severn Council – Aboriginal Place Search

Aboriginal Place	Address	Suburb	SHR
Sugarloaf Aboriginal Place (Sacred ceremonial place)	Washpool National Park and Gibraltar Range National Park	Inverell NSW 2360	A001
Waratah Trig Aboriginal Place	Washpool National Park and Gibraltar Range National Park	Moogem NSW 2370	A002

A search of the NSW AHIMS register indicated that there are recorded aboriginal sites on and within 50 m of the subject land. The absence of aboriginal sites recorded on the subject land may reflect the lack of survey on the subject land rather than a lack of aboriginal history on the subject land. A copy of the search results is provided in Appendix H.

The proposed development site does not contain landscape features such as rock outcrops, caves, rock shelters and or rock carvings, estuarine or coastal dunes, sand hills, waterholes and or natural springs, wetlands and/or floodplains that are considered likely to contain Aboriginal objects.

The magnitude and extent of previous disturbance when cleared from grassy woodland to grazing area affects the likelihood of discovering intact heritage deposits, with significant deposits more likely to be found in undisturbed areas.

Remnant woodland within the wider subject land area may contain artefacts; however, these areas will not be disturbed.

It is considered that further Aboriginal heritage assessment of the proposed development site is not required and that an AHIP (Aboriginal Heritage Impact Permit) is not necessary (nor sought) in relation to the establishment of the proposed development.

Step 5 of the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* (DECCW, 2010c) indicates that if the *Code* is followed, and it has been reasonably decided that an AHIP application is not necessary either because Aboriginal objects are not present, or harm to those objects can be avoided, therefore the proponent can proceed with the development of the subject site with caution.

Although the proposed development complex site has previously been extensively cleared and developed, all reasonable and practical measures shall be undertaken to ensure the activity does not harm any Aboriginal heritage.

A precautionary approach shall be applied to the assessment of risk to Aboriginal heritage to ensure that all aspects of potential risk is considered, and appropriate steps are applied to avoid or minimise damage to Aboriginal heritage.

In the unlikelihood that any Aboriginal objects be located during any future works within the proposed development site, then all works immediately cease and contact be made with Heritage NSW (previously the Office of Environment & Heritage (OEH) to seek further advice. Should any Aboriginal objects be located during any site works in the future, then an application for an AHIP (Aboriginal Heritage Impact Permit) should be made to Heritage NSW.

5.8.1.1 Native title

Native title recognises that Aboriginal and Torres Strait Islander people have rights and interests to land and waters according to their traditional law and customs as set out in Australian Law. Native Title is governed by the *Native Title Act 1993* (Commonwealth).

Under the *Native Title Act 1993*, except where native title had been wholly extinguished by the historical grant of freehold, leasehold and other interests, native title exists where Aboriginal people have maintained a traditional connection to their land and waters substantially uninterrupted since sovereignty.

As the subject land is held in freehold title as outlined in section 2.1.1.4 Native Title cannot generally exist over the subject land.

5.8.2 Non-Aboriginal

Under the *Heritage Act 1977*, items of "environmental heritage" include places, buildings, works, relics, moveable objects and precincts identified as significant based on historical, scientific, cultural, social, archaeological, architectural, natural or aesthetic values.

The non-Aboriginal heritage assessment of the proposed development area involved a desktop review of known heritage sites and objects in the proposed development area, an assessment of the potential impacts to non-Aboriginal heritage as a result of the proposed development, and development of recommendations to minimise, manage and mitigate these potential impacts. The assessment involved the following:

- Previously identified heritage items in the proposed development area through a search of heritage registers including:
    - National Heritage List;
    - Commonwealth Heritage List;

  - State Heritage Register (HHIMS); and
  - State Heritage Inventory.

- Site survey to assess the potential for heritage significance and any locally significant heritage sites, historic items of significance.

The subject land and proposed development site are not listed on the National Heritage List. Further, there are no listed historic heritage places owned or controlled by the Australian Government as listed on the Commonwealth Heritage List within 5 km of the subject land as shown on the EPBC Act Protected Matters Report provided in Appendix I.

A search of the Historic Heritage Information Management System (HHIMS) register for post-contact heritage items and places managed by NSW Environment and Heritage was conducted to assess the broader historic heritage environment, including heritage items in the vicinity of the proposed development that could also be affected by the proposed development.

A search of the State Heritage Inventory was undertaken for the Glen Innes Severn Council area. There are no items listed by the heritage council under the NSW Heritage Act or by the Glen Innes Severn Council and state government agencies on the subject land on which the development is proposed.

No items of historic heritage are located within the proposed development site as shown in Table 37 and

Table 38 and evidenced by:

- A search of Schedule 5 Environmental heritage of the Glen Innes Severn Council Local Environment Plan (LEP) 2012. (www.legislation.nsw.gov.au – accessed 3 July 2024); and

Table 37 – Glen Innes Severn Council Local Environmental Plan – Archaeological sites

Item name	Address	Suburb	SHR
Aboriginal cultural site	110 Blacks Road	Glen Innes NSW	A001
Mount Mitchell stone chimney	1674 Mount Mitchell Road (located on the 'Tirrana' block)	Mount Mitchell	A002

Table 38 – Glen Innes Severn Council Local Environmental Plan – Heritage Items

Item name	Address	Suburb	Item No.
Former Bald Nob Hotel	Grafton Road (Gwydir Highway)	Bald Nob	I198
Deepwater Railway Station	Gough Street	Deepwater	I001
Police station and residence	55 Gough Street	Deepwater	I002
Stationmaster's cottage (former)	78 Gough Street	Deepwater	I002
Cemetery	James Street (corner Nant Park Road)	Deepwater	I004
Public school principal's residence	56 Severn Street	Deepwater	I005
Railway gatekeeper's cottage (former)	6 Simpson Street	Deepwater	I006
Convent	13 Simpson Street	Deepwater	I007
St Michael Catholic Church	15 Simpson Street	Deepwater	I008
Residence	19 Simpson Street	Deepwater	I009
Post office (former)	Tenterfield Street	Deepwater	I010
National Bank building (former)	54 Tenterfield Street	Deepwater	I011
Eclipse Theatre	62 Tenterfield Street	Deepwater	I012
School of Arts	72 Tenterfield Street	Deepwater	I013
Residence	81 Tenterfield Street	Deepwater	I014
Deepwater Inn	102 Tenterfield Street	Deepwater	I015
Deepwater Racecourse	6 Torrington Road	Deepwater	I199
Post Office	26 Young Street	Deepwater	I016
Cemetery	New England Highway	Dundee	I017
Devon Villa	90 Rangers Valley Road	Dundee	I018
Dundee Rail Bridge	Severn River	Dundee	I019
Christ Church	Severn River Road	Dundee	I020
Dundee Hall-former Public School	Severn River Road	Dundee	I200
Principal's Residence (former)	Severn River Road	Dundee	I021
St Paul's Church	Glen Innes Road (corner Moore Street)	Emmaville	I023
Court house (former)	39–45 Glen Innes Road	Emmaville	I024
Club Hotel	1 Irby Street	Emmaville	I025
Tattersalls Hotel	85–89 Moore Street	Emmaville	I026
Mining Museum	86 Moore Street	Emmaville	I027
War Memorial Hall	93 Moore Street	Emmaville	I028
Presbytery (former)	19 O'Donnell Street	Emmaville	I029
Convent (former)	22-24 O'Donnell Street	Emmaville	I031
Police residence (former)	23 O'Donnell Street	Emmaville	I030
St Mary's Church	26-28 O'Donnell Street	Emmaville	I032
Post Office	1 Post Office Street	Emmaville	I033
War Memorial	1-3 Post Office Street	Emmaville	I035
Cemetery	314 Rose Valley Road	Emmaville	I034
Ottery Mine	Tent Hill Road	Emmaville	I022
Glen Innes Showground	Bourke Street	Glen Innes	I036
Memorial Gates	Bourke Street (corner West Avenue)—Anzac Park	Glen Innes	I037
The Railway Tavern	80 Bourke Street	Glen Innes	I038
St John's Ambulance Station	104–106 Bourke Street	Glen Innes	I039
House	105 Bourke Street	Glen Innes	I040
Former laundry	119 Bourke Street	Glen Innes	I041
Commercial building – "Glen Innes Examiner"	124 Bourke Street	Glen Innes	I043

Shop and residence	133 Bourke Street	Glen Innes	I042
The Old Mill-stone grist mill	133 Bourke Street	Glen Innes	I044
Former Severn Shire Council Chambers	181 Bourke Street	Glen Innes	I045
Glen Innes Fire Station	202 Bourke Street	Glen Innes	I046
House—"Rosevilla"	276 Bourke Street	Glen Innes	I047
House	75 Church Street	Glen Innes	I048
House	93 Church Street	Glen Innes	I049
House	129 Church Street	Glen Innes	I050
House	141 Church Street	Glen Innes	I051
Chapel Theatre (former Methodist Chapel)	143 Church Street	Glen Innes	I052
Old Power Station	148 Church Street	Glen Innes	I053
Masonic Hall	162 Church Street	Glen Innes	I054
St Joseph's School	163 Church Street	Glen Innes	I058
St Joseph's Sisters of Mercy Convent	163 Church Street	Glen Innes	I057
St Patrick's Chapel	163 Church Street	Glen Innes	I056
St Patrick's Church	163 Church Street	Glen Innes	I055
House	167 Church Street	Glen Innes	I059
Residential flats	168 Church Street	Glen Innes	I061
House	169 Church Street	Glen Innes	I060
Glen Innes Public School	171-179 Church Street	Glen Innes	I063
Glen Innes Public School-assembly hall	171-179 Church Street	Glen Innes	I062
Glen Innes Public School—infants building	171–179 Church Street	Glen Innes	I064
House—"Lochiel"	176 Church Street	Glen Innes	I065
House	182 Church Street	Glen Innes	I066
Glen Innes West Public School	Coronation Avenue	Glen Innes	I067
House—"Rosecroft"	105 Cramsie Crescent	Glen Innes	I068
House—"Uplands"	95 Dibley Road	Glen Innes	I069
Anzac Park	East Avenue	Glen Innes	I070
King Edward VII Park	East Avenue	Glen Innes	I071
King George V Park	East Avenue	Glen Innes	I072
Veness Park	East Avenue	Glen Innes	I073
Glen Innes High School	Edward Street	Glen Innes	I074
Glen Innes Butter Factory	Ferguson Street (corner Park Street)	Glen Innes	I075
Land of the Beardies Museum (former hospital complex)	Ferguson Street (corner West Avenue)	Glen Innes	I076
Cottage	192 Ferguson Street	Glen Innes	I207
Cemetery	Grafton Street	Glen Innes	I077
House—"Balnagowen"	258 Grafton Street	Glen Innes	I078
Court house	Grey Street	Glen Innes	I079
Commercial building—Mackenzie Mall	Grey Street (corner Bourke Street)	Glen Innes	I080
Underground Brick Culvert	Corner of Grey Street and Bourke Street	Glen Innes	I205
Commercial building—Boot Factory	Grey Street (corner Ferguson Street)	Glen Innes	I082
Royal Hotel	Grey Street (corner Ferguson Street)	Glen Innes	I081
Boer War Memorial	Grey Street (corner Meade Street)	Glen Innes	I084
Glen Innes Post and Telegraph Office	Grey Street (corner Meade Street)	Glen Innes	I083
Grey Street Culvert	Grey Street Road Reserve located 1.39 kilometres north of Glen Innes Post Office	Glen Innes	I203

Grey Street Culvert	Grey Street Road Reserve located 1.61 kilometres north of Glen Innes Post Office	Glen Innes	I204
House	62 Grey Street	Glen Innes	I085
Club Hotel	150 Grey Street	Glen Innes	I086
Butcher shop	169–171 Grey Street	Glen Innes	I087
Shops	173–175 Grey Street	Glen Innes	I088
Commercial Building (former Grand Cinema	176 Grey Street	Glen Innes	I089
Shops-'Phoenix Buildings'	186–194 Grey Street	Glen Innes	I090
Shop—"Kwong Sing & Co Emporium"	196–204 Grey Street	Glen Innes	I091
Shop	199 Grey Street	Glen Innes	I092
Commercial building—bank	234 Grey Street	Glen Innes	I093
Commercial building—bank—Former State Bank	245 Grey Street L	Glen Innes	I094
Commercial building—"Hutchison's Buildings"	240 Grey Street	Glen Innes	I095
Shop and residence (former "Paragon Cafe")	246-250 Grey Street	Glen Innes	I096
Bank	251 Grey Street	Glen Innes	I097
Commercial building (former stationers)	254-256 Grey Street	Glen Innes	I102
Commercial building	258-260 Grey Street	Glen Innes	I098
Town Hall	265 Grey Street	Glen Innes	I100
Commercial School of Arts	266 Grey Street	Glen Innes	I099
Commercial Building-bank	278 Grey Street	Glen Innes	I103
Shops	281 Grey Street	Glen Innes	I101
Commercial building-'Supreme building'	282 Grey Street	Glen Innes	I104
Commercial building-bank	289 Grey Street	Glen Innes	I105
Shop	300 Grey Street	Glen Innes	I106
Shop and Office-'Healey's Building'	303 Grey Street	Glen Innes	I107
The Central Building-offices	305 Grey Street	Glen Innes	I108
Shop	306-308 Grey Street	Glen Innes	I109
Victorian shop	311 Grey Street	Glen Innes	I110
Central Hotel	313 Grey Street	Glen Innes	I111
Commercial building (former bank of NSW)	320 Grey Street	Glen Innes	I112
Imperial Hotel	322 Grey Street	Glen Innes	I113
Commercial building-'Milners building'	326 Grey Street	Glen Innes	I114
Commercial building (former Pastures protection Board)	328-332 Grey Street	Glen Innes	I115
Commercial building—"Meyers Bakery Building"	338 Grey Street	Glen Innes	I116
Commercial building	342 Grey Street	Glen Innes	I117
Commercial building	344 Grey Street	Glen Innes	I118
House—"San Karo"	379 Grey Street	Glen Innes	I119
House	393 Grey Street	Glen Innes	I120
Beardy Waters Weir	Gwydir Highway	Glen Innes	I188
House	179 Herbert Street	Glen Innes	I121
House (former Stationmaster's cottage)	Lambeth Street (corner Wentworth Street)	Glen Innes	I122

Glen Innes Railways Station Group	Bounded by Lambeth, Ferguson, Railway and Lang Streets	Glen Innes	I123
House	51 Lambeth Street	Glen Innes	I124
House-"Glenburn"	71 Lambeth Street	Glen Innes	I125
Former "Glen Innes Boxing and Fitness Gymnasium"	99 Lambeth Street	Glen Innes	I126
Shop and house	107 Lambeth Street	Glen Innes	I127
House	109 Lambeth Street	Glen Innes	I128
House	119 Lambeth Street	Glen Innes	I129
House	170 Lambeth Street	Glen Innes	I130
Saleyards	Lang Street	Glen Innes	I131
Memorial Gate	Lang Street (corner East Avenue)—King George Park	Glen Innes	I132
House	133 Lang Street	Glen Innes	I133
House	198 Lang Street	Glen Innes	I134
Christina Cameron Memorial Hall	Macquarie Street (corner Bourke Street)	Glen Innes	I135
House	32 Macquarie Street	Glen Innes	I136
House	56 Macquarie Street	Glen Innes	I137
Uniting Church Manse	70 Macquarie Street	Glen Innes	I138
Church-Cameron Memorial Uniting Church	74 Macquarie Street	Glen Innes	I139
House	84 Macquarie Street	Glen Innes	I140
House	85 Macquarie Street	Glen Innes	I141
House – "Doonee"	90 Macquarie Street	Glen Innes	I142
House	94 Macquarie Street	Glen Innes	I143
House	129 Macquarie Street	Glen Innes	I144
House – "Doonayr"	130 Macquarie Street	Glen Innes	I145
House	137 Macquarie Street	Glen Innes	I147
House	138 Macquarie Street	Glen Innes	I148
Highwood Garden	169 Macquarie Street	Glen Innes	I149
House	31 Manns Lane	Glen Innes	I150
House	31 Meade Street	Glen Innes	I151
Anglican Vicarage	76 Meade Street	Glen Innes	I152
House	85 Meade Street	Glen Innes	I153
Police Station Complex—Station, Residence, Sheriff's Cottage	126 Meade Street	Glen Innes	I154
Commercial building	134 Meade Street	Glen Innes	I146
House—"Dunvegan"	138 Meade Street	Glen Innes	I155
Roman Catholic Presbytery	162 Meade Street	Glen Innes	I156
House	194 Meade Street	Glen Innes	I157
Houses	197, 199 and 201 Meade Street	Glen Innes	I158
House	252 Meade Street	Glen Innes	I159
Hendersons Mill	New England Highway	Glen Innes	I160
House	9971 New England Highway	Glen Innes	I162
House – "Glen Rule"	10004 New England Highway	Glen Innes	I161
House – "Brandon"	Oliver Street	Glen Innes	I163
House (former gatekeepers cottage)	4 Oliver Street	Glen Innes	I164
House	90 Oliver Street	Glen Innes	I165
Mann River Bridge (disused timber bridge)	Red Range Road, 12 kilometres east of the New England Highway	Glen Innes	I206
Lilburn Homestead and outbuildings	663 Red Range Road	Glen Innes	I166

Former brickworks	Thomas Street	Glen Innes	I167
Grandstand	Wentworth Street (King George Park)	Glen Innes	I178
Former school building "Queenswood"	82 Wentworth Street	Glen Innes	I197
House	84 Wentworth Street	Glen Innes	I168
House	86 Wentworth Street	Glen Innes	I169
House	88 Wentworth Street	Glen Innes	I170
Private home (former CWA Mountain Home)	91 Wentworth Street	Glen Innes	I171
Rotunda Bandstand	West Avenue (King Edward Park)	Glen Innes	I172
House—"Terrichuel"	88 West Avenue	Glen Innes	I173
House	92 West Avenue	Glen Innes	I174
New England Club (former villa)	98 West Avenue	Glen Innes	I175
Church	138 West Avenue	Glen Innes	I176
Bridge over railway line (pre-1900)	Winters Road	Glen Innes	I177
Glen Legh Station	Glen Legh Road	Glen Legh	I179
Marouan Homestead	140 Marouan Road	Glencoe	I180
Glencoe Community Hall—Former Glencoe Public Schoo	8008 New England Highway	Glencoe	I201
Cemetery	8165 New England Highway	Glencoe	I181
Surrey Park residence	13 Surrey Park Court	Glencoe	I182
Balaclava Station—station gardens	285 Ilparran Road	Matheson	I183
Matheson Presbyterian Church	Waterloo Road	Matheson	I208
Pinkett Hall	3998 Pinkett Road	Pinkett	I209
Yarraford Rail Bridge	Beardy Waters (Main Northern Railway)	Rangers Valley	I184
Rangers Valley Homestead	1259 Rangers Valley Road	Rangers Valley	I210
Butter Factory (former)—archaeological remains	19 Grafton Street	Red Range	I185
Cemetery	Red Range Cemetery Road	Red Range	I186
Memorial Hall	41 Victoria Street	Red Range	I187
Shannon Vale Station	Shannon Vale Road	Shannon Vale	I189
Former road bridge	Former New England Highway, 12 km south of Glen Innes	Stonehenge	I202
Stone formations	8820 New England Highway	Stonehenge	I190
Stonehenge Station—gardens and outbuildings	8861 New England Highway	Stonehenge	I191
Waterloo Station	67 Waterloo Road	Waterloo	I192
Wellingrove Memorial Hall	917 Polhill Road	Wellingrove	I212
Presbyterian Church	927 Polhill Road	Wellingrove	I193
Wellingrove Presbyterian Cemetery	933 Polhill Road	Wellingrove	I211
Wellingrove Station	2153 Strathbogie Road	Wellingrove	I194
Wellington Vale Private Cemetery	Wellington Vale Road	Wellington Vale	I195
Wellington Vale Homestead	Wellington Vale Homestead	Wellington Vale	I196

As shown in Photograph 1 to Photograph 3 inclusive, there is no evidence of historic heritage on the proposed development complex site. Consequently, the proposed development will not impact on a place or area of local or State heritage significance.

5.9 Biosecurity

Biosecurity is a strategic and integrated approach that manages the risks from pests, weeds and diseases (pests) entering, emerging and establishing in New South Wales to protect agricultural resources and the economy, environment, and community.

The *Biosecurity Act 2015* and associated regulations provides a framework for an effective biosecurity system that helps to minimise biosecurity risks and better facilitate a response to the impacts of those risks on the economy, environment, human health and public amenity.

Under the *Biosecurity Act 2015,* a person who deals with an organism or a carrier, or carries out an activity, if the person knows or ought reasonably to know that the organism, carrier or activity poses or is likely to pose a biosecurity risk must take all reasonable and practical measures to prevent or minimise the biosecurity risk.

A person who becomes aware of, or suspects, that a prohibited matter event has occurred, is occurring or is about to occur has a biosecurity duty to immediately notify the prohibited matter event in accordance with the requirements specified in the regulations.

To prevent, eliminate, minimise or manage a biosecurity risk or biosecurity impact one or more biosecurity zones may be established under the regulations. The Biosecurity Regulation 2017 provides extra protection against biosecurity risks caused by unlawful entry to premises when a biosecurity management plan is in operation.

In relation to the proposed development, biosecurity risks might include:

- Management of animal and plant pests (e.g. weeds and wild dogs) and diseases that could have negative impacts on neighbouring properties;
- Moving animals will pose a biosecurity risk if they are carrying pests or diseases that could affect agricultural industries; and
- Moving machinery or soil will pose a biosecurity risk if they are carrying weed seeds etc that could affect agricultural industries.

A Biosecurity Management Plan shall be developed as part of NFAS accreditation that outlines the measures put in place to protect biosecurity and mitigate the risks of pests and diseases on the subject land. These measures shall include relevant signs and procedures. Consequently, with the proposed mitigation measures, the proposed development shall have no adverse effects on biosecurity matters.

5.10 Coastal and aquatic environment

5.10.1 Fish Habitat Area

One of the objectives of the *Fisheries Management Act 1994* is to 'conserve key fish habitats'. A Key Fish Habitat Area (KFH) has been defined as those aquatic habitats (freshwater and marine) which has been identified as having particular values for the sustainability of the recreational and commercial fishing industries, the maintenance of fish populations generally and the survival and recovery of threatened aquatic species. Not all aquatic habitats are important for the conservation of fish populations and the sustainability of fishing activities.

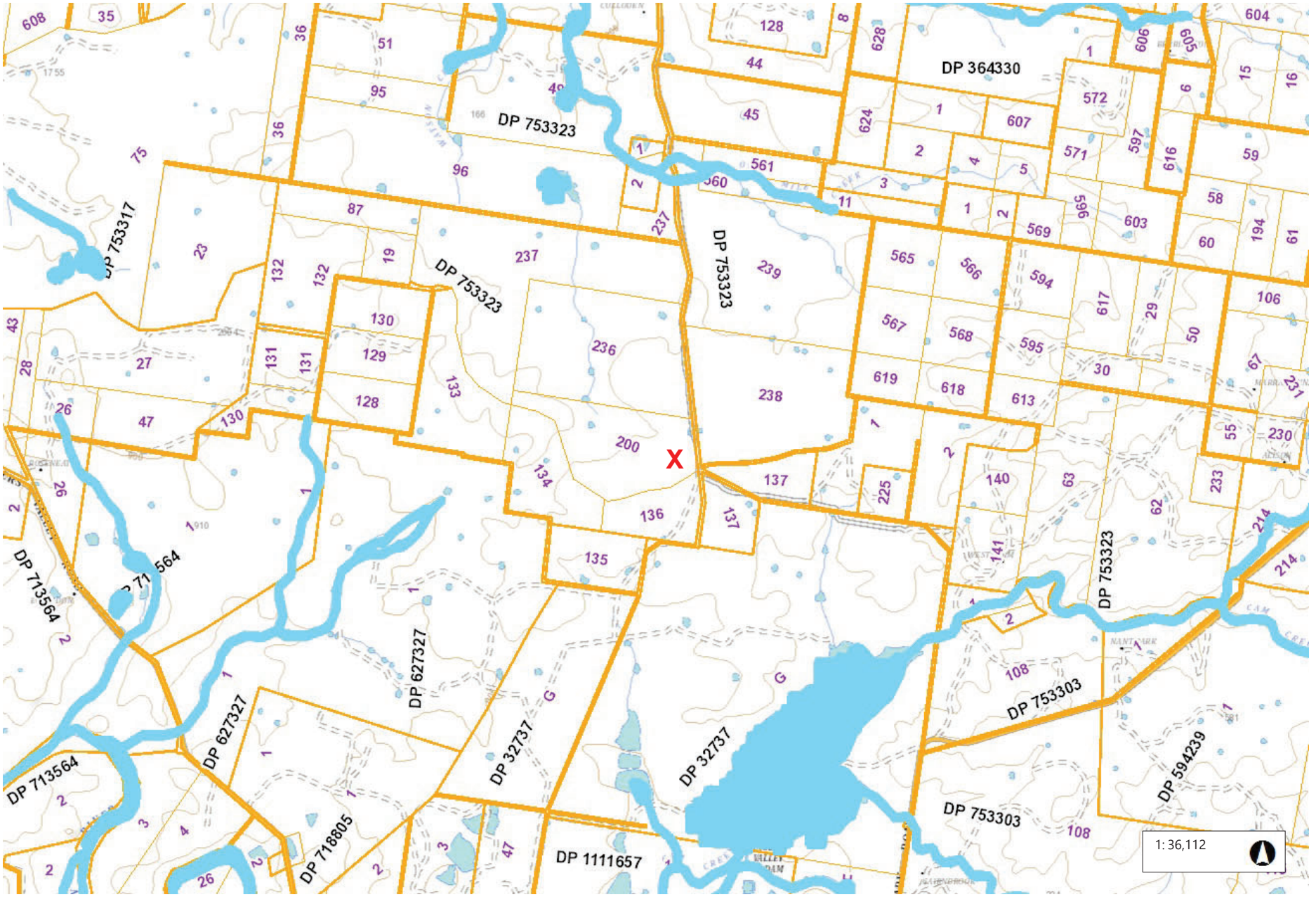
KFHs are managed by the Department of Primary Industries – Fisheries. The Department of Primary Industries – Fisheries has developed statewide mapping for each local government area to define and identify KFHs within each jurisdiction. KFHs are defined to include all marine and estuarine habitats up to highest astronomical tide level ('king' tides) and most permanent and semi-permanent freshwater habitats including rivers, creeks, lakes, lagoons, billabongs, weir pools and impoundments up to the top of the bank. Small headwater ephemeral creeks and gullies (known as first and second order streams) are generally excluded, as are farm dams constructed on such systems. Wholly artificial waterbodies such as irrigation channels, urban drains and ponds, salt and evaporation ponds are also excluded except where they are known to support populations of threatened fish or invertebrates (NSW Department of Primary Industries-Fishing, 2023)

The KFH area overlay of the subject land was obtained from the Department of Primary Industries-Fisheries Fisheries Spatial Data Portal and is provided in Figure 35.

As shown in Figure 35, there is no KFH area mapped on the subject land. The proposed development site shall be located some 2 km outside of the KFH area mapped along Cam Creek and Rangers Valley Dam and an unnamed tributary of the Severn River. Further, the proposed effluent and solid waste utilisation areas are not located within a KFH area respectively.

Consequently, the proposed development will not be located within or adjacent to any KFH.

Department of Primary Industries



Legend

- Key Fish Habitat - Murray Darl
- Key Fish Habitat - Northern Riv
- PlanExtent_Labels
- SectionExtent_Labels
- Lot_Labels
- SectionExtent
- PlanExtent
- Lot

X - PROPOSED DEVELOPMENT COMPLEX SITE

FIGURE 35

1.8 0 0.92 1.8 Kilometers

WGS_1984_Web_Mercator_Auxiliary_Sphere

Map creation date: 09-Nov-2024

5.10.2 Marine protected areas

Marine protected areas are parts of the NSW marine estate managed to conserve marine biodiversity and support marine science, recreation and education (DPIE, 2019). The NSW marine estate covers an area of about 1 million hectares along the NSW coastline.

Currently there are 12 aquatic reserves, six multiple use marine parks and 20,000 hectares of estuarine and oceanic habitats contained within National Parks and nature reserves.

The subject land is not located on the New South Wales coast as shown in Figure 1 and Figure 3. Consequently, the proposed development is not located within or adjacent to a marine park or aquatic reserve.

5.11 Mineral and petroleum resources

Under the *Mining Act 1992* and *Petroleum (Onshore) Act 199*1, ownership of all minerals including petroleum and geothermal energy existing in their natural form is vested in the Crown. However, some resources found on the land like limestone, rock, gravel and sand fall outside the operation of these acts.

The subject land is situated east of the Clarence-Moreton bioregion in northern NSW. Consequently, there has been limited exploration programs and developments in the region.

The NSW Exploration and Mining Titles dataset contains all current titles for mineral and energy resource exploration, assessment and production under the *Mining Act 1992* or *Petroleum (Onshore) Act 199*1. These are areas in NSW where a company or individual has the right to explore for or extract resources including petroleum, minerals and coal.

An overlay of NSW Exploration and Mining Titles relating to the subject land was obtained from the SEED NSW Government's central resource for Sharing and Enabling Environmental Data Open Data portal and shown in Figure 36.

As shown in Figure 36, the subject land is not within the limits of any Exploration Licence (EL) or Petroleum Exploration Licence (PEL). The closest tenure is a current mining title held by Taronga Mines Pty Ltd, granted 21 June 2021 and located on land approximately 4 km to the south west of the subject land. The closest current mining title to the east is held by Patrick Harvey, issued 22 August 2022.

The subject land is not subject to a petroleum application and does not contain a petroleum pipeline.

N

W E

S

SUBJECT LAND BOUNDARY

NEWSOMES ROAD

PROPOSED DEVELOPMENT COMPLEX SITE

19 DP753323

237 DP753323

239 DP753323

565 DP753323

566 DP753323

567 DP753323

568 DP753323

93 DP753323

4 DP1246771

130 DP753303

2 DP115193

129 DP753303

128 DP753303

236 DP753323

238 DP753323

619 DP753323

618 DP753323

133 DP753323

200 DP753323

1 DP612287

2 DP612287

134 DP753323

136 DP753323

137 DP753323

225 DP753323

141 DP753323

2 DP1246771

135 DP753303

1 DP627327

G DP32737

1 DP944758

SCALE 0 150 300 450 600 750 900 1,050 1,200 1,350 1,500m

1:7,500 (A1) 1:15,000 (A3)

LEGEND

- SUBJECT LAND BOUNDARY
- LAND PARCEL BOUNDARY
- EFFLUENT UTILISATION AREA
- SOLID WASTE UTILISATION AREA
- EXPLORATION / MINING TENURE
- STREAM ORDER 1
- STREAM ORDER 2
- STREAM ORDER 3
- STREAM ORDER 4
- STREAM ORDER 5
- STREAM ORDER 6
- STREAM ORDER 7
- STREAM ORDER 8

NOTES:

1. CADASTRAL INFORMATION BASED ON THE NSW GOVERNMENT SPATIAL SERVICES DIGITAL CADASTRAL DATABASE (DCDB) 2024, PROVIDED BY THE NSW DEPARTMENT OF CUSTOMER SERVICE AND ACCURACY IS LIMITED.
2. TOPOGRAPHIC INFORMATION BASED ON THE NSW GOVERNMENT SPATIAL SERVICES DIGITAL TOPOGRAPHIC DATABASE (DTDB) 2024, PROVIDED BY THE NSW DEPARTMENT OF CUSTOMER SERVICE AND ACCURACY IS LIMITED.
3. EXPLORATION AND MINING TITLES BASED ON NSW EXPLORATION AND MINING TITLES DATA PROVIDED BY NSW DEPARTMENT OF PLANNING, INDUSTRY AND ENVIRONMENT VIA SEED (THE CENTRAL RESOURCE FOR SHARING AND ENABLING ENVIRONMENTAL DATA) PORTAL.
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5. HORIZONTAL DATUM - MGA2020 ZONE 56.

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STATUS: FOR APPROVAL
NOT TO BE USED FOR CONSTRUCTION PURPOSES

RPEQ

REV.	DATE	REVISION DESCRIPTION	DRAWN	CHECK	APPROVED
A	24/11/24	DRAFT ISSUE TO CLIENT	RJD	RJD	RJD
B	06/12/24	FINAL ISSUE FOR LODGEMENT TO GLEN INNES SEVERN COUNCIL	RJD	RJD	RJD

SCALE	1:15,000 (A3)
DRAWN	RJD
DATE	06/12/2024
CHECKED	RJD
DATE	06/12/2024
APPROVED	RJD
DATE	06/12/2024

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CLIENT: NARRIE HOLDINGS PTY LTD ATF NEWSOME FAMILY TRUST

PROJECT: PROPOSED 999 HEAD BEEF CATTLE FEEDLOT

TITLE: DEVELOPMENT APPLICATION FOR INTENSIVE LIVESTOCK AGRICULTURE
STATEMENT OF ENVIRONMENTAL EFFECTS
SUBJECT LAND - EXPLORATION AND MINING TENURE OVERLAY

REPORT REFERENCE	SUPPLIED DRAWING NUMBER	A3	DRAWING NUMBER	REV.
FIGURE 36			G4-116-00-36	B

5.12 Natural hazards

Natural hazard events are inherently unpredictable and occur at many levels of severity and frequency and include bushfire, landslide, flood and coastal hazards such as storm tide inundation and erosion.

5.12.1 Bushfire prone areas

Bushfires are an intrinsic part of Australia's environment. In New South Wales, bushfire incidents which also include grassfires are increasing due to hotter, drier weather conditions associated with long-term climatic changes.

Bushfire hazard is managed through the *Environmental Planning and Assessment Act 1979* and the *Rural Fires Act 1997*.

Bushfire prone land is land which can support a bush fire or is subject to bush fire attack. Bushfire prone land have been designated by local council under section 10.3 of the *Environmental Planning and Assessment Act 1979* to reflect the potential of bushfire to affect that land. Mapping of bushfire prone areas has been undertaken using factors to determine the potential intensity of a bushfire. These include:

- potential fire weather severity;
- extent of remnant and non-remnant bushfire prone vegetation;
- estimates of potential fuel loads for different regional ecosystems;
- landscape slope; and
- potential fuel load.

Additional planning and building requirements may apply to developments within areas designated as bushfire prone under the *Environmental Planning and Assessment Act 1979* and the *Rural Fires Act 1997*. Further assessment of bushfire risk may also be required under the Planning and Development (Local Planning Schemes), State Planning Policy 3.7 Planning in Bushfire Prone Areas and the Building Code of Australia.

In relation to bushfire prone land, the RFS's Guide for Bush Fire Prone Land Mapping (NSW RFS 2015) defines four classes of vegetation category. These include Category 1 vegetation, Category 2 vegetation, Category 3 vegetation and excluded vegetation as outlined below.

Category 1 vegetation is defined under the RFS's Guide for Bush Fire Prone Land Mapping (NSW RFS 2015) as:

- areas of forest, woodlands, heaths (tall and short), forested wetlands and timber plantations;

Category 2 vegetation is defined as:

- Rainforests;

- Lower risk vegetation parcels. These vegetation parcels represent a lower bush fire risk to surrounding development and consist of:
  - Remnant vegetation;
  - Land with ongoing land management practices that actively reduces bush fire risk. These areas must be subject to a plan of management or similar that demonstrates that the risk of bush fire is offset by strategies that reduce bush fire risk; and include:
    - Discrete urban reserve/s;
    - Parcels that are isolated from larger uninterrupted tracts of vegetation and known fire paths;
    - Shapes and topographies which do not permit significant upslope fire runs towards development;
    - Suitable access and adequate infrastructure to support suppression by firefighters;
    - Vegetation that represents a lower likelihood of ignitions because the vegetation is surrounded by development in such a way that an ignition in any part of the vegetation has a higher likelihood of detection.

Category 3 vegetation is defined as:

- Grasslands, freshwater wetlands, semi-arid woodlands, alpine complex and arid shrublands.

Vegetation excluded from being mapped as bush fire prone includes:

- Single areas of vegetation less than 1 hectare in area and greater than 100 metres separation from other areas of Category 1, 2 or 3 vegetation;
- Multiple areas of vegetation less than 0.25 hectares in area and not within 30 metres of each other;
- Strips of vegetation less than 20 metres in width, regardless of length and not within 20 metres of other areas of Category 1, 2 or 3 vegetation;
- Areas of "managed grassland" including grassland on, but not limited to, recreational areas, commercial/industrial land, residential land, airports/airstrips, maintained public reserves and parklands, commercial nurseries and the like;
- Areas of managed gardens and lawns within curtilage of buildings;
- Non-vegetated areas, including waterways, roads, footpaths, buildings and rocky outcrops.
- Managed botanical gardens;
- Agricultural lands used for annual and/or perennial cropping, orchard, market gardens, nurseries and the likes are excluded;
- Saline wetlands including mangroves; and
- Other areas that, due to their size, shape and overall risk are not considered Category 1, 2 or 3 vegetation.

Category 1 and Category 2 vegetation generally defines what land is considered to be bushfire prone.

The current bushfire mapping for the subject land was obtained from the bushfire prone land overlay provided by the NSW Planning ePlanning Spatial Viewer and is shown in Figure 37.

Figure 37 shows that there are Vegetation Category 1, Category 2, Category 3 and buffer area designated bush fire prone area mapped on the subject land. As shown in Figure 37, the proposed development complex site comprises Vegetation Category 3 which is excluded vegetation. Consequently, the proposed development complex site is not considered bush fire prone.

All development on land that is designated as bush fire prone, have a legal obligation to consider bush fire and meet the requirements of Planning for Bush Fire Protection 2019 and AS3959 - 2018.

However, as the proposed development involves intensive livestock agriculture use and does not involve residential dwellings or other infrastructure it does not trigger assessment against the Building Code of Australia (BCA) and Australian Standard AS3959-2009 Construction of buildings in bushfire-prone areas and a bushfire management plan is not required.

Figure 37 – Subject land – Bushfire prone areas

5.12.2 Flooding

State-wide mapping of flood hazard areas has been undertaken using factors to determine the potential areas impacted by flooding. Development implications due to flooding are designated under Part 5 of the Glen Innes Severn Local Environmental Plan 2012.

An assessment of the subject land and proposed development in relation to flooding has been undertaken in section 5.5.3. The subject land is not located within a flood risk area and the proposed development shall not impact on the existing flood regime in the region.

The proposed development complex site is located on an elevated rise and shall not be impacted by flooding or impact the existing flood regime in the region.

5.12.3 Landslide

A landslide describes the movement of a mass of rock, debris or earth (soil) down a slope and are a form of mass erosion (Australian Geomechanics Society, 2007). This includes mass soil movement through slope failure, shifting sand dunes, wave erosion and subsidence in karst topography (land underlain by caves).

Landslides occur when the downward force of gravity acting on slope materials exceeds the cohesive force that holds the soil particles together, or the frictional force which holds the material to the slope. There are various contributing factors to a landslide including:

- steepness of the slope;
- shape of the hillside;
- physical properties of different materials in the subsurface profile (that affect through-flow and shear strength);
- depth to the water table;
- the potential for subsurface water concentration; and
- vegetation cover.

Development implications due to landslide risk are not designated under Part 5 of the Glen Innes Severn Local Environmental Plan 2012. Consequently, landslide susceptibility has been assessed based on the various contributing factors to a landslide as mentioned above and landslide risk mapping. Land with a slope greater than 15 % may be at risk of landslide, depending on the nature of the land (for example, whether it is rock or sand).

The current landslide risk mapping for the subject land was obtained from the landslide risk overlay provided by the NSW Planning ePlanning Spatial Viewer and is shown in Figure 37. Figure 37 shows that there are no areas mapped as Landslide Risk on the subject land.

Figure 15 shows that the subject land is gently undulating land. The proposed development complex is to be sited on an area with a gentle slope in the order of 3.5 % as shown in Figure 4. Clearing of woodland vegetation is not required to establish the proposed development complex as shown in Figure 28. Further, the proposed development shall not redirect the

existing flow of surface or groundwater. Consequently, based on the criteria mentioned above, the proposed development complex is not sited in a potential landslide hazard area and the siting, design and construction of the proposed development shall not increase the potential for landslide events.

Consequently, no additional geotechnical investigations are required, or specific measures taken in the construction of buildings or additional measures required in order to mitigate against landslides.

Figure 38 – Subject land – Landslide risk

5.12.4 Coastal

New South Wales coastal communities are vulnerable to impact from coastal erosion and storm tide inundation. These coastal hazards are generally caused by extreme weather events such as storms and intense low pressure systems.

Storm surge can be associated with a combination of unusually high tides, strong winds and extreme low pressure. Traditionally, storm surge is considered as one of the possible accompaniments to east coast lows.

The NSW coastal zone is defined by four coastal management zones under section 5 of the *Coastal Management Act 2016*. These are

1) Coastal wetlands and littoral rainforests area – areas which display the characteristics of coastal wetlands or littoral rainforests that were previously protected by SEPP 14 and SEPP 26;
2) Coastal vulnerability area – areas subject to coastal hazards such as coastal erosion and tidal inundation;
3) Coastal environment area – areas that are characterised by natural coastal features such as beaches, rock platforms, coastal lakes and lagoons and undeveloped headlands. Marine and estuarine waters are also included; and
4) Coastal use area – land adjacent to coastal waters, estuaries and coastal lakes and lagoons.

As shown in Figure 1 and Figure 3, the subject land is not located on the New South Wales coast or in an area that is considered a high risk coastal hazard area and therefore not subject to erosion and permanent tidal inundation due to sea level rise.

Consequently, the requirements contained in Chapter 2 of the SEPP (Resilience and Hazards) 2021 such as a Coastal Wetlands and Littoral Rainforests Area, Coastal Environment Area, Coastal Use Area, and Coastal Vulnerability Area are not required to be considered.

5.13 Matters of state environmental significance

5.13.1 Drinking water catchment

Public drinking water source areas in New South Wales are protected to make sure the public has access to safe, good quality drinking water now and into the future. To protect the catchment and recharge areas of drinking water sources, land may be identified as Drinking Water Catchment.

Development in Drinking Water Catchment areas must adhere to local provisions clause within the LEP or per the State Environmental Planning Policy (Sydney Drinking Water Catchment) 2011 where this SEPP applies.

The drinking water catchment overlay provided by the NSW Planning ePlanning Spatial Viewer and Glen Innes Severn Local Environment Plan 2012 was used to determine if the subject land is in a drinking water catchment.

Figure 39 and Figure 45 shows that the subject land is not located within a public drinking water catchment area within a Sydney Drinking Water Catchment or a local public drinking water catchment area identified under the Glen Innes Severn Local Environment Plan 2012 respectively.

Figure 39 – Subject land – Drinking water catchment

5.13.2 Protected areas and conservation reserves

Protected areas are areas specially set aside under law for the protection and conservation of biodiversity and/or natural or cultural heritage values within them. Protected areas of land and water in original or close to original natural condition are the cornerstone of nature conservation efforts in NSW.

For the terrestrial environment, nearly all of such land is in the state's public reserve system. This is a substantial network of protected areas that:

- conserves representative areas of the full range of habitats and ecosystems, plant and animal species, and significant geological features and landforms in NSW;
- protects areas of significant cultural heritage; and
- provides opportunities for recreation and education.

As well as the protected area system, NSW also conserves the environment through other measures. Conservation of natural values across the whole is increasingly being focused on public and privately owned areas outside the reserve system such as:

- Conservation agreements;
- Wildlife refuges;
- Incentive property vegetation plans;
- Nature Conservation Trust agreements; and
- BioBanking agreements / Stewardship sites; etc

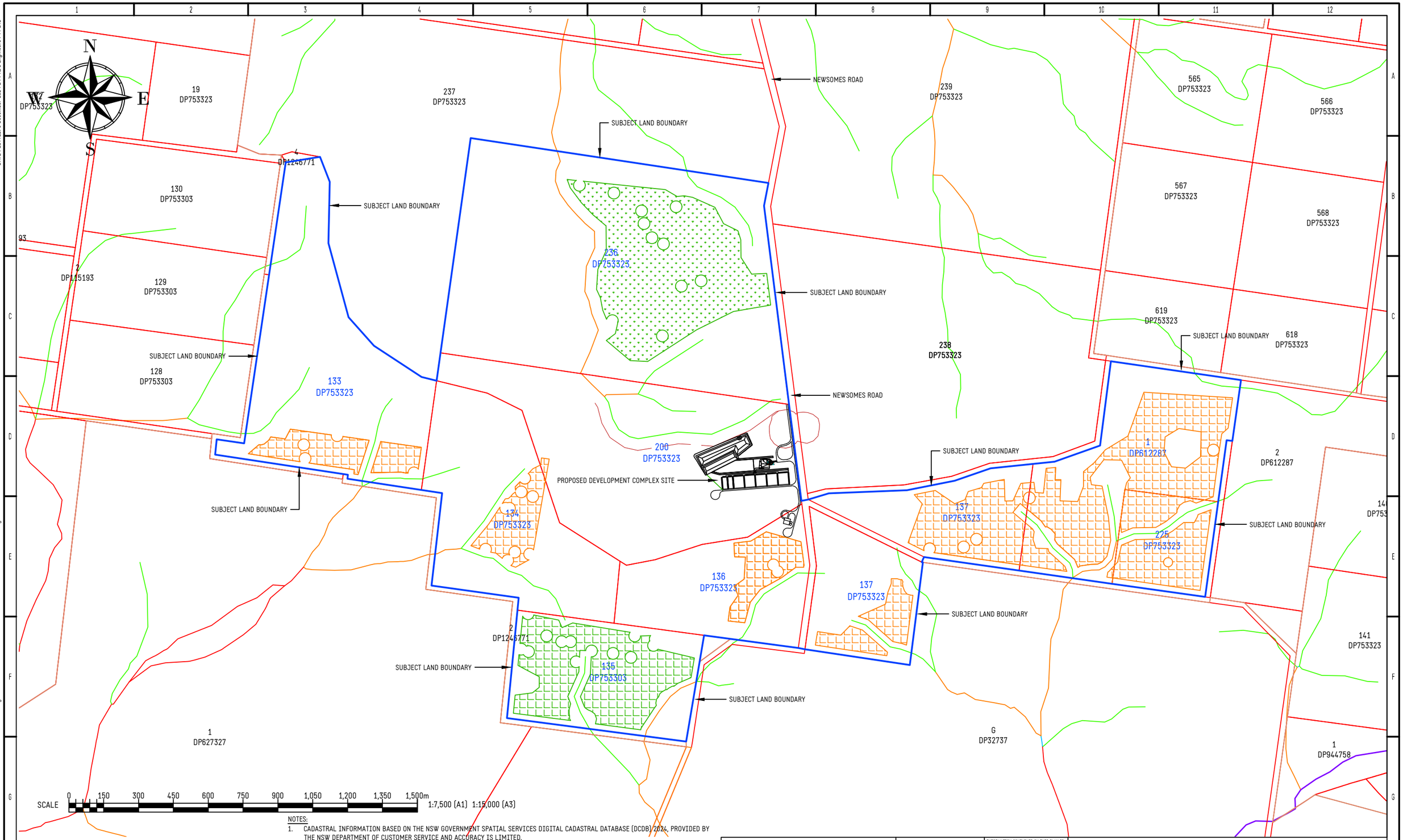
Conservation reserves are managed and protected under the *National Parks and Wildlife Act 1974*. Flora reserves are managed by the Forestry Corporation under the *Forestry Act 2012*. State parks which cover significant natural areas of bush and wetlands are managed by various trusts under the *Crown Lands Act 1989*. Travelling stock routes (TSRs) are managed as a trust by Local Land Services or leaseholders by private landholders under the Crowns Land Act 1989.

An overlay of NSW State Forests, Flora Reserves and Timber Reserves relating to the subject land was obtained from the SEED NSW Government's central resource for Sharing and Enabling Environmental Data Open Data portal and shown in Figure 40.

As shown in Figure 40, there are no State Forests, Flora Reserves and Timber Reserves within or adjacent to the subject land.

The subject land does not contain any other conservation areas managed outside of the reserve system such as conservation agreements; wildlife refuges, Nature Conservation Trust agreements, biobanking agreements or stewardship sites.

The closest conservation estates to the subject land are the Fladbury Nature Reserve, Torrington State Conservation area and Bolivia Hill Nature Reserve located some 9.5 km, 15 km, and 19.5 km to the south southwest, north northwest and northeast of the subject land respectively.



LEGEND

- SUBJECT LAND BOUNDARY
- LAND PARCEL BOUNDARY
- EFFLUENT UTILISATION AREA
- SOLID WASTE UTILISATION AREA
- CONSERVATION RESERVE
- PROTECTED AREA
- STREAM ORDER 1
- STREAM ORDER 2
- STREAM ORDER 3
- STREAM ORDER 4
- STREAM ORDER 5
- STREAM ORDER 6
- STREAM ORDER 7
- STREAM ORDER 8

NOTES:

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REV.	DATE	REVISION DESCRIPTION	DRAWN	CHECK	APPROVED
A	24/11/24	DRAFT ISSUE TO CLIENT	RJD	RJD	RJD
B	06/12/24	FINAL ISSUE FOR LODGEMENT TO GLEN INNES SEVERN COUNCIL	RJD	RJD	RJD

SCALE	1:15,000 (A3)
DRAWN	RJD
DATE	06/12/2024
CHECKED	RJD
DATE	06/12/2024
APPROVED	RJD
DATE	06/12/2024

CLIENT: NARRIE HOLDINGS PTY LTD ATF NEWSOME FAMILY TRUST
PROJECT: PROPOSED 999 HEAD BEEF CATTLE FEEDLOT
TITLE: DEVELOPMENT APPLICATION FOR INTENSIVE LIVESTOCK AGRICULTURE
STATEMENT OF ENVIRONMENTAL EFFECTS
SUBJECT LAND - PROTECTED AREAS AND CONSERVATION RESERVES OVERLAY

REPORT REFERENCE	SUPPLIED DRAWING NUMBER		DRAWING NUMBER	REV.
FIGURE 40		A3	G4-116-00-40	B

5.14 Matters of national environmental significance

The EPBC Act lists nine matters of NES which must be addressed when assessing the impact of a proposal. The nine matters of NES are:

- world heritage properties;
- national heritage places;
- wetlands of international importance (often called Ramsar wetlands after the international treaty under which such wetlands are listed);
- nationally threatened species and ecological communities;
- migratory species;
- Commonwealth marine areas;
- the Great Barrier Reef Marine Park;
- nuclear actions (including uranium mining); and
- a water resource, in relation to coal seam gas development and large coal mining development.

A search of MNES using the Protected Matters Search Tool (PMST) was completed and the report is presented Appendix I. The EPBC Act Protected Matters Report summarises the MNES that may occur in, or may relate to, a 5 km area surrounding the subject land. The following sections summarise the outcomes of the EPBC Act Protected Matters Report.

5.14.1 World heritage properties

There are no declared world heritage properties in proximity to the subject land, or that would potentially be affected by the proposed development.

5.14.2 National heritage properties

There are no declared national heritage properties in proximity to the subject land, or that would potentially be affected by the proposed development.

5.14.3 Wetlands of international importance (Ramsar Wetlands)

There are no Wetlands of International Importance in proximity to the proposed development, or that would potentially be affected by the proposed development as outlined in section 5.7. The closest wetlands of International Importance are the Riverland and Banrock Station Wetland Complex situated some 1,100-1,200 km downstream of the subject land.

The *Environmental Planning and Assessment Regulation 2021* Schedule 3 , Part 1 Definitions describes an environmentally sensitive area of State significance to include *(d) a declared*

Ramsar wetland or declared World Heritage property within the meaning of the Environment Protection and Biodiversity Conservation Act 1999 of the Commonwealth.
There are no wetlands of international importance within 1,100 km of the subject land and proposed development as outlined in the EPBC Report presented in Appendix I.

5.14.4 Nationally threatened species and ecological communities

A search for Commonwealth-listed threatened ecological communities (EC's) has returned 3 listed EC's and that may occur in, or relate to, a buffer of 5 km surrounding the subject land.

The three listed threatened ecological communities that are likely to occur within or surrounding the subject land are;

- Natural grasslands on basalt and fine-textured alluvial plains of northern New South Wales and southern Queensland
- New England Peppermint (Eucalyptus nova-anglica) Grassy Woodlands
- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland

The three listed threatened ecological communities are listed as critically endangered.

The proposed development is not sited in areas of native vegetation and no native vegetation is proposed to be cleared as part of the proposed development as outlined in section 5.6.1. Further, the proposed development is to be sited on land that has been disturbed during the early years of agricultural development through woody vegetation clearing (ring barking/ poisoning) and construction of essential infrastructure to provide water for sheep and cattle.

Impacts to native vegetation have been considered in the vegetation assessment prepared by Birdwing Ecological Services summarised in section 5.6 and presented in Appendix I. The vegetation assessment concluded that the proposed development is unlikely to have any adverse impacts on endangered ecological communities.

A search for Commonwealth-listed threatened species within a 5 km buffer area of the subject land has returned 51 listed species.

Three of these species are birds listed as critically endangered. These are the Regent Honeyeater (*Anthochaera phrygia*), Curlew Sandpiper (*Calidris ferruginea*) and Swift Parrot (*Lathamus discolor)* which may occur within the search area to forage or feed.

The Curlew Sandpiper is a migratory shorebird. The proposed development will not affect the life cycle of this critically endangered species therefore there will be no decline in a population. The proposed development site does not provide suitable habitat for the Curlew Sandpiper breeding. Consequently, the proposed development will not affect the life cycle of these bird species and there will be no decline in a population.

The Regent Honeyeater is a generalist forager, although it feeds mainly on the nectar from a relatively small number of eucalypts that produce high volumes of nectar. Key eucalypt species include Mugga Ironbark, Yellow Box, White Box and Swamp Mahogany.

The Swift Parrot breeds in Tasmania during the summer and the entire population migrates north to mainland Australia for the winter. They occupy habitats across all tenures, with the majority of habitats occurring outside formal conservation reserves. Whilst on the mainland the swift parrot disperses widely to forage on flowers and psyllid lerps in Eucalyptus species, with the majority being found in Victoria and New South Wales. In Victoria, swift parrots are predominantly found in the dry forests and woodlands of the box-ironbark region on the inland slopes of the Great Dividing Range. In New South Wales, swift parrots forage in forests and woodlands throughout the coastal and western slopes regions each year. Coastal regions tend to support larger numbers of birds when inland habitats are subjected to drought (Saunders & Tzaros 2011).

The proposed development is not sited in areas of native vegetation and no native vegetation is proposed to be cleared as part of the proposed development as outlined in section 5.6.1. Further, the proposed development is to be sited on an area that has been previously grazed. Consequently, the proposed development is unlikely to have any adverse impacts on critically endangered bird species.

5.14.5 Migratory species

A search for migratory species within a 5 km buffer area of the subject land has returned 8 listed migratory species.

One of these species, the Curlew Sandpiper is a migratory wetlands bird species listed as critically endangered and may occur within the search area to forage or feed. The Curlew Sandpiper is listed as Critically endangered under the *Threatened Species Act 1995*.

The Curlew Sandpiper is a shorebird that mainly occur on intertidal mudflats in sheltered coastal areas, such as estuaries, bays, inlets and lagoons, and also around non-tidal swamps, lakes and lagoons near the coast, and ponds in saltworks and sewage farms. They are also recorded inland, though less often, including around ephemeral and permanent lakes, dams, waterholes and bore drains, usually with bare edges of mud or sand. They occur in both fresh and brackish waters.

As the subject land is not located in a coastal area or contain habitat favoured by the Curlew Sandpiper, it is unlikely that the Curlew Sandpiper will occur within the area or species habitat will occur on the subject land. The proposed development will not disturb or clear any watercourses, drainage features or vegetation of ecological significance. Consequently, the proposed development will have minimal impact on the Curlew Sandpiper.

5.14.6 Commonwealth marine areas

There are no Commonwealth marine areas in proximity to the proposed development, or that would potentially be affected by the proposed development.

5.14.7 The Great Barrier Reef Marine Park (GBRMP)

The proposed development is not located in the GBRMP or in an area that drains into the GBRMP. Therefore, the GBRMP would not be affected by the proposed development.

5.14.8 Nuclear actions

The proposed development would not involve a nuclear action, as defined under the EPBC Act 1999.

5.14.9 A water resource, in relation to coal seam gas development and large coal mining development

The proposed development is not a coal seam gas or large coal mining development as outlined in section 4.

5.14.10 EPBC Act Referrals

The EPBC Protected Matters Report includes an extra information section that lists EPBC Act referrals for the subject land and a 5 km buffer area. This report has identified three EPBC Act all being a non controlled action referral. The non controlled actions refer to:

- Expansion of Rangers Valley beef cattle feedlot and the assessment status is listed as completed;
- Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia and the assessment status is listed as completed; and
- Aerial baiting for wild dog control and the assessment status is listed as completed.

There are no controlled actions listed. Consequently, the development application will not be referred to the Minister responsible for the EPBC 1999 Act under section 68 of the EPBC Act 1999.

5.15 Identification and prioritisation of potential issues

Table 39 presents a summary of the environmental issues identified through the specific review of the proposed development activities, the environmental setting and potential impacts associated with the proposed development. On the basis of frequency of identification, potential consequence of impact and relevance to the proposed development, each issue is identified as having high, moderate, low or no priority for assessment.

Table 39 – Summary of key environmental issues

Environmental issue	Source of identification		Priority	Justification	Section
	LGA	SEE			
Air quality (odour, dust, GHG)	Y	Y	Moderate	The potential impacts on nearby sensitive land uses needs to be assessed, particularly with regard to odour nuisance.	6.2
Land resources (soils and land capability)			Moderate	The potential impacts on the physical or chemical properties of soils at or in the vicinity of the proposed development site through the release of contaminants commonly found in effluent and/or solid waste streams and erosion needs to be assessed.	5.4, 6.2.6
Water resources – Groundwater and surface water	Y	Y	High	The potential impacts on groundwater and surface water quantity and quality needs to be assessed.	5.5, 6.2.7
Biodiversity (flora & fauna, native vegetation)		Y	Low	No native vegetation shall be cleared for the proposed development and therefore the potential adverse impacts on biodiversity values by loss and modification of native vegetation and habitat are considered to be low.	4, 5.6
Cultural heritage		Y	Low	The proposed development site has been significantly disturbed through historic land clearing and agricultural operations. Therefore, the potential impacts on culture heritage, through disturbance to Aboriginal or non-Aboriginal sites and artefacts are considered to be low.	5.8.1, 6.2.9
Visual amenity		Y	Low	Significant distances to sensitive receivers along with surrounding topography, landforms and vegetation, provide visual screening of the proposed development from sensitive receivers.	6.2.4
Traffic and transport		Y	Low	The proposed development shall result in a slight increase in traffic on the local, regional and state road network.	4.5.11
Noise and vibration		Y	Low	Significant distances to sensitive receivers and as the operational activities of the proposed development are consistent with the activities of the existing agricultural activities of the surrounding area the potential adverse impacts on the surrounding environment are considered to be low.	6.2.2

6 Assessment of key environmental issues

6.1 Introduction

The risk that an intensive livestock development poses to the environment depends upon the vulnerability of the natural resources or amenity, and on the standard of design and management of the operation.

The purpose of an environmental risk assessment is to identify any actual, or likely impacts that the proposed development may pose to the environment. This provides the basis for reducing impacts (or risks of impacts) through design, management or monitoring.

A risk assessment has been undertaken to ensure potential environmental risks from the proposed development are identified and addressed up-front with management strategies in place to mitigate the possible risks. The risk assessment approach has been used to identify the hazards that are not only industry-wide hazards but also the hazards posed due to the siting and operation of the proposed development.

6.2 Amenity and air quality

Potential impacts on the amenity of nearby land users are outlined in the following sections.

6.2.1 Odour

Odour at intensive livestock developments is mainly the result of anaerobic breakdown of organic matter, primarily in solid (manure) and liquid (effluent) wastes. Consequently, odour release sites within the proposed development include:

- Pen areas;
- Drainage systems including sedimentation systems (sediment basin) and holding pond; and
- Solid and liquid waste utilisation areas.

Odour has been identified as the principal community amenity concern and impact to air quality in relation to the proposed development. Various design and management measures shall be implemented to minimise the generation of odour, but it is not possible to completely eliminate this nuisance source. The accepted solution to limit any adverse impacts and unreasonable interference with the amenity of neighbours is to provide an adequate separation between the nuisance source and the sensitive receptor.

Consequently, a separation distance assessment has been undertaken as outlined in section 6.2.5.

6.2.2 Noise and Vibration

This section discusses the potential impacts from noise and vibration associated with the proposed development; including mitigation measures when practicable.

The sources of noise emissions from the construction and operation of the proposed development include:

- Construction plant and machinery;
- Feed storage and processing equipment (electric motors, conveyors, roller mills) and mobile plant (tractors, front-end loaders etc) during operation;
- Livestock; and
- Livestock, feed commodity and solid waste transport vehicles both on-site and off-site.

Potential noise impacts are expected to be minimal based on the implementation of several mitigation measures, the location of the proposed development and the absence of nearby rural dwellings will limit any adverse impacts.

The sources of vibration from the construction and operation of the proposed development include:

- Feed processing equipment such as the grain movement; and
- Livestock, feed commodity and solid waste transport vehicles.

6.2.2.1 Noise and Vibration Assessment Guidelines

The Protection of the Environment Operations Act 1997 (POEO Act) and associated regulation Protection of the Environment Operations (Noise Control) Regulation 2017 provides the statutory framework for managing noise and vibration pollution in NSW.

In addition, potential noise and vibration impacts associated with the proposed construction and operational activities are assessed in accordance with the following guidelines:

- NSW *Noise Policy for Industry* (EPA 2017) for the assessment of the operational noise of the proposed development;
- NSW *Environmental Criteria for Road Traffic Noise* (EPA 1999) for the assessment of the off-site traffic noise on public roads;
- NSW *Interim Construction Noise Guidelines* (DECC 2009) for the assessment of the noise from construction of the proposed development;
- NSW *Assessing Vibration: a technical guideline* (DECC 2006) for the assessment of the vibration from the proposed development; and
- NSW *Road Noise Policy* (DECCW, 2011) for the assessment of the noise from traffic generated by the proposed development.

EPA guidelines not applicable to the development include:

- Rail infrastructure noise guideline (DECC 2007)

6.2.2.2 Noise

6.2.2.2.1 Assessment criteria

The acoustic assessment has been completed in accordance with the procedure identified in the NSW Noise Policy for Industry (NPfI) (NSW EPA, 2017). The NPfI recognises that scientific literature has identified that both the increase in noise level above background levels (that is, intrusiveness of a source), as well as the absolute level of noise are important factors in how a community will respond to noise from industrial sources.

In response to this, the NPfI establishes two separate noise criteria to meet environmental noise objectives: one to account for intrusive noise and the other to protect the amenity of particular land uses. These two criteria are then used to determine project triggers levels against which the proposed development will be assessed. The project noise trigger level is a level that, if exceeded, would indicate a potential noise impact on the community, and so 'trigger' a management response.

The derivation of the two sets of criteria are presented below in sections 6.2.2.2.1.2 and 6.2.2.2.1.3. For residential dwellings, the noise criteria are assessed at the most-affected point (i.e. highest noise level) on or within the property boundary. Where the property boundary is more than 30 m from the house, then the criteria apply at the most-affected point within 30 m of the house (NSW EPA, 2017).

6.2.2.2.1.1 Background noise level

The proposed development is in a rural area dominated by agricultural activities such as beef production and cropping. The subject land is a large land holding and the nearest potentially affected noise sensitive receptor locations have been identified from examination of aerial imagery (Google Earth™) and a site inspection. The closest sensitive receptors are rural dwellings located on the adjoining property over 3,000 m from the proposed development complex, whilst other sensitive receptors being rural dwellings are separated by over 3,900 m. These locations are shown in Table 59 and highlighted in Figure 41.

The main sources of noise in the vicinity of the proposed development are from agricultural activities (tractors, cropping etc.) and traffic on Newsomes Road.

Indicatively, Table 40 presents typical background noise levels extracted from AS1055.3–1997 (Standards Australia, 1997). These are representative of background levels in rural areas controlled by natural, agricultural, and local traffic noise sources and are considered applicable to the proposed development.

Table 40 – Estimated background noise levels (Standards Australia, 1997)

Description of neighbourhood	Average background A-weighted sound pressure level, L_{A90}					
	Monday to Saturday			Sunday and public holidays		
	7 am-6pm	6 pm- 10 pm	10 pm-7 am	7 am-6pm	6 pm-10 pm	10 pm-7 am
Area with low density transportation	40	35	30	40	35	30

6.2.2.2.1.2 Intrusiveness noise criteria

The intrusiveness noise level is intended to protect against significant changes in noise levels as a result of industrial development. To achieve this, the NPfI (NSW EPA, 2017) describes intrusive noise as noise that exceeds background noise levels (as defined by the Rating Background Level or RBL) by more than 5 dB.

For this assessment, the minimum Rating Background Noise Level (RBL) has been used to define the minimum intrusiveness criteria. The NPfI adds 5 dB to the minimum RBL to derive the intrusiveness criteria. Table 41 presents the derivation of the intrusiveness criteria based on the minimum background noise level established by the NPfI.

Table 41 – Minimum intrusiveness noise criteria

Receptor	Parameters	Period		
		Day	Evening	Night
Minimum Assumed Rating Background Noise Level	RBL (dB(A))	40[a)]	35[a)]	30[a)]
Minimum Intrusiveness Project Noise Levels	$LA_{eq,15\text{-minute}}$	45[b)]	40[b)]	35[b)]

[a)] Receptor noise criteria applied at a location 30 m from the dwelling façade.
[b)] Minimum background noise level established by the NSW EPA (2017) + 5 dB.

6.2.2.2.1.3 Amenity noise criteria

The amenity noise level seeks to protect against cumulative noise impacts from industry and maintain amenity for particular land uses. The recommended amenity noise levels will protect against noise impacts such as speech interference, community annoyance and some sleep disturbance. Review of the surrounding area has identified that there are no other industrial noise sources in the area, and that future industrial development in the area is unlikely. As such, the amenity noise levels are equivalent to the indicative noise amenity area total industrial noise levels presented in Table 42.

Table 42 – Amenity noise levels (NSW EPA, 2017)

Type of Receiver	Indicative noise amenity area	Time of day	Recommended LAeq Noise Level dB(A)	
			Total industrial noise	Project specific
Residence	Rural[a]	Day	50	50
		Evening	45	45
		Night	40	40

[a] Rural amenity noise levels sourced from Table 2.2 of NSW EPA (2017).

6.2.2.2.1.4 Project noise trigger levels

The project noise trigger level (PNTL), i.e. the noise criteria considered by the assessment, is the lower value of the project intrusiveness noise level and the project amenity noise level (PANL), after the conversion to $L_{Aeq,\ 15\ min}$ dB(A) equivalent level. Table 43 presents the standardised intrusiveness noise level and the project amenity noise level as derived by adding 3 dB(A) to each period of the day (as described in section 2.2 of the NPfI (NSW EPA, 2017).

Table 43 – Proposed development – Noise trigger levels

Type of Receiver	**Time of day**	**Intrusiveness Noise Level**	**Standardised LAeq, 15 min Noise Level**	
(dB)	(dB)	(dB)	(dB)	
			PANL	PNTL
Residence	Day	45	50 +3 = 53[a]	45
	Evening	40	45 + 3 = 48 [a]	40
	Night	35	40 + 43 = 48 [a]	35

[a] The LAeq is determined over a 15-minute period for the project intrusiveness noise level and over an assessment period (day, evening, and night) for the project amenity noise level. This leads to the situation where, because of the different averaging periods, the same numerical value does not necessarily represent the same amount of noise heard by a person for different time periods. To standardise the time periods for the intrusiveness and amenity noise levels, this policy assumes that the LAeq,15min will be taken to be equal to the LAeq, period + 3 decibels (dB), unless robust evidence is provided for an alternative approach for the particular project being considered.

6.2.2.2.1.5 Sleep disturbance

NSW EPA (2017) have identified a screening assessment for sleep disturbance based on the nighttime noise levels at a residential location. Where noise levels at a residential location exceed the following levels during the night-time period, the potential for sleep disturbance should be investigated:

- $L_{Aeq,\ 15\ min}$ 40 dB(A) or the prevailing RBL plus 5 dB, whichever is greater; and/or
- L_{AFmax} 52 dB(A) or the prevailing RBL plus 15 dB whichever is the greater.

As the proposed development only operates during the daytime period between 6 am and 6 pm, sleep disturbance does not have to be assessed and a detailed maximum noise level event assessment is not required to be undertaken.

6.2.2.2.1.6 Road traffic assessment criteria

The principle guidance for assessing the impact of road traffic noise on receivers is in the NSW Road Noise Policy (NSW DECCW, 2011). The proposed development will include an increase in truck movements on the transport route. The proposed development is accessed from Newsomes, with most vehicles originating from the east, and some from the west along Wellington Vale Road.

Newsomes Road leading to the proposed development is classified as a Local road. Wellington Vale road is a regional road.

Table 44 presents the road noise assessment criteria for this road category as listed in the NSW Road Noise Policy (NSW DECCW, 2011).

Table 44 – Road traffic noise criteria (NSW DECCW, 2011)

Road category	Type of project and land use	Assessment criteria
Local road	Existing residences affected by additional traffic on existing local roads generated by land use developments	$L_{Aeq,\ (1\ hour)}$ 55 (external)

The Road Noise Policy (NSW DECCW, 2011) states that where existing road traffic noise criteria are already exceeded, any additional increase in total traffic noise level should be limited to +2 dB(A), after consideration of all feasible and reasonable noise mitigation and management measures.

6.2.2.2.2 Assessment methodology

For the purposes of predicting impacts associated with noise emissions from the proposed development on nearby sensitive receptors, a quantitative assessment based on noise emissions of typical equipment to be used during operation was undertaken. The methodology outlined

in AS2436-2010 – Guide to Noise Control on Construction, Maintenance and Demolition Sites was used to determine the deduction from the A-weighted Sound Power Level.

Vegetation, terrain, and metrological conditions have not been factored into the assessment. Most sensitive receptors to the north, south and east have stands of native vegetation, hills and valleys between them and the proposed development complex which would attenuate the noise to some degree.

6.2.2.2.3 Noise sources

Most noise sources associated with the proposed development are generally continuous in nature and are associated with fixed plant items operating in the production process. Short-term or variable sources include operation of tractors, feed wagons, front-end loader (FEL) and truck movements. It should be noted that most sources will be operated on a sort term basis but to account for worst-case scenario, they have been assessed on continuous day-time operation.
Table 45 outlines the typical sound pressure levels for a range of construction equipment. Some of which shall be used during the construction and operation of the proposed development along with typical sound pressure levels. The sound pressure levels shown in Table 45 are generalised values of construction machinery and equipment that have either been reproduced from Department of Planning Transport and Infrastructure (SA) (2014) or Australian Standard 2436 (Standards Australia, 2010). Noise generated by construction plant dissipates over distance.

Table 45 – Typical sound power level from construction equipment (Department of Planning Transport and Infrastructure (SA), 2014)

Equipment	Source *	Sound Pressure Level dB(A) 7m		20m		50m		100m		200m	
		L_{eq} (15min)	L_{max}	L_{eq} (15min)	L_{max}	L_{eq} (15min)	L_{max}	L_{eq} (15min)	L_{max}	L_{eq} (15min)	L_{max}
Asphalt truck/Sprayer	106	81	81	72	72	64	64	58	58	52	52
Backhoe	104	79	83	70	74	62	66	56	60	50	54
Batch plant	116	91	90	82	81	74	73	68	67	62	61
Bobcat (skid-steer loader)		85		76		68		62		56	
Bulldozer (large)	108	92	95	83	86	75	78	69	72	63	66
Bulldozer (small)	106	90	93	81	84	73	76	67	70	61	64
Chainsaw (4-5hp)	110	89	92	80	83	72	75	66	69	60	63
Cherry picker		80		71		63		57		51	
Compactor	113	88		79		71		65		59	
Compressor (silenced)	101	76		67		59		53		67	
Concrete truck	109	84	85	75	76	67	68	61	62	55	56
Concrete vibrator	103	78	80	69	71	61	63	55	57	49	51
Delivery truck	107	83	88	74	79	66	71	60	65	54	59
Dump truck	117	83	90	74	81	66	73	60	67	54	61
Dump truck (50t) - loaded	110	76	90	67	81	59	73	53	67	47	61
Dump truck (50t) - unloaded	117	83	90	74	81	66	73	60	67	54	61
Tracked excavator (5t)	100	77		68		60		54		48	
Tracked excavator (45t)	107	83	90	74	81	66	73	60	67	54	61
Forklift	106	81		72		64		58		52	
Front end loader loading ballast	113	81	92	72	83	64	75	58	69	52	63
Generator	99	78	81	69	72	61	64	55	58	49	52
Grader	110	85	90	76	81	68	73	62	67	56	61
Hand tools (electric)	102	77		68							
Hand tools (pneumatic)	116	91		82							
Hand-held vibrating compactor		83		74		66		60		54	
Jackhammer	121	96		87		79		73		67	
Loader moving with full bucket	105	76		67	70	59		53		47	
Mobile crane	104	88	91	79	82	71	74	65	68	59	62
Road truck	107	83	88	74	79	66	71	60	65	54	59
Roller		82	88	73	79	65	71	59	65	53	59
Scraper	116	85	98	76	89	68	81	62	75	56	69
Tub grinder & mulcher (40-50hp)	116	91	95	82	86	74	78	68	72	62	66
Vibratory roller	108	84	85	75	76	67	68	61	62	55	56
Water cart	107	82	83	73	74	65	66	59	60	53	54
Welding equipment	105	80	85	71	76	63	68	57	62	51	56

*A-weighted sound power levels - Typical mid-point

Table 47 provides a summary of the noise sources adopted for this assessment and the operational details of each source. Sound power levels have been taken from reproduced from Department of Planning Transport and Infrastructure (SA) (2014) or Australian Standard 2436 (Standards Australia, 2010) and are typical levels.

6.2.2.2.4 Noise generation

6.2.2.2.4.1 Construction

Noise from construction of the proposed development is expected to include steady or quasi-steady noise sources (e.g. generators etc) and intermittent noise sources (e.g. earthmoving equipment, site vehicles etc). It is expected that steady or quasi-steady noise sources will be of a lower noise level to the earthmoving equipment. The anticipated type of equipment and number of units to be used during construction are provided in Table 46. The type and number of equipment is a guide only as the type of equipment and number of units shall be dependent on the construction contractor engaged.

Construction works will involve the noise generating activities and/or use of the noise generating plant and equipment outlined in Table 46. Jack hammers, pile-drivers and blasting shall not be used during construction.

Table 46 – Construction phase – Anticipated equipment

Activity	Vehicles / Equipment
Vegetation clearing	Bulldozer (CAT D6/D8)
Bulk Earthworks – cut/fill	Open bowl scraper (CAT 637)
Topsoil stripping / trimming	Elevating scraper (CAT 637)
Drains / trimming embankments	Excavator (CAT 325)
Trimming/ subgrade placement	Graders (CAT 140M)
Soil moisture conditioning	Articulated vehicle - CAT740 (32t)
Dust suppression	Medium vehicle – Rigid (16t)
Fill compaction	Roller – compactor 825H
Subgrade compaction	Roller – smooth drum C56
Road aggregate placement/spray seal	Medium vehicle – Rigid 12t
Services / material placement	Backhoe (CAT 580)
Water reticulation lines	Bobcat trencher (CAT T9B)
Fuel distribution	Medium vehicle – Rigid 10t
Equipment servicing/repairs	Medium vehicle – Rigid 10t
Fencing / Shade structures	Truck mounted pipe cutting and welding equipment
Post holes	Bobcat hole borer (CAT T9B)
Equipment delivery	Heavy vehicle - Semi-trailer low loader
Material delivery – cement/steel/silos	Heavy vehicle - Semi-trailer / B-Double
Fuel delivery	Heavy vehicle - Semi-Double
Personnel	Light vehicle

Table 45 outlines the typical sound pressure levels for a range of construction equipment. Some of which shall be used during the construction of the proposed development along with typical sound pressure levels. The sound pressure levels shown in Table 47 are generalised values of construction machinery and equipment that have either been reproduced from Department of Planning Transport and Infrastructure (SA) (2014) or Australian Standard 2436 (Standards Australia, 2010). Noise generated by construction plant dissipates over distance.

In accordance with the Environmental Protection (Noise) Policy 2019, the emission of noise must not exceed the levels specified in Table 42.

As outlined in section 4.4.10, the proposed hours of construction are 6:30 am and 6:30 pm for Monday to Friday and between 7 am and 5 pm on Saturdays and Sundays with no construction activities undertaken on public holidays, evening or nighttime.

Items such as boilers, pumps, transformers, cooling fans, compressors, oil and gas burners, foundries, washing machines, electrical installations, diesel engines, asynchronous motors, ventilation and air-conditioning equipment, wind turbulence and large chimney resonances are sources of high level, low frequency noise having frequency content less than 200 Hz (Roberts, 2004). The proposed construction works do not involve equipment or activities that may produce low frequency noise.

The magnitude of off-site noise impact associated with construction would be dependent upon a number of factors:

- The intensity of construction activities;
- The location of construction activities on site;
- The type of equipment used;
- The timing of construction activities;
- Intervening terrain; and
- The prevailing weather conditions.

A semi-quantitative assessment based on noise emissions of typical construction equipment to be used during construction has been undertaken due to the separation distances to sensitive receptors. The assessment scenario assumes that two of the highest sound power level generating construction equipment (i.e. scrapers) are working in close proximity to each other in dry conditions. Vegetation, terrain and metrological conditions have not been factored into the assessment.

All sensitive receptors have stands of vegetation and undulating topography between them and the construction site which would attenuate the noise to some degree. As outlined in section 5.1.1 and Figure 14, the predominant wind direction is from the east to southeast direction blowing towards receptor R12 and R13 which are rural dwellings separated by over 6 km.

The construction noise impact for the anticipated construction equipment is shown in Table 49 for the distance to each noise sensitive receptor and is based on no natural landform noise barriers or no acoustic shielding in place and with each plant item operating at full power.

Table 47 – Proposed development – Construction phase – Predicted sound power levels at sensitive receptors

Receptor	Distance from development complex to sensitive receptor m	Nearest Activity A-weighted Sound Power Level at Source* db(A)	Deduction from A-weighted Sound Power Level[1] db(A)	Predicted A-weighted Sound Power Level db(A)	Compliance with Acoustic Quality Objectives - daytime <45 db(A)
R1	3,265	112	87	21	Yes
R2	4,475	113	90	18	Yes
R3	4,730	113	91	17	Yes
R4	4,950	113	91	17	Yes
R5	3,910	113	89	19	Yes
R6	3,930	113	89	19	Yes
R7	4,825	113	91	17	Yes
R8	4,895	113	91	17	Yes
R9	5,480	113	92	16	Yes
R10	4,990	113	91	17	Yes
R11	5,040	113	92	16	Yes
R12	6,460	113	94	14	Yes
R13	6,540	113	94	14	Yes
R14	3,985	113	89	19	Yes
R15	3,500	113	88	20	Yes
R16	5,000	113	91	17	Yes
R17	2,810	113	85	23	Yes
R18	9,780	113	99	9	Yes
R19	14,040	113	103	5	Yes

Notes: 1. Deduction from A-weighted Sound Power Level obtained from Figure B1 and Table D1 in AS2436-2010 – Guide to Noise Control on Construction, Maintenance and Demolition Sites.

6.2.2.2.4.2 Operation

Noise emissions from the operation of the proposed development would largely be associated with the operation of machinery and equipment on the site, traffic movements and from animal noise.

Transport of feed commodities, livestock, solid waste would typically occur between 6:30 am and 6:30 pm. However, heavy vehicle movements may occur outside of normal transport hours for example transport of cattle may occur either at night or in the early hours of the morning for animal welfare reasons.

The operation of the proposed development shall not involve additional plant and equipment that may produce additional low frequency noise over which already exists at the site.

Increased noise from cattle would generally occur during loading and unloading of cattle and any situations where cattle may be distressed. Stress impacts upon cattle growth and would

therefore be minimised to ensure cattle are healthy thereby ensuring optimum growth. Most of the livestock noise would be generated during daytime operations.

Table 48 indicates the type of equipment, number of units and predicted noise levels during various operational activities associated with the proposed development. The type of mobile plant may be subject to change.

Table 49 below presents predicted receptor noise levels during the construction and operational phase of the proposed development respectively. Review of the predicted noise levels confirms that compliance with the PNTL criteria established in accordance with the NPfI can be achieved for all receptors during the daytime period.

Table 48 – Typical sound power level from operational equipment (Department of Planning Transport and Infrastructure (SA), 2014)

Type	Number of units	Activity	Location	Typical sound power level (db(A))
Augers, roller mill	1	Grain movement, processing	Grain storage	95
Tractor/Spreader	1	Solid waste spreading	Solid waste stockpile / waste utilisation areas	107
Front-end loader	1	Ration preparation, solid waste stockpiling/processing	Commodity storage / Solid waste stockpile	105
Tractor	3	Ration delivery, general activities, tillage, spraying, silage production	Development complex / waste utilisation areas	100
Trucks (>20t)	NA	Outgoing cattle, feed commodities etc	-	107

A semi-quantitative assessment based on noise emissions of typical equipment to be used during operation has been undertaken due to the separation distances to sensitive receptors. Vegetation, terrain and metrological conditions have not been factored into the assessment. There are stands of native vegetation, between the closest sensitive receptor and the proposed development site which would attenuate the noise to some degree.

Therefore, the predicted noise levels in Table 49 represent a worst-case scenario and noise levels at these distances from equipment are likely to be much lower. For the assessment it has been assumed that a feed tractor and front-end loader are operating at the same time.

The noise impact for the anticipated operational equipment is shown in Table 49 for the distance to the subject land boundary and is based on no natural landform noise barriers or no acoustic shielding in place and with each plant item operating at full power.

Table 49 – Proposed development – Operation phase –Predicted sound power levels at sensitive receptors

Receptor	Distance from development complex to sensitive receptor m	Nearest Activity A-weighted Sound Power Level at Source* db(A)	Deduction from A-weighted Sound Power Level[1] db(A)	Predicted A-weighted Sound Power Level db(A)	Compliance with Acoustic Quality Objectives - daytime <45 db(A)
R1	3,265	110	87	20	Yes
R2	4,475	110	90	17	Yes
R3	4,730	110	91	16	Yes
R4	4,950	110	91	16	Yes
R5	3,910	110	89	18	Yes
R6	3,930	110	89	18	Yes
R7	4,825	110	91	16	Yes
R8	4,895	110	91	16	Yes
R9	5,480	110	92	15	Yes
R10	4,990	110	91	16	Yes
R11	5,040	110	92	15	Yes
R12	6,460	110	94	13	Yes
R13	6,540	110	94	13	Yes
R14	3,985	110	89	18	Yes
R15	3,500	110	88	19	Yes
R16	5,000	110	91	16	Yes
R17	2,810	110	85	22	Yes
R18	9,780	110	99	8	Yes
R19	14,040	110	103	4	Yes

Notes: 1. Deduction from A-weighted Sound Power Level obtained from Figure B1 and Table D1 in AS2436-2010 – Guide to Noise Control on Construction, Maintenance and Demolition Sites.

Plant and equipment would only operate at maximum sound power levels for brief periods whilst the remainder of the time, machinery would operate below full power, producing lower sound levels. It is highly unlikely that all construction equipment would operate at maximum sound power levels at any one time and all equipment is not present on the site at one time due to the sequence of activities. Therefore, the predicted noise levels in Table 49 represent a worst-case scenario and noise levels at these distances from equipment are likely to be much lower given the natural landform of the area.

6.2.2.2.4.3 Traffic

In addition to the above noise sources at the proposed development, vehicle movements associated with livestock and commodities generate noise. All vehicles shall utilise Newsomes Road. Up to 20 vehicles per day have been assumed on Newsomes Road as shown in Table 50. Hourly traffic movements do not include site employee traffic movements which would normally occur independently of the road truck traffic, either earlier or later, at the beginning and the end of each working day. As the local region is dominated by agricultural activities there would be a large seasonal fluctuation in traffic movements in line with planting and harvesting windows.

Table 51 provides the estimated traffic movements for production rate of 81,500 tonnes per annum. The table includes all inbound and outbound unloaded and loaded vehicles. A vehicle entering and exiting the development site is two movements. The vehicle movements have been modelled on truck and dog combination. Heavy vehicle movements may occur 5 days a week.

Table 50 – Local road network – Background traffic levels

Assessed roads	Vehicle type	Traffic movements Newsomes Road vpd
Existing traffic	Light vehicles	18
	Heavy vehicles	2
	Total	20

Table 51 – Proposed development – Traffic generation (AADT)

	Vehicles per day	Vehicles per week	Vehicles per year
Light vehicles	~4.3	~30.0	~1,560
Heavy vehicles	~0.7	~5.0	~260
Total vehicles	~5.0	~35.0	~1,820

As shown in Table 51, the AADT for the proposed development is estimated to be up to 5.0 vpd with about 0.7 vpd heavy vehicles when fully developed.

The peak vehicle movements were based on 2 times average weekly movements spread across five days and are shown in Table 52. The volumes are double the average to represent a reasonable amount of peaking throughout the year. This is a conservative estimate which was then used to determine the peak hourly volumes. Typically, on major roads, the peak daily traffic flow is about 10% of the average annual daily traffic.

Table 52 – Background and proposed development traffic – Peak volumes

	Peak vehicles per hour	Peak vehicles per day	Peak vehicles per week
Light vehicles	~3.6	~18.0	~90.0
Heavy vehicles	~4.2	~21.0	~105.0

The NSW Road Noise Policy 2011 (RNP) recommends a relative increase criterion for residential land uses to be 2 dB(A) above existing traffic noise levels. It is noted that the RNP specifies an LAeq,15-hour and LAeq,9-hour criteria of 60 dB(A) and 55 dB(A) for the Day (7 am to 10 pm) and the Night (10 pm to 7 am) periods, respectively for traffic-generating developments. The proposed development shall not operate outside of daylight hours.

To the north on Newsomes Dip Road, the nearest residential receptors (roadside) that could be affected by an increase in road traffic noise are R15 and R1 which are set back approximately 115 m and 515 m from the road respectively.

There are several residential receptors (roadside) along Wellington Vale Road, the nearest residential facades are set back approximately 235 m, 350 m, and 1,950 m from the road respectively.

The calculated traffic noise levels for the background and during operation of the proposed development are shown in Table 53. Traffic noise calculations are based on the Calculation of Road Traffic Noise (CoRTN) method developed by the United Kingdom of Transport (UKDoT), with adjustments to the base method to determine average (LAeq) noise level. However, this method is reliable for traffic movements of over 50 vehicles per hour. Consequently, as a worst case scenario 50 vehicles per hour has been modelled. The peak hour flow on Newsomes Road and Wellington Vale Road are significantly less than 50 vph.

Table 53 – Proposed development – Estimated traffic noise level

Identifier	Distance from road m	Noise level dB(A)	Compliance with RNP 60 dB(A)	Road frontage
R1	515	46.3	Yes	Newsomes Road
R2	1,950	39	Yes	Wellington Vale Road
R3	1,050	NA	NA	Nant Park Road
R4	500	NA	NA	Nant Park Road
R5	360	NA	NA	Nant Park Road
R6	160	NA	NA	Nant Park Road
R7	35	NA	NA	Rangers Valley Road
R8	35	NA	NA	Rangers Valley Road
R9	470	NA	NA	Rangers Valley Road
R10	55	NA	NA	Rangers Valley Road
R11	165	NA	NA	Rangers Valley Road
R12	745	NA	NA	Rangers Valley Road
R13	235	52.9	Yes	Wellington Vale Road
R14	865*	43.8	Yes	Newsomes Road
R15	115*	53.6	Yes	Newsomes Road
R16	300	51.3	Yes	Wellington Vale Road

*Owned by the applicant.

6.2.2.3 Vibration assessment

The construction and operation of the proposed development does not involve any vibration generating activities such as blasting, crushing, drilling or plant and equipment etc. Further, the closest potentially affected vibration sensitive receptor is located over 3,000 m from the proposed development.

Consequently, a vibration assessment is not deemed warranted.

6.2.2.3.1 Conclusion

The proposed development is in a rural area dominated by agricultural activities. The nearest potentially affected noise sensitive receptor is located over 3,000 m from the proposed development.

The proposed development shall not result in an increase in traffic noise. Further, the operation vehicles shall be of similar type and size to the existing traffic on this road servicing the subject land and existing agricultural enterprises (semi-trailers, B-Doubles), adherence to approved operation hours and lack of rural dwellings adjoining Newsomes Road shall mitigate any potential traffic noise impacts upon surrounding sensitive receptors.

Due to the nature of the proposed development, separation distances to sensitive receptors and the terrain and stands of vegetation between sensitive receptors and the proposed development it is highly unlikely that sensitive receptor locations would receive an increase in the existing acoustic environment level.

6.2.3 Dust

Dust may be generated from cattle movements, traffic movements, solid waste handling and feed commodities. However, generally, solid waste contains enough moisture not to generate dust.

The subject land contains native vegetation fringing drainage lines and the subject land boundary on Newsomes Road. This vegetation screens the proposed development from sensitive receptors in these directions and mitigates any potential dust issues. This vegetation shall remain in place for the proposed development.

Vehicle movements along unsealed roads can generate dust. Newsomes Road is unsealed and is a potential source of dust generation. There are two sensitive receptors with frontage to Newsomes Road. One sensitive receptor is setback over 100 m and is there are a stand of trees along the property boundary and around the dwelling. This sensitive receptor is the applicants residence. The other sensitive receptor is setback over 500 m from Newsomes Road and surrounded by trees and shrubs. The proposed development shall not impact on sensitive receptors.

The National Guidelines for Beef Cattle Feedlots in Australia (3rd Edition) (MLA, 2012a) state that typically, in intensive livestock facilities, if the separation distance is suitable to mitigate against odour impacts, dust impacts are also not expected by default. As outlined in section 6.2.5, the proposed development is sufficiently separated to mitigate odour impacts. Consequently, no particulate matter or visible contaminant, including dust, smoke, fumes and aerosols likely to cause environmental harm is to emanate beyond the boundaries of the subject land.

6.2.4 Visual

The visual impact of the proposed development, including both short-term and long-term impacts has been determined by considering both visual effect and visual sensitivity. Visual effect is a measure of the level of visual contrast and integration of the proposed development with the existing landscape.

The degree of this contrast with the existing landscape will determine the level of visual effect. For example, a new development will have a higher visual effect due to strong contrast with the existing visual environment. Changes to an existing development will have a lesser visual effect due to elements of the development being present in the landscape.

Visual sensitivity is a measure of how critically a change to the existing landscape is viewed by people from different land use areas in the vicinity of the proposed development. In this regard, residential, tourist and / or recreation areas generally have a higher visual sensitivity than other land use areas including industrial, agricultural or transport corridors. This is because land uses with a higher visual sensitivity, such as residential, use the scenic amenity values of the surrounding landscape and may be used as part of a leisure experience and often over extended viewing periods (such as a regional tourist drive).

The visual sensitivity of individual viewing locations varies according to:

- Screening effects of any intervening topography, buildings or vegetation. Viewing locations with well screened views of the proposed development will have a lower visual sensitivity than those with more open views;
- Viewing distance from the viewing location to visible areas of the proposed development. The longer the viewing distances, the lower the visual sensitivity; and
- General orientation of residences to landscape areas affected by the proposed development. Viewing locations with strong visual orientation towards the proposed development (i.e. those residences with areas such as living rooms and/or verandas orientated towards it) will have a higher visual sensitivity than those not orientated towards, and which do not make use of the views toward the proposed development.

The subject land has been affected by impacts commonly associated with agricultural development including livestock grazing and cropping operations. This existing disturbance includes tree clearing, pasture improvement and cropping. The current vegetation pattern includes scattered vegetation becoming denser along drainage lines and areas less suitable for agricultural pursuits.

The proposed development shall have a large horizontal and low vertical scale. Whilst the visual effect of the proposed development is high, the low vertical scale ensures that all viewing locations are screened by the intervening topography and/or vegetation, limiting the visibility of the proposed development from receptors in adjacent areas. There are no residential dwellings that have views of the proposed development. The closest residential dwelling is on the property “Wellington Vale” located some 3,265 m to the north by east of proposed development complex . The setback area contains stands of woody native vegetation and along with the undulating topography mitigates any potential views of the proposed development as shown in Figure 3.

Remaining residential dwellings are unsighted due to intervening topographic and vegetation features. There is potential for glimpses of the proposed development complex from Newsomes Road to the north as shown in Photograph 19. However, Newsomes Road is a 'No Through Road' and predominantly services land owned by the applicant or related entities.

The visual impact of the proposed development is low from key viewing locations with impact limited to the local setting in the vicinity of Newsomes Road. However, the nature of the proposed development would be consistent with the existing agricultural activities in the surrounding area. Consequently, it is considered that the proposed development would assimilate into the local landscape due to the nature of the development and the high visual absorption capacity of the surrounding landscape.

The maintenance of the proposed development and its associated infrastructure in a clean and tidy condition will generally assist in the management of the visual impact of the development.

Consequently, the proposed development is not expected to impact on the visual amenity of sensitive receivers or the landscape character of the area in the immediate vicinity.

Photograph 19 – Proposed development site – View from Newsomes Road (north)

6.2.5 Separation distance assessment

The use of appropriate separation distances is a well-established and widely recognised means of mitigating the impacts on community amenity that arise from odour from beef cattle feedlots (MLA, 2012a).

The National Guidelines for Beef Cattle Feedlots in Australia (3rd Edition) (MLA, 2012a) provide two methods for determining appropriate separation distances between cattle feedlots and sensitive receptors. These include the S-factor method and odour dispersion modelling.

The S-factor method uses a standard empirical formula that provides a conservative estimate of the separation distance required and therefore offers higher levels of protection for community amenity. Typically, the separation distance estimated using the S-factor method more than complies with the quantitative performance criteria set out in relevant environmental legislation, regulation and policy.

Given, the size and scale of the proposed development and proximity to sensitive receptors the S-factor method has been adopted to assess the separation distance required to mitigate potential odour nuisance issues for nearby sensitive receptors.

The S-factor method relies on factors such as the number of cattle in the development, receptor type, topography, vegetation (surface roughness), wind frequency and feedlot design and operation. The required separation distance is measured from the closest odour source of the proposed development in the direction of the sensitive receptor, not the centre of the development.

The National Guidelines for Beef Cattle Feedlots in Australia (3rd Edition) (MLA, 2012a) calculation of separation distances for each receptor type follows the form:

Separation distance (D) (m) = $N^{0.5}$ x S_1 x S_2 x S_3 x S_4 x S_5

Where:

- N = feedlot capacity in SCU;
- 0.5 = feedlot size exponent determined using the results of modelling;
- S_1 = feedlot design and management factor;
- S_2 = receptor type factor;
- S_3 = topography or terrain weighting factor;
- S_4 = vegetative cover factor; and
- S_5 = wind direction factor.

As outlined in section 4.3.1, the proposed development has a capacity of 842 SCU.

6.2.5.1.1 Siting, Design and management factor (S_1)

Siting, design and management factors will influence odour emissions from the proposed development. These factors include the climatic conditions at the site and stocking density of the production pens.

The average stocking density of the proposed development is proposed to be ~13.1 m^2/head or ~15.6 m^2/SCU as outlined in section 4.3.2.1.

For comparable odour emission rates, pens must be stocked at a lower density (i.e. greater m^2/SCU) in a wetter climate than in a drier one (with all other factors equal). Thus, S_1 values for specific stocking densities are provided for an average annual rainfall of either <750 mm or >750 mm. As outlined in section 5.1, the average annual rainfall for the area is about 789 mm per year.

Consequently, based on a stocking density of ~15.6 m^2/SCU and a rainfall category of >750mm/year, a S_1 factor of **63** was interpolated from Table B-1 of the National Guidelines for Beef Cattle Feedlots in Australia (3rd Edition) (MLA, 2012a).

6.2.5.1.2 Receptor factor (S_2)

S_2 is a receptor type factor which accounts for the variation in population density, odour sensitivity and risk of exposure for receptors located in the vicinity of a development. The greater the exposed population, the more likely it is that 'sensitive' individuals might be exposed to nuisance odour. Thus, the S_2 value for a large population centre (and the minimum separation distance) is greater than that for a single rural dwelling (Table B.2, MLA, 2012a).

There are three types of receptors to be considered surrounding the proposed development. These include single rural dwellings on surrounding rural properties, low use public areas (Glen Innes sailing club) and the villages of Emmaville and Deepwater which are population centres located some distance away.

The S_2 factors were selected for the closest receptors. The location of the receptors is shown in Figure 41 and are summarised in Table 59.

Table 54 – Proposed development – Receptor factors – Adopted values of S_2

Identifier	Location	Direction from Development	Receptor type	S_2 value
R1	1045 Wellington Vale Road, Wellington Vale	North by East	Single rural or farm dwelling	0.3
R2	Morven Road, Dundee	Northeast by East	Single rural or farm dwelling	0.3
R3	907 Nant Park Road, Deepwater	East by North	Single rural or farm dwelling	0.3
R4	907 Nant Park Road, Deepwater	East	Single rural or farm dwelling	0.3
R5	581 Nant Park Road, Deepwater	East southeast	Single rural or farm dwelling	0.3
R6	234 Nant Park Road, Rangers Valley	Southeast by South	Single rural or farm dwelling	0.3
R7	1259 Rangers Valley Road, Rangers Valley	South southwest	Single rural or farm dwelling	0.3
R8	1259 Rangers Valley Road, Rangers Valley	South by West	Single rural or farm dwelling	0.3
R9	Rangers Valley Road, Rangers Valley	Southwest by South	Single rural or farm dwelling	0.3
R10	1909 Rangers Valley Road, Rangers Valley	West by South	Single rural or farm dwelling	0.3
R11	2004 Rangers Valley Road, Emmaville	West	Single rural or farm dwelling	0.3
R12	1755 Wellington Vale Road, Emmaville	West northwest	Single rural or farm dwelling	0.3
R13	1501 Wellington Vale Road, Wellington Vale	Northwest by North	Single rural or farm dwelling	0.3
R14	166 Newsomes Road, Wellington Vale	North by West	Single rural or farm dwelling	0.3
R15	166 Newsomes Road, Wellington Vale	North	Single rural or farm dwelling	0.3
R16	1045 Wellington Vale Road Wellington Vale	North	Single rural or farm dwelling	0.3
R17	Rangers Valley Aquatic Club	South southeast	Low use public area	0.05
R18	Deepwater (Population ~456 2021)	East northeast	Medium town (125-500 persons)	1.1
R19	Emmaville (Population ~519 2016)	West by North	Medium town (500-2000 persons)	1.2

6.2.5.1.3 Terrain factor (S_3)

The terrain weighting factor (S_3) relates to the potential for the odour plume to be exaggerated in particular directions, and relatively small in others. This method provides an estimation of the potential changes to odour dispersion in situations where meteorological conditions may be influenced by local terrain.

The S_3 terrain factor is selected based on the topography at the site.

Generally speaking, the terrain is gently undulating between the proposed development complex site and each receptor downhill or uphill as shown in the topographic data in Figure 15 and from photographs of the area as shown in Photograph 5 to Photograph 7. The grade to each receptor downhill is less than 1%.

Consequently, relief between the proposed development site and each receptor, and in their immediate environs, is moderate (<75 m) as shown in Table 55. A S_3 factor for Flat terrain (1.0) has been selected for conservatism for all rural dwelling receptors as this results in a larger separation distance when compared to other terrain factors. A S_3 factor for low relief undulating (0.9) has been selected for townships due to their distance from the proposed development complex.

Table 55 – Proposed development – Terrain factor – Adopted values of S_3

Identifier	Location	Elevation[1] m (AHD)	Distance from Development m	Grade %	S_3 value
R1	1045 Wellington Vale Road, Wellington Vale	936	~3,265	0.18	1.0
R2	Morven Road, Dundee	965	~4,475	0.78	1.0
R3	907 Nant Park Road, Deepwater	995	~4,730	1.37	1.0
R4	907 Nant Park Road, Deepwater	973	~4,950	0.87	1.0
R5	581 Nant Park Road, Deepwater	942	~3,910	0.31	1.0
R6	234 Nant Park Road, Rangers Valley	916	~3,930	-0.36	1.0
R7	1259 Rangers Valley Road, Rangers Valley	907	~4,825	-0.48	1.0
R8	1259 Rangers Valley Road, Rangers Valley	906	~4,895	-0.49	1.0
R9	Rangers Valley Road, Rangers Valley	883	~5,480	-0.86	1.0
R10	1909 Rangers Valley Road, Rangers Valley	901	~4,990	-0.58	1.0
R11	2004 Rangers Valley Road, Emmaville	901	~5,040	-0.58	1.0
R12	1755 Wellington Vale Road, Emmaville	891	~6,460	-0.60	1.0
R13	1501 Wellington Vale Road, Wellington Vale	885	~6,540	-0.69	1.0
R14	166 Newsomes Road, Wellington Vale	900	~3,985	-0.75	1.0
R15	166 Newsomes Road, Wellington Vale	910	~3,500	-0.57	1.0
R16	1045 Wellington Vale Road Wellington Vale	897	~5,000	-0.66	1.0
R17	Glen Innes sailing club	904	~2,810	-0.93	0.9
R18	Deepwater (Population ~456 2021)	963	~9,780	0.34	0.9
R19	Emmaville (Population ~519 2016)	898	~14,040	-0.23	0.9

[1] Terrain heights were taken from the Google Earth™ at each receptor location. The elevation of the proposed development complex is around 930 m.

6.2.5.1.4 Vegetative cover factor (S_4)

The vegetative cover factor (S_4) relates to the vegetative density or 'roughness elements' between the proposed development and the receptor. Generally, the rougher the surface, the more turbulent the air flow, and the more mixing and dilution of the air and more odour dispersion. Maximum turbulence occurs when the surface is a mixture of various sized obstacles of various heights.

The vegetation factor for each sensitive receptor was selected based on both on-site observations and aerial imagery of the area and are shown in Figure 3. Receptors 1 through to 19 are separated by a combination of open grassland, cropping and remnant native vegetation grassy woodland ringing drainage lines, roads and areas less suitable for agriculture. Consequently, for conservatism 'crops only (no effective tree cover)' was selected as this results in a larger separation distance when compared to other surface roughness factors.

An indication of the vegetative cover can be seen on aerial imagery as shown in Figure 3.

Table 56 – Proposed development – Vegetative cover – Adopted values of S_4

Identifier	Location	Vegetation type	S_4 value
R1	1045 Wellington Vale Road, Wellington Vale	Crops only (no effective tree cover)	1.0
R2	Morven Road, Dundee	Crops only (no effective tree cover)	1.0
R3	907 Nant Park Road, Deepwater	Crops only (no effective tree cover)	1.0
R4	907 Nant Park Road, Deepwater	Crops only (no effective tree cover)	1.0
R5	581 Nant Park Road, Deepwater	Crops only (no effective tree cover)	1.0
R6	234 Nant Park Road, Rangers Valley	Crops only (no effective tree cover)	1.0
R7	1259 Rangers Valley Road, Rangers Valley	Crops only (no effective tree cover)	1.0
R8	1259 Rangers Valley Road, Rangers Valley	Crops only (no effective tree cover)	1.0
R9	Rangers Valley Road, Rangers Valley	Crops only (no effective tree cover)	1.0
R10	1909 Rangers Valley Road, Rangers Valley	Crops only (no effective tree cover)	1.0
R11	2004 Rangers Valley Road, Emmaville	Crops only (no effective tree cover)	1.0
R12	1755 Wellington Vale Road, Emmaville	Crops only (no effective tree cover)	1.0
R13	1501 Wellington Vale Road, Wellington Vale	Crops only (no effective tree cover)	1.0
R14	166 Newsomes Road, Wellington Vale	Crops only (no effective tree cover)	1.0
R15	166 Newsomes Road, Wellington Vale	Crops only (no effective tree cover)	1.0
R16	1045 Wellington Vale Road Wellington Vale	Crops only (no effective tree cover)	1.0
R17	Glen Innes sailing club	Crops only (no effective tree cover)	1.0
R18	Deepwater (Population ~456 2021)	Crops only (no effective tree cover)	1.0
R19	Emmaville (Population ~519 2016)	Crops only (no effective tree cover)	1.0

6.2.5.1.5 Wind direction factor (S_5)

Wind direction has the potential to increase the exposure of a receptor located in the downwind path. While most Australian feedlot sites will have some form of prevailing wind, it is unlikely that it will blow from that general direction (±40° of the direct line) for most of the time (>60%) (MLA, 2012a).

Due to the location of the proposed development and separation to sensitive receivers' site-specific wind direction data has been used is the S-factor assessment to determine wind direction. Site-specific wind direction data was obtained from TAPM as outlined in section 5.1.1.

Wind data derived from TAPM between 2018 and 2022 were used (43,824 hours). Figure 13 and Figure 14 (TAPM 2018-2022) show that the predominant wind direction is from the east through to southeast. Consequently, the receptors that would be most affected are receptors R10, R11, R12 and R19 (Emmaville). However, the wind does not blow from that general direction (±40° of the direct line) towards these receptors for most of the time (>60%) as shown in Table 57. Consequently, a normal S_5 wind factor was applied to all receptors as shown in Table 57.

Table 57 – Proposed development – Separation distance assessment – Wind direction – Adopted values of S_5

Identifier	Location	Wind Direction (Bearing)	Hours wind blowing within ±40° of the bearing	Percentage wind blowing within ±40° of the bearing	S_5 value
R1	1045 Wellington Vale Road, Wellington Vale	189.0	3,337	7.6	1.0
R2	Morven Road, Dundee	233.0	5,849	13.3	1.0
R3	907 Nant Park Road, Deepwater	263.0	7,528	17.2	1.0
R4	907 Nant Park Road, Deepwater	270.0	7,666	17.5	1.0
R5	581 Nant Park Road, Deepwater	292.5	7,731	17.6	1.0
R6	234 Nant Park Road, Rangers Valley	326.25	6,476	14.8	1.0
R7	1259 Rangers Valley Road, Rangers Valley	18.4	6,656	15.2	1.0
R8	1259 Rangers Valley Road, Rangers Valley	11.25	6,425	14.6	1.0
R9	Rangers Valley Road, Rangers Valley	39.0	8,194	18.7	1.0
R10	1909 Rangers Valley Road, Rangers Valley	75.9	20,015	45.6	1.0
R11	2004 Rangers Valley Road, Emmaville	87.6	23,081	52.6	1.0
R12	1755 Wellington Vale Road, Emmaville	115.3	21,781	49.6	1.0
R13	1501 Wellington Vale Road, Wellington Vale	146.0	13,171	30.0	1.0
R14	166 Newsomes Road, Wellington Vale	165.9	4,596	10.5	1.0
R15	166 Newsomes Road, Wellington Vale	180	3,389	7.7	1.0
R16	1045 Wellington Vale Road Wellington Vale	180	3,389	7.7	1.0
R17	Glen Innes sailing club	180	3,389	7.7	1.0
R18	Deepwater (Population ~456 2021)	180	3,389	7.7	1.0
R19	Emmaville (Population ~519 2016)	101.5	23,073	52.6	1.0

6.2.5.1.6 Cumulative effects

One of Australia's largest cattle feedlots, Rangers Valley is located in the local area. Rangers Valley has a licensed capacity of 50,000 head and a current built capacity of 40,000 head, ranking it the fourth largest in Australia. There are no other intensive livestock facilities such as piggeries, poultry farms or smaller beef cattle feedlots in the area. Table 58 outlines the closest intensive livestock development to the proposed development. The Rangers Valley Feedlot is a large beef cattle feedlot and is located on adjoining land with the development complex located some 2,500 m to the south of the proposed development.

Table 58 – Regional Intensive Livestock Facilities

ID	Location	Address	Capacity*	Stocking Density	Distance to Westholme FL
			Head	m^2/head	km
1	Rangers Valley Feedlot	1304 Rangers Valley Road, Glen Innes	50,000	16.0	~2.5

*Approved capacity

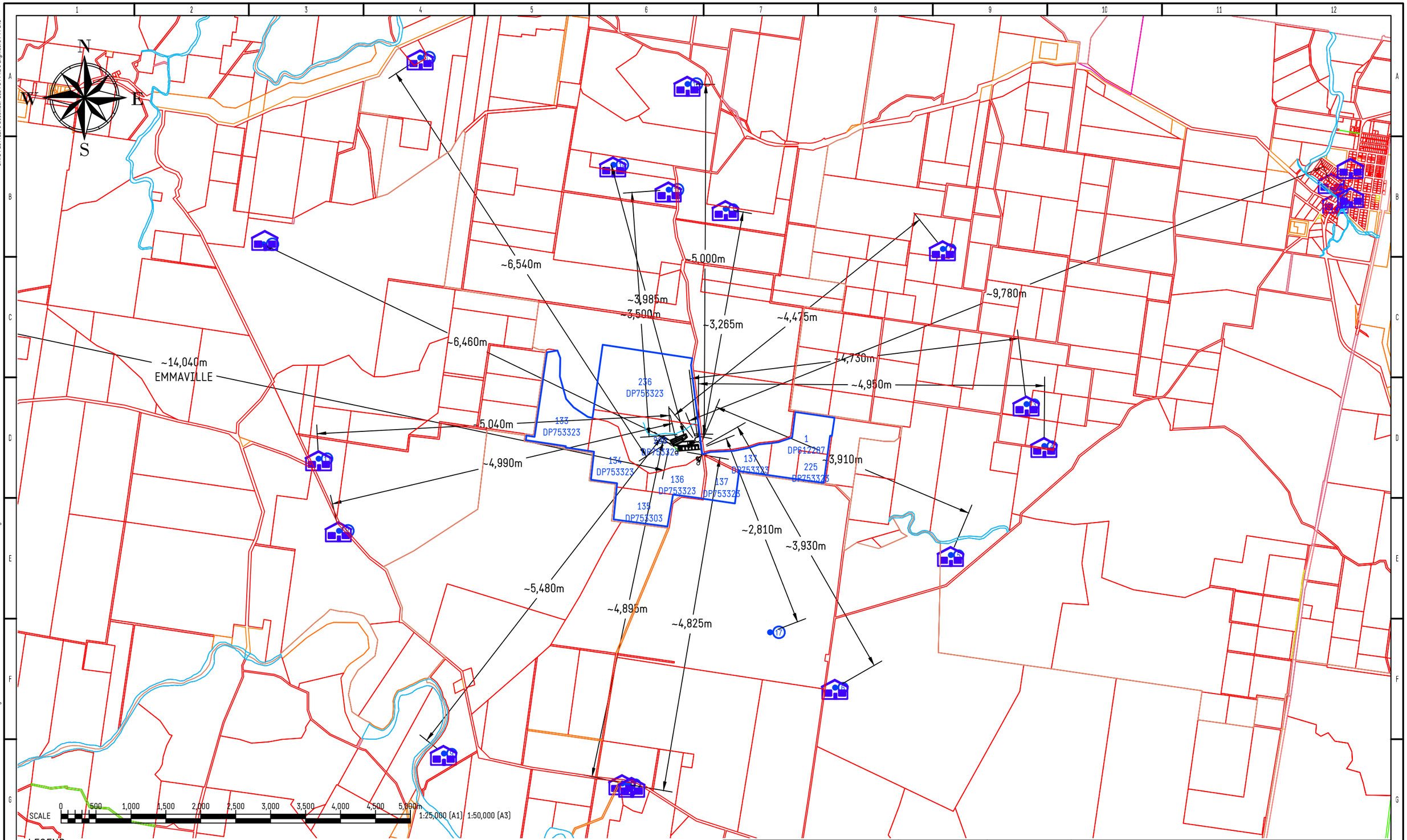
Consequently, as the proposed development and Rangers Valley feedlots are not separated by less than half the shortest separation distance (275 m) and there are no sensitive receptors unacceptably located within the 120% overlap zone, a cumulative impact assessment is not warranted in accordance with the National Feedlot Guidelines (MLA, 2012a).

6.2.5.1.7 Conclusion

Table 59 shows the required and available separation distances for the proposed development assuming normal wind direction frequency towards a receptor. This analysis shows that the receptors are outside of the separation distances required for the proposed development. Therefore, the proposed development meets the conservative separation distance requirements for sensitive receptors calculated in accordance with the S-factor method outlined in the National Guidelines for Beef Cattle Feedlots in Australia (3rd Edition) (MLA, 2012a) and a more detailed analysis is not required.

Table 59 – Proposed development – Separation distances from National Feedlot Guidelines (MLA, 2012a)

Identifier	Type	Direction	S_1	S_2	S_3	S_4	S_5	Distance Required Normal S_5	Available Distance	Compliance
							Normal	m	m	
R1	1045 Wellington Vale Road, Wellington Vale	North by East	63	0.3	1.0	1.0	1.0	550	3,265	Yes
R2	Morven Road, Dundee	Northeast by East	63	0.3	1.0	1.0	1.0	550	4,475	Yes
R3	907 Nant Park Road, Deepwater	East by North	63	0.3	1.0	1.0	1.0	550	4,730	Yes
R4	907 Nant Park Road, Deepwater	East	63	0.3	1.0	1.0	1.0	550	4,950	Yes
R5	581 Nant Park Road, Deepwater	East southeast	63	0.3	1.0	1.0	1.0	550	3,910	Yes
R6	234 Nant Park Road, Rangers Valley	Southeast by South	63	0.3	1.0	1.0	1.0	550	3,930	Yes
R7	1259 Rangers Valley Road, Rangers Valley	South southwest	63	0.3	1.0	1.0	1.0	550	4,825	Yes
R8	1259 Rangers Valley Road, Rangers Valley	South by West	63	0.3	1.0	1.0	1.0	550	4,895	Yes
R9	Rangers Valley Road, Rangers Valley	Southwest by South	63	0.3	1.0	1.0	1.0	550	5,480	Yes
R10	1909 Rangers Valley Road, Rangers Valley	West by South	63	0.3	1.0	1.0	1.0	550	4,990	Yes
R11	2004 Rangers Valley Road, Emmaville	West	63	0.3	1.0	1.0	1.0	550	5,040	Yes
R12	1755 Wellington Vale Road, Emmaville	West northwest	63	0.3	1.0	1.0	1.0	550	6,460	Yes
R13	1501 Wellington Vale Road, Wellington Vale	Northwest by North	63	0.3	1.0	1.0	1.0	550	6,540	Yes
R14	166 Newsomes Road, Wellington Vale	North by West	63	0.3	1.0	1.0	1.0	550	3,985	Yes
R15	166 Newsomes Road, Wellington Vale	North	63	0.3	1.0	1.0	1.0	550	3,500	Yes
R16	1045 Wellington Vale Road Wellington Vale	North	63	0.3	1.0	1.0	1.0	550	5,000	Yes
R17	Glen Innes sailing club	South southeast	63	0.05	0.9	1.0	1.0	82	2,810	Yes
R18	Deepwater (Population ~456 2021)	East northeast	63	1.1	0.9	1.0	1.0	1,815	9,780	Yes
R19	Emmaville (Population ~519 2016)	West by North	63	1.2	0.9	1.0	1.0	1,980	14,040	Yes



LEGEND

- SUBJECT LAND BOUNDARY
- LAND PARCEL BOUNDARY
- RURAL RESIDENTIAL RECEPTOR
- SMALL TOWN RECEPTOR
- STREAM ORDER 1
- STREAM ORDER 2
- STREAM ORDER 3
- STREAM ORDER 4
- STREAM ORDER 5
- STREAM ORDER 6
- STREAM ORDER 7
- STREAM ORDER 8

NOTES:

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4. HORIZONTAL DATUM - MGA2020 ZONE 56.

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STATUS: FOR APPROVAL
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RPEQ

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REV.	DATE	REVISION DESCRIPTION	DRAWN	CHECK	APPROVED
A	24/11/24	DRAFT ISSUE TO CLIENT	RJD	RJD	RJD
B	06/12/24	FINAL ISSUE FOR LODGEMENT TO GLEN INNES SEVERN COUNCIL	RJD	RJD	RJD

SCALE	1:50,000 (A3)
DRAWN	RJD
DATE	06/12/2024
CHECKED	RJD
DATE	06/12/2024
APPROVED	RJD
DATE	06/12/2024

CLIENT: NARRIE HOLDINGS PTY LTD ATF NEWSOME FAMILY TRUST
PROJECT: PROPOSED 999 HEAD BEEF CATTLE FEEDLOT
TITLE: DEVELOPMENT APPLICATION FOR INTENSIVE LIVESTOCK AGRICULTURE
STATEMENT OF ENVIRONMENTAL EFFECTS
PROPOSED DEVELOPMENT - SEPARATION TO SENSITIVE RECEPTORS

REPORT REFERENCE	SUPPLIED DRAWING NUMBER		DRAWING NUMBER	REV.
FIGURE 41		A3	G4-116-00-41	B

6.2.6 Soils

The soils of the subject land are outlined in section 5.4. The soils are loamy clay to medium clays and are well suited to the construction and operation of the proposed development.

Due to the location of the subject land in the landscape (~930 m - ~934 m AHD), it is unlikely that potential acid sulfate soils shall be disturbed during construction of the proposed development.

Those areas of the proposed development from which stormwater runoff has a high organic matter such as the beef cattle production pens, sedimentation basin, solid waste stockpile and carcass composting area and holding pond are contained within controlled drainage areas which excludes upslope stormwater runoff.

Stormwater runoff from the controlled drainage area is captured by a holding pond as outlined in 4.3.10 where it will be applied to crops by irrigation when there is sufficient volume. The catch drain, sedimentation basin and holding pond shall be lined with an impermeable clay base to achieve a permeability of 1×10^{-9} m/s. The solid waste stockpile and carcass composting area will also have a base permeability of 1×10^{-9} m/s.

When available, effluent shall be sustainably applied to crops on the subject land using a low- or high-pressure overhead irrigation system. The subject land has an area of at least 40 ha of suitable cropping land available for effluent utilisation as shown on Figure 11.

Solid waste shall be applied sustainably to cropping land using a tractor drawn moving bed manure spreader on the subject land. The subject land has an area of at least 100 ha of cropping land available for solid waste utilisation as shown on Figure 11.

Further, no woody vegetation is required to be cleared for the proposed development, thus minimising any potential impacts from salinity that may result from removal of trees on the subject land.

Consequently, the capability of the land shall not be affected by the proposed development.

6.2.7 Water

6.2.7.1 Surface water

6.2.7.1.1 Quality

As outlined in section 5.5.2, the subject land is in the eastern margin of the NSW Murray-Darling Basin on an elevated plateau known as the Northern Tablelands. On a regional scale, the subject land is located in the NSW Border Rivers catchment which comprises the catchments of the Dumaresq, Severn, Macintyre and Barwon rivers.
At a local scale, the subject land lies in the One Mile Creek sub-catchment of the Beardy River and the Cam Creek sub-catchment and unnamed tributary sub-catchment of the Severn River within the Dumaresq and Macintyre River drainage network respectively.

Figure 24 shows that the subject land is dissected by intermittent waterways that drain ultimately to the north and south to One Mile Creek and the Severn River respectively. The majority of the subject land is in the One Mile Creek subcatchment of the Beardy River.

Whilst the subject land does not have frontage to watercourses (>Stream Order 2), the proposed development has been designed and shall be constructed and operated to mitigate risks to surface water quality. The areas of the proposed development from which stormwater runoff may have a high organic matter and therefore high pollution potential shall be included within a controlled drainage area as outlined in section 4.3.10. The holding pond has been located in excess of 75 m from the closest waterway which is a stream order 1.

Stormwater runoff from outside of the controlled drainage area shall be excluded from contaminated runoff from within the controlled drainage area by diversion banks and catch drains.

The holding pond has been sized using site-specific daily-step hydrological modelling. Site-specific daily-step hydrological modelling accounts for the cumulative impact of a series of wet weather events such as might be experienced in a wetter-than-average season. This method is the recommended method by *The National Guidelines for Beef Cattle Feedlots in Australia* (MLA, 2012a). The spill frequency does not exceed an average of one spill in 10 years (notionally able to retain runoff in a 90th percentile wet year). This shall minimise any impacts on surrounding surface waters.

There are existing stock dams constructed on waterways downstream of the holding pond which will act as terminal ponds in the event of an effluent spill. These dams shall not be used as water supply for the proposed development.

When available, effluent shall be sustainably applied to crops within a dedicated effluent utilisation area on the subject land using a low-pressure overhead irrigation system. Sufficient buffer distance exists between effluent utilisation areas and watercourses as outlined in 4.3.12.2.1. The subject land has an area of at least 40 ha of cropping land available for effluent utilisation as shown on Figure 11.

Solid waste shall sustainably be applied within a dedicated on-site solid waste utilisation area on the subject land using a tractor drawn moving bed manure spreader. Sufficient buffer distances exist between solid waste utilisation areas and watercourses as outlined in section 4.3.12.2.1. The subject land has an area of about 100 ha of cropping land available for solid waste utilisation as shown on Figure 11.

Consequently, there is a minimal risk of surface water contamination from the proposed development.

6.2.7.1.2 Quantity

As outlined in section 5.5.2, there are no perennial watercourses mapped on the subject land.

Consequently, the subject land does not have access to river water and does not hold any water access licences for river water.

The subject land benefits from harvestable rights, which are one of the forms of basic landholder rights. The volume of harvestable rights is greater than the demand of the proposed development.

Consequently, the proposed development shall have no impact on the quantity of surface water in the local area.

6.2.7.2 Groundwater

6.2.7.2.1 Quality

The proposed development has the potential to impact the environmental values of groundwater at or in the vicinity of the development complex site through the release of contaminants commonly found in effluent and/or solid waste streams.

Contamination of groundwater has been shown to occur wherever three main components exist; a potential source of contamination, an underlying aquifer, and a pathway for transfer between the two. This pathway can be either indirectly through the soil or directly through man-made structures which intersect the water table, such as drains and effluent holding ponds.

Stormwater runoff from the controlled drainage areas is captured by a sedimentation basin and holding pond as outlined in 4.3.10 where it will be applied to land as irrigation when sufficient quantities allow. Catch drains, sedimentation basin and holding pond shall be lined with an impermeable clay base to achieve a permeability of 1×10^{-9} m/s. The solid waste stockpile and carcass composting area will also have a base permeability of 1×10^{-9} m/s.

When available, effluent shall be applied sustainably to crops within a dedicated effluent utilisation area on the subject land using a low-pressure overhead irrigation system. The subject land has an area of at least 60 ha of cropping land available for effluent utilisation as shown on Figure 11.

Solid waste shall be applied sustainably to a dedicated solid waste utilisation area on the subject land using a tractor drawn moving bed manure spreader. The subject land has an area of about 75 ha of cropping land available for solid waste utilisation as shown on Figure 11.

The quantity of solid waste that shall be applied to land shall not exceed 9.7 (dry) per ha/calendar year in accordance with the annual application rate for the nitrogen and phosphorus contained in the solid waste using the NLAR approach.

Consequently, the proposed development shall have no impact on the quality of groundwater in the local area.

6.2.7.2.2 Quantity

Groundwater shall be not used as the source of water for the proposed development.

Consequently, the proposed development shall have no impact on the quantity of groundwater in the local area.

6.2.8 Biodiversity

The proposed development shall be sited on Category 1 land an area historically cleared of native vegetation and which currently contains infrastructure such as roads, non-native grasses and isolated paddock trees. The proposed development does not involve clearing of native vegetation above the 1 ha threshold as outlined in section 5.6.

When available, effluent shall be applied sustainably to a dedicated effluent utilisation area on the subject land using a low-pressure overhead irrigation system. Buffer distances shall be maintained between effluent utilisation areas and native vegetation as outlined in 4.3.12.2.1.

Solid waste shall be applied sustainably to cropping land within a dedicated solid waste utilisation area on the subject land. Buffer distances shall be maintained between solid waste utilisation areas and native vegetation as outlined in 4.3.11.3.1.

Consequently, the proposed development shall have no adverse impacts on biodiversity on the subject land or immediate surrounds.

6.2.9 Cultural heritage

As outlined in section 5.8.1, a search of recorded aboriginal cultural heritage from the NSW Environment and Heritage AHIMS indicates that there are no Aboriginal sites, currently registered on the subject land. There are no heritage places or heritage survey areas currently registered on the subject land.

The subject land has been affected by impacts commonly associated with agricultural development including livestock grazing and cropping operations. This existing disturbance includes native vegetation clearing, pasture improvement and cropping.

Consequently, pursuant to the Aboriginal Heritage Due Diligence Guidelines, the proposed development can be considered a 'Category 4 activity' – Significant Disturbance in a significantly altered environment.

The proposed development will comply with the Aboriginal Heritage Due Diligence Guidelines.

Although the area has previously been extensively cleared and developed for agricultural purposes, the applicant shall take all reasonable and practical measures to ensure the activity does not harm any Aboriginal cultural heritage.

6.2.10 Waste

The proposed development involves the use of site-won virgin excavated materials and various measures such as erosion and sediment control shall be put in place to ensure earthworks are undertaken in a manner that prevents or limits sediment discharge, thereby mitigating environmental harm.

The approach taken on waste management for the proposed development will be consistent with the waste management hierarchy listed in the Waste Avoidance and Resource Recovery Act, 2001(section 7.2.13).

The construction phase shall generate negligible quantities of non-putrescible and non-putrescible solid waste. It is most likely that all of the metal and polyethylene materials (fencing materials, water pipeline etc) shall be stored on-site for use as repairs/maintenance during the operational phase.

Further, the operation of the proposed development shall generate significant levels of organic solid (manure) and liquid waste (effluent). All of the solid waste shall be sustainably utilised on the subject land as outlined in section 4.5.5.4.

All the effluent generated shall be sustainably utilised on the subject land as outlined in section 4.5.6.1.2.

Consequently, the proposed development shall have no adverse impacts on the environment from waste generation.

6.2.11 Biosecurity

Biosecurity relates to preventive measures designed to reduce the risk of transmission of infectious diseases, invasive pests or weeds which may impact on biodiversity values, animal human health. Biosecurity risks shall be managed in accordance with the general biosecurity obligation and the proposed development's relevant environmental management plans.

All equipment arriving on-site shall be clean and free of soil and matter which may be a vector for transmission of weed seeds, pest animals or the like.

The implementation of environmental management procedures shall minimise potential adverse biosecurity risks during the operational phase.

Consequently, with the implementation of environmental management procedures, the proposed development shall have no adverse impacts on biosecurity.

7 Statutory Planning Context

7.1 Commonwealth Legislation

7.1.1 Environment Protection and Biodiversity Conservation Act 1999

Under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act), approval of the Commonwealth Minister for the Environment, Heritage and the Arts is required for any action that may have a significant impact on matters of national environmental significance. These matters are outlined in section 5.14.

The only provisions of this legislation, which are potentially relevant to the proposed development, relate to potential impacts on migratory species, threatened species, or ecological communities listed under the EPBC Act. As outlined in section 5.14 and section 5.6, the proposed development is sited on an area containing introduced pasture species and does not require clearing of native vegetation. Therefore, the proposed development will not impact on migratory species, threatened species, or ecological communities listed under the EPBC Act and the approval of the Commonwealth Minister for the Environment, Heritage and the Arts is not required for the development.

There are no controlled actions listed on the MNES report which require referral.

Consequently, the development application will not be referred to the Minister responsible for the EPBC Act under section 68 of the EPBC Act.

7.1.1.1 Native title

Native title recognises that Aboriginal and Torres Strait Islander people have rights and interests to land and waters according to their traditional law and customs as set out in Australian Law. Native Title is governed by the *Native Title Act 1993* (Commonwealth).

Under the *Native Title Act 1993*, except where native title had been wholly extinguished by the historical grant of freehold, leasehold and other interests, native title exists where Aboriginal people have maintained a traditional connection to their land and waters substantially uninterrupted since sovereignty.

As the subject land is held in freehold title as outlined in section 2.1.1.4 Native Title cannot generally exist over the subject land.

7.2 State Legislation

7.2.1 Crown Land Management Act 2016

The *Crown Land Management Act 2016* sets out how Crown land is to be managed in NSW. The subject land on which the development is proposed does not include Crown Land as outlined in section 2.1 and Figure 2.

7.2.2 Dams Safety Act 2015

There are numerous dams throughout NSW ranging from small farm dams up to major dams. The *Dams Safety Act 2015* is charged with ensuring the safety of a small percentage of those dams whose failure would cause serious community consequences (e.g. loss of life). It prescribes those dams and oversights their safety throughout their lives.

The *Dams Safety Act 2015* prescribes to constitute the Dams Safety Committee (DSC) and to confer and impose on the Committee functions relating to the safety of certain dams.

Dams are man-made structures that store liquids (usually water). They come in many forms and sizes, including water supply dams, irrigation, tailings and industrial dams, and stormwater detention & retarding dams.

The DSC considers a dam structure is adequately safe if it complies with the DSC's requirements, and otherwise conforms to accepted good practice. The DSC's normal requirements for each dam depend on the particular dam's Consequence Category, but each dam is assessed individually. Relevant matters are:

- Structural adequacy and stability;
- Leakage control;
- Adequate flood capacity;
- Effective operation, maintenance and emergency management practices; and
- Regular surveillance and dam safety reviews.

Dams Safety NSW declares those dams that meet the criteria listed in section 4 of the 2019 regulation:

- a dam having a dam wall that is more than 15 metres high;
- an existing or proposed dam that Dams Safety NSW is reasonably satisfied would result in a major or catastrophic level of severity of damage or loss were there to be a failure of the dam;
- dams that were ‘prescribed’ under the old Dams Safety Act (1978) became declared dams upon commencement of the new Act.

The proposed development will include the construction of an effluent holding dam in which effluent is temporarily held pending irrigation to land. However, the proposed effluent holding

pond shall not meet the criteria listed in section 4 of the *Dams Safety Regulation 2019* and therefore is not a declared dam.

Concept design details on such aspects as the location and type of dam, dam materials, design parameters and major dimensions is provided in Figure 4 and Figure 7.

7.2.3 Fisheries Management Act 1994

The *Fisheries Management Act 1994* is administered by NSW Fisheries. The *Fisheries Management Act 1994* includes provisions for licensing, regulating commercial and recreational fishing activities, and the protection of threatened species and their habitats.

The objects of the *Fisheries Management Act 1994* are to conserve, develop and share the fishery resources of the State for the benefit of present and future generations. In particular, the objects of this act include:

a) to conserve fish stocks and key fish habitats,
b) to conserve threatened species, populations and ecological communities of fish and marine vegetation,
c) to promote ecologically sustainable development, including the conservation of biological diversity, and, consistently with those objects:
d) to promote viable commercial fishing and aquaculture industries,
e) to promote quality recreational fishing opportunities,
f) to appropriately share fisheries resources between the users of those resources,
g) to provide social and economic benefits for the wider community of New South Wales,
h) to recognise the spiritual, social and customary significance to Aboriginal persons of fisheries resources and to protect, and promote the continuation of, Aboriginal cultural fishing.

Part 7 of the *Fisheries Management Act 1994* deals with the protection of aquatic ecosystems. Permits are required to be obtained for certain works, including the following:

- dredging or reclamation work;
- cutting, removing, damaging or destroying marine vegetation on public water land or an aquaculture lease, or on the foreshore of any such land or lease; and
- setting a net, netting or other material, constructing or altering a dam, floodgate, causeway or weir, or creating an obstruction across or within a bay, inlet, river or creek, or across or around a flat.

The proposed development does not involve works within an aquatic ecosystem. Further, no threatened species, populations and ecological communities of fish and/or marine vegetation within adjoining watercourses would be adversely affected as a result of the proposed development as discussed in section 5.6.

7.2.4 National Parks and Wildlife Act 1974

The *National Parks and Wildlife Act 1974* governs the establishment, preservation and management of national parks, historic sites and certain other areas, and the protection of certain fauna, native plants and Aboriginal relics.

The *National Parks and Wildlife Act 1974* is a broad piece of legislation that covers a number of different areas including reserving lands, managing certain reserved lands, the protection of Aboriginal objects and places, the protection of fauna and the protection of native vegetation.

The *National Parks and Wildlife Act 1974* is relevant to the protection of Aboriginal artefacts and the protection of native flora and fauna. Part 6 of the *National Parks and Wildlife Act 1974* identifies certain aboriginal objects to be crown property and offences relating to Aboriginal objects, including disturbing land to discover an artefact. Section 87(1) of the *National Parks and Wildlife Act 1974* requires a permit to be obtained to remove any artefacts, while section 90 (2) of the *National Parks and Wildlife Act 1974* requires consent from the Director-General of Office of Environment and Heritage (OEH) to knowingly destroy, deface or damage a relic or Aboriginal place.

Part 7, Part 8, Part 8a and Part 9 are relevant to the protection of fauna; native plants and threatened species, populations and ecological communities, and their habitats, and critical habitat respectively.

An assessment of the impact of the proposed development on aboriginal heritage and flora and fauna is included in sections 5.8 and 5.6. The aboriginal assessment concluded that there are unlikely to be significant impacts on recorded Aboriginal sites and therefore recommends that no section 90 consent is required for the proposed development. The vegetation assessment concluded that there are unlikely to be significant impacts on flora and fauna and a BDAR is not required.

7.2.5 Local Land Services Act 2013

This legislation allows for publicly funded biosecurity, natural resource management, emergency management and agricultural advisory services to be provided by a single organisation.

The *Local Land Services Act 2013*, supported by the Local Land Services Regulation 2014 puts local decision making and priority setting at the centre of the new Local Land Services.

The proposed development is located with the North West Local Land Services (NTLLS).

7.2.6 Biodiversity Conservation Act 2016

The *Biodiversity Conservation Act* 2016 and the amendments to the *Local Land Services Act 2013* commenced on 25 August 2017. The *Biodiversity Conservation Act 2016* provides robust tools to avoid, minimise and offset biodiversity impacts through land use planning and during the development assessment process. The *Biodiversity Conservation Act 2016* establishes a

scheme for the biodiversity certification of land which strengthens and improves the former biodiversity certification framework. Biodiversity impacts of biodiversity certification proposals are assessed using the Biodiversity Assessment Method (BAM).

The biodiversity assessment and approval pathways are dependent on the purpose of the vegetation clearing and whether the clearing is associated with Native or non-native vegetation clearing. Native vegetation and native vegetation clearing are defined under Schedule Part 5A, Division 1 Section 60B and 60C of the *Local Land Services Act 2013.*

Consequently, as the proposed development does not require consent under Part 4 of the *Environmental Planning and Assessment Act 1979* and does not involve clearing of native vegetation above the 1 ha threshold and a biodiversity assessment report (BDAR) is not required.

7.2.7 Protection of the Environment Operations Act 1997

The *Protection of the Environment Operations Act 1997* is the key piece of environment protection legislation administered by the EPA in NSW. The *Protection of the Environment Operations Act 1997* prohibits any person from causing pollution of waters or air, and provides penalties for pollution offences relating to water, air and noise.

The objects of the *Protection of the Environment Operations Act 1997* are as follows:

(a) to protect, restore and enhance the quality of the environment in New South Wales, having regard to the need to maintain ecologically sustainable development,
(b) to provide increased opportunities for public involvement and participation in environment protection,
(c) to ensure that the community has access to relevant and meaningful information about pollution,
(d) to reduce risks to human health and prevent the degradation of the environment by the use of mechanisms that promote the following:
    (i) pollution prevention and cleaner production,
    (ii) the reduction to harmless levels of the discharge of substances likely to cause harm to the environment,
    (iii) the elimination of harmful wastes,
    (iv) the reduction in the use of materials and the re-use or recycling of materials,
    (v) the making of progressive environmental improvements, including the reduction of pollution at source,
    (vi) the monitoring and reporting of environmental quality on a regular basis
(e) to rationalise, simplify and strengthen the regulatory framework for environment protection,
(f) to improve the efficiency of administration of the environment protection legislation,
(g) to assist in the achievement of the objectives of the Waste Avoidance and Resource Recovery Act 2001.

The proposed development has the potential to impact water and air quality. Development siting, design and sufficient erosion and sediment controls, along with appropriate drainage

management, will mitigate potential sediment impacts to waterways as far as practicable as outlined in 6.2.7.1.

Stormwater discharge from the works area, shall be retained in a sediment basin and holding pond prior to discharge. Erosion control measures shall be implemented on site such as revegetation of disturbed areas as soon as practical after completion of works, vegetated areas shall remain between disturbed areas and waterways will minimise as far is reasonable and practical the potential for contaminated runoff exiting the site.

External catchments discharge into existing overland flow paths and are to remain in their current location and condition as far as practical. Clean water diversions are proposed to be installed to direct these external catchments around the proposed development site.

Diversion drains are proposed to be installed to convey internal catchments through the proposed development site to direct flows to the sediment basin and holding pond.

Development siting and dust control measures will mitigate potential impacts to air as far as practicable as outlined in 6.2. The development is sited over 3,265 m from the closest rural dwelling and watering of disturbed areas and revegetation of disturbed areas will minimise wind blown dust.

7.2.8 Native Title (New South Wales) Act 1994

The aim of the *Native Title (New South Wales) Act 1994* is to ensure that New South Wales law is consistent with standards set by the Commonwealth Native Title Act for future dealings affecting native title and to validate any past acts, and intermediate period acts, invalidated because of the existence of native title and to confirm certain rights. The Commonwealth Native Title Act prescribes that native title can be extinguished under certain circumstances, including the granting of freehold land. Areas of land where native title may not have been extinguished include Crown land.

As outlined in section 2.1.1.4 the subject land is freehold land and consequently native title is extinguished.

7.2.9 Roads Act 1993

The *Roads Act 1993*, commenced on 1 July 1993 and superseded the roads provisions of the Crown and Other Roads Act 1990, the State Roads Act 1986, the Local Government Act 1919, the Public Gates Act 1901 the Width of Roads and Lanes Act 1902 and the Traffic Safety (Lights and Hoardings) Act 1951.

The *Roads Act 1993* sets out procedures for carrying out of certain activities on roads, provides a classification of roads, establishes procedures for opening and closing public roads and the authorities responsible for roads i.e. the Roads and Maritime Services (RMS), the council of a local government area etc.

Section 138 of the *Roads Act 1993* requires the consent of the appropriate roads' authority for the following works:

- erecting a structure or carrying out a work in, on or over a public road, or
- digging up or disturbing the surface of a public road, or
- removing or interfering with a structure, work or tree on a public road, or
- pumping water into a public road from any land adjoining the road, or
- connecting a road (whether public or private) to a classified road.

The local council is the roads authority for all public roads within its local government area, except for any freeway, crown public road, or any public road declared to be under the control of some other authority.

As the proposed development is accessed from Newsomes Road a local controlled road, the development application would not be referred to the TfNSW in conjunction with the assessment of the SEE by the Glen Innes Severn Council in accordance with Division 4.3 of the Environmental Planning and Assessment Act 1979.

7.2.10 Rural Fires Act 1997

The *Rural Fires Act 1997* was established to establish the NSW Rural Fire Service and define its functions; to make provision for the prevention, mitigation and suppression of rural fires; to repeal the *Bush Fires Act 1949*; to amend certain other Acts; and for other purposes. The Rural Fires and Environmental Assessment Legislation Amendment Bill 2002 amends the *Rural Fires Act, 1997* and the *Environmental Planning and Assessment Act 1979* with respect to bushfire prone lands, bushfire hazards and bushfire emergencies; and for other purposes.

The objects of the *Rural Fires Act 1997* are to provide:

(a) for the prevention, mitigation and suppression of bush and other fires in local government areas (or parts of areas) and other parts of the State constituted as rural fire districts, and

(b) for the co-ordination of bush firefighting and bush fire prevention throughout the State, and

(c) for the protection of persons from injury or death, and property from damage, arising from fires, and

(d) for the protection of the environment by requiring certain activities referred to in paragraphs (a)–(c) to be carried out having regard to the principles of ecologically sustainable development described in section 6 (2) of the Protection of the Environment Administration Act 1991.

Section 63(2) of the *Rural Fires Act 1997* imposes a duty on the owner or occupier of land to take the notified steps, being any steps advised by the Bush Fire Co-ordinating Committee or any steps in a bush fire risk management plan, to prevent the occurrence of bushfires on, and to minimise the danger of the spread of bush fires on or from that land.

Division 8 of the *Rural Fires Act 1997* relates to development of bush fire prone land and for bush fire hazard reduction. Section 100B(3) requires a bush fire safety authority to be obtained prior to developing bushfire prone land for the following types of development:

- subdivision that could lawfully be used for residential or rural residential purposes; or
- development for special fire protection purposes, which include schools, childcare centres, hospitals, hotel, motel or other tourist accommodation, homes or other establishments for mentally incapacitated persons, housing for older people or people with disabilities, group, homes, retirement villages or other purposes prescribed by the regulations.

The proposed development does not involve subdivision for residential or rural residential purposes or development for special fire protection purposes.

A firebreak will be maintained around the proposed development infrastructure. All weather access roads will provide access for firefighting and the firebreak will provide access around the proposed development. Water from on-site clean water storages will provide an adequate supply for fire-fighting purposes. The proposed development site (and suitable firebreak distance from infrastructure) will be cleared of vegetation and other readily flammable materials stored in accordance with relevant Australian standards.

7.2.11 Heritage Act 1977

The purpose of the *Heritage Act 1977* is to conserve the environmental heritage of New South Wales. Environmental heritage means those places, buildings, works, relics, moveable objects, and precincts, of State or local heritage significance. The Heritage Act is administered by the NSW OEH.

State heritage significance is defined as, in relation to a place, building, work, relic, moveable object or precinct, means significance to the State in relation to the historical, scientific, cultural, social, archaeological, architectural, natural or aesthetic value of the item.

Local heritage significance is defined as, in relation to a place, building, work, relic, moveable object or precinct, means significance to an area in relation to the historical, scientific, cultural, social, archaeological, architectural, natural or aesthetic value of the item.

The objects of this Heritage Act are as follows:

(a) to promote an understanding of the State's heritage,
(b) to encourage the conservation of the State's heritage,
(c) to provide for the identification and registration of items of State heritage significance,
(d) to provide for the interim protection of items of State heritage significance,
(e) to encourage the adaptive reuse of items of State heritage significance,
(f) to constitute the Heritage Council of New South Wales and confer on it functions relating to the State's heritage,
(g) to assist owners with the conservation of items of State heritage significance.

The Heritage Act makes provision for a place, building, work, relic, moveable object, precinct, or land to be listed on the State Heritage Register. If an item is subject of an interim listing, or is listed on the State Heritage Register, a person must obtain approval under section 58 of the Heritage Act for the following works or activities:

- demolition of the building or work
- damaging or despoiling the place, precinct or land, or any part thereof
- moving, damaging or destroying the relic or moveable object
- excavating any land for the purpose of exposing or moving the relic
- carrying out any development in relation to the land on which the building, work or relic is
- situated, the land that comprises the place, or land within the precinct
- altering the building, work, relic or moveable object
- displaying any notice or advertisement on the place, building, work, relic, moveable object
- or land, or in the precinct
- damaging or destroying any tree or other vegetation on or remove any tree or other
- vegetation from the place, precinct or land.

This includes items protected by heritage schedules to local environmental plans, regional environmental plans or by the State Heritage Register. The items include buildings, objects, monuments, Aboriginal places, gardens, bridges, landscapes, archaeological sites, shipwrecks, relics, bridges, streets, industrial structures and conservation precincts.

There are no known items of heritage significance under the Heritage Act on the subject land on which the development is proposed as outlined in section 5.8.

7.2.12 Water Management Act 2000

Management of water resources in NSW relies on a range of legislation, initiatives and cooperative arrangements with the Commonwealth and other state governments. The key pieces of legislation for the management of water in NSW are the *Water Management Act 2000, Water Management Amendment Act 2014 and* the *Water Act 1912*.

The *Water Act 1912* came into force at the turn of the last century and represented a different era in water management in NSW. This Act is being progressively phased out and replaced by the *Water Management Act 2000.* However, some provisions are still in force.

The object of the *Water Management Act 2000* is the sustainable and integrated management of the state's water for the benefit of both present and future generations and is based on the concept of ecologically sustainable development.

The *Water Management Act 2000* recognises:

- the fundamental health of our rivers and groundwater systems and associated wetlands, floodplains, estuaries have to be protected;
- the management of water must be integrated with other natural resources such as vegetation, soils and land;
- to be properly effective, water management must be a shared responsibility between the government and the community;
- water management decisions must involve consideration of environmental, social, economic, cultural and heritage aspects;
- to protect, enhance and restore water sources, their associated ecosystems, ecological processes and biological diversity and their water quality;
- social and economic benefits to the state will result from the sustainable and efficient use of water, including:
  - (i) benefits to the environment, and
  - (ii) benefits to urban communities, agriculture, fisheries, industry and recreation, and
  - (iii) benefits to culture and heritage, and
  - (iv) benefits to the Aboriginal people in relation to their spiritual, social, customary and economic use of land and water,
- to recognise the role of the community, as a partner with government, in resolving issues relating to the management of water sources,
- to provide for the orderly, efficient and equitable sharing of water from water sources,
- to integrate the management of water sources with the management of other aspects of the environment, including the land, its soil, its native vegetation and its native fauna,
- to encourage the sharing of responsibility for the sustainable and efficient use of water between the Government and water users,
- to encourage best practice in the management and use of water.

As a result, the *Water Management Act 2000* recognises the need to allocate and provide water for the environmental health of our rivers and groundwater systems, while also providing licence holders with more secure access to water and greater opportunities to trade water through the separation of water licences from land. The main tool the Act provides for managing the state's water resources are water sharing plans.

The watercourses and groundwater in the vicinity of the proposed development will be protected through appropriate design and management practices, including vegetated buffers, controlled drainage area, low permeability pen and drainage system construction as outlined in section 4.

A controlled activity approval is required for controlled activities on waterfront land. 'Waterfront land' means the bed of any river, lake or estuary, and the land within 40 metres of the river banks, lake shore or estuary mean high water mark.

There is no waterfront land on the subject land as outlined in section 5.5.2.2. The Waterfront e-tool has been completed for the subject land and is provided in Appendix G.

The access to the proposed development site will be via an existing road network. Consequently, a controlled activity approval is not required in accordance with s.91 of the *Water Management Act 2000.*

7.2.13 Waste Avoidance and Resource Recovery Act 2001

The *NSW Waste Avoidance and Resource Recovery Act 2001* reflects the importance the community places on minimising waste and maximising resources.

The objects of the *NSW Waste Avoidance and Resource Recovery Act 2001* are as follows:

a) to encourage the most efficient use of resources and to reduce environmental harm in accordance with the principles of ecologically sustainable development,
b) to ensure that resource management options are considered against a hierarchy of the following order:
    i) avoidance of unnecessary resource consumption,
    ii) resource recovery (including reuse, reprocessing, recycling and energy recovery),
    iii) disposal,
c) to provide for the continual reduction in waste generation,
d) to minimise the consumption of natural resources and the final disposal of waste by encouraging the avoidance of waste and the reuse and recycling of waste,
e) to ensure that industry shares with the community the responsibility for reducing and dealing with waste,
f) to ensure the efficient funding of waste and resource management planning, programs and service delivery,
g) to achieve integrated waste and resource management planning, programs and service delivery on a State-wide basis,
h) to assist in the achievement of the objectives of the *Protection of the Environment Operations Act 1997*.

The waste hierarchy is a set of priorities for the efficient use of resources; this underpins the objectives of the Act.

The waste hierarchy is:

1) **avoidance** including action to reduce the amount of waste generated by households, industry and all levels of government;
2) **resource recovery** including re-use, recycling, reprocessing and energy recovery, consistent with the most efficient use of the recovered resources; and
3) **disposal** including management of all disposal options in the most environmentally responsible manner.

The proposed development involves the use of site-won virgin excavated materials and various measures such as erosion and sediment control shall be put in place to ensure earthworks are undertaken in a manner that prevents or limits sediment discharge, thereby mitigating environmental harm.

7.2.14 Local Government Act 1993

7.2.14.1 Section 68 Approvals

Council's reticulated water supply is not available within close proximity to the subject land. As such this development application does not include an application to Council for any new connections to Council's reticulated water supply service under the provisions of section 68 of the Local Government Act 1993 as permitted by section 4.12 (3) of the *Environmental Planning and Assessment Act 1979*.

Council's reticulated sewerage system is not available within close proximity to the subject land. As such, this development application does not include an application to Council for any new connections to Council's reticulated sewerage system under the provisions of section 68 of the Local Government Act 1993 as permitted by section 4.12(3) of the *Environmental Planning and Assessment Act 1979*.

This development application does not include an application to install or operate any on-site sewerage treatment system under the provisions of section 68 of the Local Government Act 1993 as permitted by section 4.12 (3) of the *Environmental Planning and Assessment Act 1979*.

The proposed development does not include changes to the arrangements for the disposal of stormwater on the subject land. Consequently, this development application does not include an application to dispose of stormwater under the provisions of Section 68 of the Local Government Act 1993 as permitted by section 4.12(3) of the Environmental Planning and Assessment Act 1979.

7.3 Environmental Planning and Assessment

7.3.1 Environmental Planning and Assessment Act 1979

The *Environmental Planning and Assessment Act 1979* and the *Environmental Planning and Assessment Regulation 2000* provide the framework for environmental planning in NSW and include provisions to ensure that proposals which have the potential to impact the environment are subject to detailed assessment and provide opportunity for public involvement.

The *Environmental Planning and Assessment Act 1979* provides the framework for NSW Planning Legislation. Under this Act, local councils prepare Local Environmental Plans (LEPs) that specify planning controls for specific parcels of land.

The Environmental Planning and Assessment Act 1979 also provides for State Environmental Planning Policies (SEPPs) and Regional Environmental Plans (REPs). Applicable SEPPs are discussed in section 7.3.3.

7.3.2 Environmental Planning and Assessment Regulation 2021

This Statement of Environmental Effects has been prepared to support a development application to Glen Innes Severn Council in accordance with Part 3, Division 1 of the *Environmental Planning and Assessment Regulation 2021*.

7.3.3 State Environmental Planning Policies

State Environmental Planning Policies (SEPPs) are environmental planning instruments developed by the State government. SEPPs apply to certain development that involves matters or issues of relevance to the State. The SEPPs that are potentially relevant to the proposed development are discussed in the following sections.

7.3.3.1 State Environmental Planning Policy (Biodiversity and Conservation) 2021

The State Environmental Planning Policy (Biodiversity and Conservation) 2021 (Biodiversity and Conservation SEPP) contains:

- planning rules and controls for the clearing of native vegetation in NSW on land zoned for urban and environmental purposes that is not linked to a development application;
- the land use planning and assessment framework for koala habitat;
- provisions which establish a consistent and co-ordinated approach to environmental planning and assessment along the River Murray;
- provisions seeking to protect and preserve bushland within public open space zones and reservations;
- provisions which aim to prohibit canal estate development;
- provisions to support the water quality objectives for the Sydney drinking water catchment;
- provisions to protect the environment of the Hawkesbury-Nepean River system;
- provisions to manage and improve environmental outcomes for Sydney Harbour and its tributaries;
- provisions to manage and promote integrated catchment management policies along the Georges River and its tributaries; and
- provisions which seek to protect, conserve and manage the World Heritage listed Willandra Lakes property.

The Biodiversity and Conservation SEPP has consolidated and repealed:

- SEPP (Vegetation in Non-Rural Areas) 2017
- SEPP (Koala Habitat Protection) 2020
- SEPP (Koala Habitat Protection) 2021

- Murray Regional Environmental Plan No 2—Riverine Land
- SEPP No 19—Bushland in Urban Areas
- SEPP No 50—Canal Estate Development
- SEPP (Sydney Drinking Water Catchment) 2011
- Sydney Regional Environmental Plan No 20 – Hawkesbury – Nepean River (No 2 – 1997)
- Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005
- Greater Metropolitan Regional Environmental Plan No 2 – Georges River Catchment
- Willandra Lakes Regional Environmental Plan No 1 – World Heritage Property (Willandra Lakes REP)

The subject land on which the development is proposed is zoned RU1 Primary Production and located in the Wellington Vale region, near Deepwater in the north of the state and is not located:

- on land zoned for urban and environmental purposes that is not linked to a development application;
- along the River Murray;
- within public open space zones and reservations;
- within the Sydney drinking water catchment;
- within the Hawkesbury-Nepean River system
- within Sydney Harbour and its tributaries
- along the Georges River and its tributaries;
- on the World Heritage listed Willandra Lakes property.

As the proposed development is not located within areas listed above the only chapter of relevance in the SEPP (Biodiversity and conversation) 2021 is Chapter 3 Koala habitat protection 2020 and Chapter 4 Koala habitat protection 2021.

The statewide Koala Habitat Information Base (KHIB) shows that the proposed development site has no likely koala habitat, no koala preferred trees and no koala sightings. Consequently, the direct impact to Koalas is considered to be low or absent as no native woody vegetation is not being impacted and no koala trees are proposed to be removed by the proposed development.

None of the Schedule 2 listed koala food tree species are present on the subject land and therefore do not constitute at least 15% of the total number of trees in the upper or lower strata of the tree component. No potential koala habitat is therefore present on the site.

The land is therefore not core koala habitat and the provisions of Chapter 3 of the SEPP (Biodiversity and conversation) 2021 do not apply as outlined in the biodiversity assessment presented in Appendix I.

7.3.3.2 State Environmental Planning Policy (Exempt and Complying Development Codes) 2008

The State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 aims to provide streamlined assessment processes for development that complies with specified development standards by –

(a) providing exempt and complying development codes that have State-wide application; and
(b) identifying, in the exempt development codes, types of development that are of minimal environmental impact that may be carried out without the need for development consent; and
(c) identifying, in the complying development codes, types of complying development that may be carried out in accordance with a complying development certificate as defined in the Act; and
(d) enabling the progressive extension of the types of development in this Policy, and
(e) providing transitional arrangements for the introduction of the State-wide codes, including the amendment of other environmental planning instruments.

Division 1 General Exempt Development Code of the SEPP lists the following relevant items for this development:

Part 2 Exempt Development Codes

- Subdivision 16 Farm buildings (other than stock holding yards, grain silos and grain bunkers);
- Subdivision 16A Stock holding yards not used for sale of stock;
- Subdivision 16B Grain silos and grain bunkers.

The proposed development includes development that is exempt and not exempt under provisions of the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008. Consequently, development approval is not subject to streamlined assessment processes.

7.3.3.3 State Environmental Planning Policy (Housing) 2021

The principles of the State Environmental Planning Policy (Housing) 2021 include –

(a) enabling the development of diverse housing types, including purpose-built rental housing,
(b) encouraging the development of housing that will meet the needs of more vulnerable members of the community, including very low to moderate income households, seniors and people with a disability,
(c) ensuring new housing development provides residents with a reasonable level of amenity,
(d) promoting the planning and delivery of housing in locations where it will make good use of existing and planned infrastructure and services,
(e) minimising adverse climate and environmental impacts of new housing development,

(f) reinforcing the importance of designing housing in a way that reflects and enhances its locality,
(g) supporting short-term rental accommodation as a home-sharing activity and contributor to local economies, while managing the social and environmental impacts from this use,
(h) mitigating the loss of existing affordable rental housing.

Provisions of this SEPP will not be enacted as the proposed development does not involve new housing.

7.3.3.4 State Environmental Planning Policy (Industry and Employment) 2021

The State Environmental Planning Policy (Industry and Employment) 2021 aims to streamline and consolidate various planning policies to ensure a more efficient and consistent approach to environmental planning across the state.

This Policy has several chapters including:

- Chapter 2 – Western Sydney Employment Area; and
- Chapter 3 – Advertising and signage.

Chapter 2 aims to protect and enhance the Western Sydney Employment Area) for employment purposes. The particular aims of this Chapter are as follows –

(a) to promote economic development and the creation of employment in the Western Sydney Employment Area by providing for development including major warehousing, distribution, freight transport, industrial, high technology and research facilities,
(b) to provide for the co-ordinated planning and development of land in the Western Sydney Employment Area,
(c) to rezone land for employment, environmental conservation or recreation purposes,
(d) to improve certainty and regulatory efficiency by providing a consistent planning regime for future development and infrastructure provision in the Western Sydney Employment Area,
(e) to ensure that development occurs in a logical, environmentally sensitive and cost-effective manner and only after a development control plan (including specific development controls) has been prepared for the land concerned,
(f) to conserve and rehabilitate areas that have a high biodiversity or heritage or cultural value, in particular areas of remnant vegetation.

The SEPP (Industry and Employment) 2021 is listed as applicable to the land on which the development is proposed. This SEPP aims to protect and enhance the land within the Western Sydney Employment Area for employment purposes. However, it is not considered relevant as the subject land is not included in section 2.2 of the SEPP which describes the land to which the SEPP applies.

The particular aims of Chapter 3 as follows –

(a) to ensure that signage (including advertising) –

(i) is compatible with the desired amenity and visual character of an area, and
(ii) provides effective communication in suitable locations, and
(iii) is of high quality design and finish, and

(b) to regulate signage (but not content) under Part 4 of the Act, and
(c) to provide time-limited consents for the display of certain advertisements, and
(d) to regulate the display of advertisements in transport corridors, and
(e) to ensure that public benefits may be derived from advertising in and adjacent to transport corridors.

This Chapter does not regulate the content of signage and does not require consent for a change in the content of signage.

The proposed development does not involve the establishment of advertising and signage as outlined in section 4.

Consequently, the provisions of SEPP (Industry and Employment) 2021 are not relevant to the proposed development.

7.3.3.5 State Environmental Planning Policy (Planning Systems) 2021

The State Environmental Planning Policy (Planning Systems) 2021 aims to streamline and consolidate various planning policies to ensure a more efficient and consistent approach to environmental planning across the state.

This Policy has several chapters including:

- Chapter 2 – State and Regional Development;
- Chapter 3 – Aboriginal Land; and
- Chapter 4 – Concurrences and Consents

The proposed development does not have an estimated development cost of more than $30 million. Consequently, for the purpose of intensive livestock agriculture the proposed development is not State Significant Development.

The proposed development being a beef cattle feedlot is not State significant infrastructure and critical State significant infrastructure as defined under Schedule 3, 4 or 5 of the SEPP (Planning Systems) 2021 as the estimated development cost is not more than $30 million.

The proposed development being a beef cattle feedlot does not meet the criteria for Regionally Significant Development is accordance with Schedule 6 of the SEPP (Planning Systems) 2021 as the estimated development cost is not more than $30 million.

The subject land on which the development is proposed is not owned by an Aboriginal Land Councils. Consequently, Chapter 3 of the SEPP (Planning Systems) 2021 does not apply.

The proposed development is subject to the provisions outlined in Chapter 4 of the SEPP (Planning Systems) 2021. This SEE demonstrates that the proposed development is suitably sited, designed and managed. The main waste products of the proposed development are solid (manure/split feed/carcasses) and liquid (effluent). However, these can be sustainably utilised on-site as an alternative to inorganic fertilisers. The proposed development will not produce hazardous waste products.

7.3.3.6 State Environmental Planning Policy (Primary Production) 2021

State Environmental Planning Policy (Primary Production) 2021 aims to require development consent for cattle feedlots above a defined capacity and to ensure that the consent authority takes into account certain criteria such as the potential for odour, water pollution and soil degradation in determining applications for such development.

The specific aims of SEPP (Primary Production) 2021 are:

(a) to facilitate the orderly economic use and development of lands for primary production,
(b) to reduce land use conflict and sterilisation of rural land by balancing primary production, residential development and the protection of native vegetation, biodiversity and water resources,
(c) to identify State significant agricultural land for the purpose of ensuring the ongoing viability of agriculture on that land, having regard to social, economic and environmental considerations,
(d) to simplify the regulatory process for smaller-scale low risk artificial waterbodies, and routine maintenance of artificial water supply or drainage, in irrigation areas and districts, and for routine and emergency work in irrigation areas and districts,
(e) to encourage sustainable agriculture, including sustainable aquaculture,
(f) to require consideration of the effects of all proposed development in the State on oyster aquaculture,
(g) to identify aquaculture that is to be treated as designated development using a well-defined and concise development assessment regime based on environment risks associated with site and operational factors.

7.3.3.6.1 Part 2.2 State Significant Agricultural Land

The NSW Department of Primary Industries is undertaking a mapping program across NSW to assist state and local government, other organisations and industries to recognise and value State Significant Agricultural Land (SSAL). A review of the NSW DPI SSAL mapping portal indicates that the subject land is not mapped as SSAL as shown as cyan shading on Figure 42.

The mapping indicates that the subject land is not mapped as SSAL mapped land. Consequently, the proposed development shall not impact on SSAL.

Further, the proposed development is considered a compatible land use with SSAL mapped lands for the following reasons:

- The development is an agricultural use;

- The commodities produced and consumed are generated and disposed of in the local area;
- The waste products generated on-site are reused on-site or on nearby lands to improve the productivity of the surrounding landscape in terms of nutrients and carbon;
- The activity is not considered to be beyond remediation with all infrastructure including the waste storage areas can fully remediated upon ceasing activity.

X – Proposed development complex site

Figure 42 – Subject land – Draft SSAL map

7.3.3.6.2 Part 2.3 Farm dams and other small-scale and low risk artificial waterbodies

The proposed development is an Intensive livestock agriculture being the establishment of a beef cattle feedlot and does not involve a farm dam or other small-scale and low risk artificial waterbodies other than a sedimentation basin and holding pond as outlined in section 4. Further, development consent is required for the proposed development.

Consequently, the provisions of Part 2.3 are not relevant.

7.3.3.6.3 Part 2.4 Intensive Livestock Agriculture

The proposed development comprises a beef cattle feedlot with a capacity exceeding 50 head and is not for emergency feeding or emergency housing arrangements for livestock in response to emergencies, including fire, flood, drought and animal disease outbreaks, or for routine husbandry purposes such as weaning or dipping.

Consequently, in accordance with Part 2.4 Livestock Industries section 2.15 and 2.16, the proposed development is not permissable without consent by the Glen Innes Severn Council.

This SEE accompanies a development application made to Glen Innes Severn Council seeking development consent for the establishment and operation of the cattle feedlot. This SEE addresses the policy aims of SEPP (Primary Production) 2021.

This SEE has been prepared in accordance with the requirements of the EP&A Act and Regulation and provides a detailed description and environmental assessment of the proposed development including potential impacts in terms of odour, surface and groundwater and soils and recommends mitigation and management measures to minimise potential adverse impacts. These issues are addressed in section 5 and 6. The proposed development will seek accreditation under the National Feedlot Accreditation Scheme (NFAS). The NFAS scheme addresses all relevant animal welfare matters through a Quality Assurance scheme subject to both off-site and field audits.

This SEE demonstrates that the proposed development is suitably sited and designed and will be managed to meet the aims of the SEPP (Primary Production) 2021. Land use conflicts have been mitigated through careful selection of the site and minimising the impacts on biodiversity. The main waste products of the proposed development are solid (manure/split feed/carcasses) and effluent which will be sustainably utilised on-site as an alternative to inorganic fertilisers. The proposed development will not produce hazardous waste products. While all feedlot developments produce some odour, at this development, odour impact will be minimised through appropriate siting (separation distances between the site, the closest sensitive residences and other areas with sensitive land uses), good design (pen layout, drainage) and management (pen cleaning, solid waste and effluent), thus minimising amenity conflicts with residential receptors.

7.3.3.7 State Environmental Planning Policy (Resilience and Hazards) 2021

The State Environmental Planning Policy (Resilience and Hazards) 2021 consolidates, transfers and repeals provisions of the following 3 SEPPs:

1. SEPP (Coastal Management) 2018;
2. SEPP 33 – Hazardous and Offensive Development; and
3. SEPP 55 – Remediation of Land

As the proposed development is not located with a Coastal management area the only chapters of relevance in the SEPP (Resilience and Hazards) 2021 are Chapter 3 Hazardous and Offensive Development and Chapter 4 Remediation of Land.

Chapter 3 Hazardous and Offensive Developments (SEPP (Resilience and Hazards) 2021) aims to amend the definitions of hazardous and offensive industries where used in environmental planning instruments and to ensure that the consent authority has sufficient information to assess whether the development is hazardous or offensive and to ensure that any measures proposed to be employed to reduce the impact of the development are taken into account.

The specific aims of Chapter 3 of SEPP Hazardous and Offensive Developments (Resilience and Hazards) 2021 are:

(a) to amend the definitions of hazardous and offensive industries where used in environmental planning instruments, and
(b) to render ineffective a provision of any environmental planning instrument that prohibits development for the purpose of a storage facility on the ground that the facility is hazardous or offensive if it is not a hazardous or offensive storage establishment as defined in this Policy, and
(c) to require development consent for hazardous or offensive development proposed to be carried out in the Western Division, and
(d) to ensure that in determining whether a development is a hazardous or offensive industry, any measures proposed to be employed to reduce the impact of the development are taken into account, and
(e) to ensure that in considering any application to carry out potentially hazardous or offensive development, the consent authority has sufficient information to assess whether the development is hazardous or offensive and to impose conditions to reduce or minimise any adverse impact, and
(f) to require the advertising of applications to carry out any such development.

A development is considered potentially hazardous and requires a Preliminary Hazard Analysis (PHA) if the storage or transport of dangerous goods exceeds screening thresholds specified in SEPP (Resilience and Hazards) 2021. A preliminary risk screening assessment for the proposed development in accordance with section 3.11 of SEPP (Resilience and Hazards) 2021 was undertaken and confirms that dangerous goods stored on site do not exceed screening thresholds specified in SEPP (Resilience and Hazards) 2021. The preliminary risk screening assessment report is provided in Appendix K.

Therefore, the proposed development is not considered to be a potentially hazardous industry.

The proposed development could be deemed 'offensive' due to generation of noise and air quality emissions. Noise and air quality assessments of the proposed development demonstrate that, with environmental safeguards in place, the proposed development will not result in adverse air quality emissions. Therefore, the proposed development is not considered to be an 'offensive industry'.

Chapter 4 of the SEPP (Resilience and Hazards) 2021 relates to the remediation of contaminated land. The policy states that land must not be developed if it is unsuitable for a proposed use because it is contaminated. If the land is unsuitable, remediation must take place before the land is developed. The policy makes remediation permissible across the State, defines when consent is required, requires all remediation to comply with standards, ensures land is investigated if contamination is suspected and requires councils to be notified of all remediation proposals.

The subject land has historically been used for agricultural activities being sheep and beef cattle grazing and is land categorised in Clause 4.6 (4) of SEPP (Resilience and Hazards) 2021. Based on the site history and no potential sources of contamination related to previous or current land uses on the subject land as outlined in section 5.4.3, no additional site investigation is deemed warranted.

The proposed development satisfies the aims and provisions of SEPP (Resilience and Hazards) 2021.

7.3.3.8 State Environmental Planning Policy (Resources and Energy) 2021

The State Environmental Planning Policy (Resources and Energy) 2021 recognises the importance to NSW of mining, petroleum production and extractive industries –

(a) to provide for the proper management and development of mineral, petroleum and extractive material resources for the purpose of promoting the social and economic welfare of the State, and
(b) to facilitate the orderly and economic use and development of land containing mineral, petroleum and extractive material resources, and
(c) to promote the development of significant mineral resources, and
(d) to establish appropriate planning controls to encourage ecologically sustainable development through the environmental assessment, and sustainable management, of development of mineral, petroleum and extractive material resources, and
(e) to establish a gateway assessment process for certain mining and petroleum (oil and gas) development—
    (i) to recognise the importance of agricultural resources, and
    (ii) to ensure protection of strategic agricultural land and water resources, and
    (iii) to ensure a balanced use of land by potentially competing industries, and
    (iv) to provide for the sustainable growth of mining, petroleum and agricultural industries.

The proposed development is for Intensive livestock agriculture (beef cattle feedlot) and does not comprise a mining, petroleum production or extractive industry and is not located within close proximity to a mining, petroleum production and extractive industry activity. Consequently, the provisions of SEPP (Resources and Energy) are not relevant to the proposed development.

7.3.3.9 State Environmental Planning Policy (Sustainable Buildings) 2022

The State Environmental Planning Policy (Sustainable Buildings) 2022 encourages the design and construction of more sustainable buildings across NSW.

The aims of the is SEPP (Sustainable Buildings) 2022 are as follows –

(a) to encourage the design and delivery of sustainable buildings,
(b) to ensure consistent assessment of the sustainability of buildings,
(c) to record accurate data about the sustainability of buildings, to enable improvements to be monitored,
(d) to monitor the embodied emissions of materials used in construction of buildings,
(e) to minimise the consumption of energy,
(f) to reduce greenhouse gas emissions,
(g) to minimise the consumption of mains-supplied potable water,
(h) to ensure good thermal performance of buildings.

As no new buildings will be constructed as part of the proposed development the provisions of the SEPP (Sustainable Buildings) 2022 are not relevant.

7.3.3.10 State Environmental Planning Policy (Transport and Infrastructure) 2021

The aims of the State Environmental Planning Policy (Transport and Infrastructure) 2021 are to facilitate the effective delivery of infrastructure across the State by:

(a) improving regulatory certainty and efficiency through a consistent planning regime for infrastructure and the provision of services, and
(b) providing greater flexibility in the location of infrastructure and service facilities, and
(c) allowing for the efficient development, redevelopment or disposal of surplus government owned land, and
(d) identifying the environmental assessment category into which different types of infrastructure and services development fall (including identifying certain development of minimal environmental impact as exempt development), and
(e) identifying matters to be considered in the assessment of development adjacent to particular types of infrastructure development, and
(f) providing for consultation with relevant public authorities about certain development during the assessment process or prior to development commencing, and
(g) providing opportunities for infrastructure to demonstrate good design outcomes.

SEPP (Transport and Infrastructure) 2021 establishes that Transport for NSW is responsible for the administration of transport services , including roads, public transport, and maritime

services in New South Wales and must be consulted in circumstances where a proposal is likely to impact the transport network.

Schedule 3 of the policy also includes development for the purposes of (Column 1) commercial premises, (Column 2) 20,000m^2 in site area or (if the site area is less than the gross floor area) gross floor area, Column 3 5,000m^2 in site area or (if the site area is less than the gross floor area) gross floor area.

The proposed development is not considered a commercial premises for the reasons:

NSW Planning and Environment LEP practice note planning system PN 11-003 issued 10 March 2011 defines a commercial premises as " commercial premises is a new group term including 'retail,' 'office' and 'business premises.' This provides an efficient term to describe the mix of uses in centres" . PN 11-003 refers to The Standard Instrument (Local Environmental Plans) Amendment Order 2011 for further definitions of retail, office and business premises. The activity is not considered a business premises as the activity in question is defined as agriculture, specifically, intensive livestock agriculture. Intensive livestock agriculture includes a feedlot as per the Standard Instrument (Local Environmental Plans) Amendment Order 2011definition. The proposed development is for a 999 head feedlot.

The Standard Instrument also defines commercial premises as including an office premises. The office premises definition in the Standard Instrument is not considered to include such activities as a feedlot office as any office on-site would not have dealing with any members of the public except where such dealing is a minor activity (by appointment) and a feedlot office is ancillary to the main purpose for which the building or place is used. Additionally, the proposed development does not involve the establishment of a site office as all administrative functions shall be undertaken in the proponent's place of residence which is located on adjoining land.

The proposed development has a gross floor area greater than 5,000 m². However, does not have direct access to an arterial road (New England Highway), or a road connecting with an arterial road within 90 m of the alignment of an arterial road. The proposed development shall not be referred to Transport for New South Wales as part of the assessment process.

7.4 Regional Planning

NSW is covered by a suite of strategic land-use plans referred to as Regional Plans which set a 20-year framework, vision and direction for strategic planning and land use.

The New England North West Regional Plan 2041 (NSW Planning and Environment, 2022) was adopted in September 2022 and covers the local authority areas of Gunnedah, Glen Innes Severn, Gwydir, Inverell, Liverpool Plains, Moree Plains, Narrabri, Tenterfield, Uralla, Walcha and the Regional Councils of Armidale and Tamworth.

The subject land on which the development is proposed is located within the Glen Innes Severn Council and therefore subject to the provisions of the New England North West Regional Plan 2041 (NENWRP).

The NENWRP sets a 20-year strategic land use planning framework for the region, aiming to protect and enhance the region's assets and plan for a sustainable future. It covers all facets of land use planning, including employment areas, town centres, housing and related infrastructure, the natural environment and future hazards .

The policies contained in the regional plan contribute towards the continued growth of the agricultural sector, protection of strategic areas of priority agricultural land use from potentially incompatible resource activities, maximise opportunities for co-existence of resources and agricultural land use and ongoing development of strategic centres and regional cities.

The NENWRP defines intensive agriculture and agribusiness as including Agriculture activities such as horticulture, irrigated crops, glasshousing, feedlots, poultry farms that rely on high levels of inputs such as labour and capital to increase yield.

The key goals for the NENWRP are to:

- Coordinate land use planning for future growth, community need and regional economic development;
- Protect the viability and integrity of rural land;
- Expand agribusiness and food processing sectors;
- Responsibly manage mineral resources;
- Enhance the diversity and strength of Central Business Districts and town centres;
- Coordinate the supply of well-located employment land;
- Support a diverse visitor economy;
- Adapt to climate change and natural hazards and increase climate resilience;
- Lead renewable energy technology and investment;
- Support a circular economy;
- Sustainably manage and conserve water resources;
- Protect regional biodiversity and areas of High Environmental Value;
- Provide well located housing options to meet demand;
- Provide more affordable and low cost housing;
- Understand, respect and integrate Aboriginal culture and heritage;
- Support the aspirations of Aboriginal people and communities in local planning;

- Celebrate local character;
- Public spaces and green infrastructure support connected, inclusive and healthy communities;
- Leverage new and upgraded infrastructure;
- Improve state and regional freight connectivity;
- Improve active and public transport networks; and
- Utilise emerging transport technology.

The key priorities for the Glen Innes Severn Council in the NENWRP of relevance to the proposed development are to:

- Protect the viability and integrity of rural land;
- encourage diversification in agriculture, horticulture and agribusiness to grow these sectors;
- Plan for and build community resilience to population and demographic change.
- Resolve skilled worker shortages.
- Build resilience to climate change and natural hazards.
- Sustainably manage and conserve water resources

The proposed development has been sited and designed in accordance with relevant aspects of state and national guidelines for the establishment and operation of beef cattle feedlots.

The proposed development is appropriately located to provide sufficient separation distances to sensitive receptors as shown in Table 59 and Figure 41.

Biodiversity issues are addressed appropriately in the proposed development so that natural environment values are maintained or enhanced as a result of the proposed development.

The proposed development has been sited, designed and shall be operated to ensure there are no adverse impacts to riparian areas and water quality from off-site transfer of sediment as demonstrated in section 4.3.11.3.1 and 4.3.12.2.1 and Figure 4, Figure 7 and Figure 24.

The proposed development is sited on land that is not contaminated and result in no increase to the risk to human health or to the environment. Refer to section 5.4.4 and Appendix K.

The proposed development involves an “Intensive Animal Livestock” use for the purposes of a beef cattle feedlot and therefore supports diversification in agriculture and agribusiness within the local region and higher intensity agricultural production within the area.

The proposed development offers opportunities and diversification for the applicant’s workforce.

Accordingly, the proposal does not compromise the goals sought under or conflict with New England North West Regional Plan 2041 or priorities for the Glen Innes Severn Council under the plan.

7.5 Local Planning

7.5.1 Glen Innes Severn Local Strategic Planning Statement

The Local Strategic Planning Statement (LSPS) presents a framework for future land use within the Glen Innes Severn Council and clarifies the relationship between State, Regional and local Council strategies and planning priorities. The LSPS plans for the Glen Innes Severn community's economic, social and environmental land use needs over the next 20 years.

Glen Innes Severn Council serves an area of 5,487 km^2 and is located strategically at the intersection of two major highways – the New England Highway and the Gwydir Highway.

The Glen Innes Severn LSPS lists the following planning priorities:

- Develop a new Economic Development Strategy to deliver a well positioned place-based approach to economic development and sustainable land use planning.
- Encourage diversification in agriculture, horticulture and agribusiness to grow these sectors and respond to domestic and international opportunities.
- Expand nature-based adventure and cultural tourism places by leveraging environmental and iconic assets such as the World Heritage listed National Parks and the Australian Standing Stones.
- Deliver a variety of housing options in Glen Innes and promote development that contributes to the unique character of Glen Innes and the villages of Emmaville, Deepwater, Glencoe and Red Range.
- Raise the area's profile and awareness of employment, business development and lifestyle opportunities, particularly for younger people and provide services for the ageing population.
- Continue to develop service and logistics infrastructure on appropriate sites to encourage new industry opportunities and population growth.
- Protect and celebrate our unique natural and cultural heritage.
- Protect areas of high environmental value and significance.
- Adapt to natural hazards and climate change.
- Promote and support renewable energy production opportunities

The proposed development involves an "Intensive Animal Livestock" use for the purposes of a beef cattle feedlot and therefore does not result in a land use conflict or fragmentation of productive agricultural lands. Further, the proposed development diversifies agriculture and agribusiness within the local region and provides higher intensity agricultural production within the area.

The proposed development is appropriately located to provide sufficient separation distances to sensitive receptors as shown in Table 59 and Figure 41.

Biodiversity issues are addressed appropriately in the proposed development so that natural environment values are maintained or enhanced as a result of the proposed development.

The proposed development has been sited, designed and shall be operated to ensure there are no adverse impacts to riparian areas and water quality from off-site transfer of sediment as demonstrated in section 4.3.11.3.1 and 4.3.12.2.1 and Figure 4, Figure 7 and Figure 24.

The proposed development is sited on land that is not contaminated and result in no increase to the risk to human health or to the environment. Refer to section 5.4.4 and Appendix K.

Accordingly, the proposed development does not compromise the goals sought under or conflict with the Glen Innes Severn LSPS.

7.5.2 Glen Innes Severn Local Environmental Plan 2012

The primary local planning instrument applying to the proposed development is the Glen Innes Severn Local Environmental Plan 2012 (GISLEP). The framework of the GISLEP is derived from the Environmental Planning and Assessment Act 1979.

A performance assessment of the proposed development against the relevant sections of the GISLEP is discussed in the following sections.

7.5.2.1 GISLEP 2012 Part 1 – Preliminary

7.5.2.1.1 Clause 1.2 (2) Aims

The particular aims of the GISLEP are as follows:

(1) This Plan aims to make local environmental planning provisions for land in Glen Innes Severn in accordance with the relevant standard environmental planning instrument under section 3.20 of the Act.

(2) The particular aims of this Plan are as follows –

(aa) to protect and promote the use and development of land for arts and cultural activity, including music and other performance arts,

(a) to encourage the proper management, development and conservation of natural and human resources in Glen Innes Severn by protecting, enhancing and conserving the following—
  (i) land of significance to agricultural production,
  (ii) timber, minerals, soil, water and other natural resources,
  (iii) areas of significance for nature conservation,
  (iv) areas of high scenic or recreational value,
  (v) landscapes, places and buildings of archaeological or heritage significance, including aboriginal relics and places,
  (vi) communities and settlements,

(b) to facilitate growth and development that—
  (i) minimises the cost to the community of fragmented and isolated development of rural land, and

(ii) facilitates the efficient and effective delivery of amenities and services, and
(iii) facilitates stimulation of demand for a range of residential, enterprise and employment opportunities and promotes agricultural diversity, and
(iv) maximises the efficient use of existing infrastructure.

The proposed development is for a beef cattle feedlot and therefore retains the existing agricultural use of the land and has been carefully assessed through this SEE in terms of its potential effect on soils, water, heritage, waterways, flora and fauna and surrounding ecosystems. Provided that the management and mitigation measures recommended in this SEE are implemented on the site, the effect of the development upon these valuable resources would be properly managed and, the proposed development shall be consistent with the general aims of GISLEP 2012. Relevant matters are addressed within this report.

7.5.2.2 GISLEP 2012 Part 2 – Permitted or prohibited development

7.5.2.2.1 Clause 2.1 Land use zones

The proposed development site is in the RU1 Primary Production zone under the GISLEP 2012 as shown in Figure 43. The proposed development is categorised as Intensive livestock agriculture development under the GISLEP 2012. As such, it is permissible development in the RU1 Primary Production zone with Council consent.

Glen Innes Severn Local Environmental Plan 2012

Land Zoning
Map - Sheet LZN_002

Zone

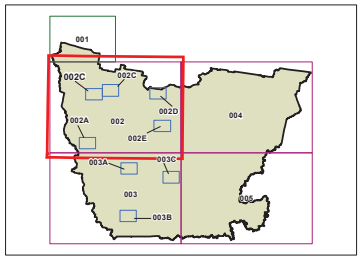
- B2 Local Centre
- B4 Mixed Use
- B6 Enterprise Corridor
- C1 National Parks and Nature Reserves
- C3 Environmental Management
- IN1 General Industrial
- IN2 Light Industrial
- R1 General Residential
- R2 Low Density Residential
- R5 Large Lot Residential
- RE1 Public Recreation
- RE2 Private Recreation
- RU1 Primary Production
- RU3 Forestry
- RU5 Village
- SP1 Special Activities
- SP2 Infrastructure

Cadastre

Cadastre 14/06/2022 © Spatial Services

X - PROPOSED DEVELOPMENT COMPLEX SITE

FIGURE 43



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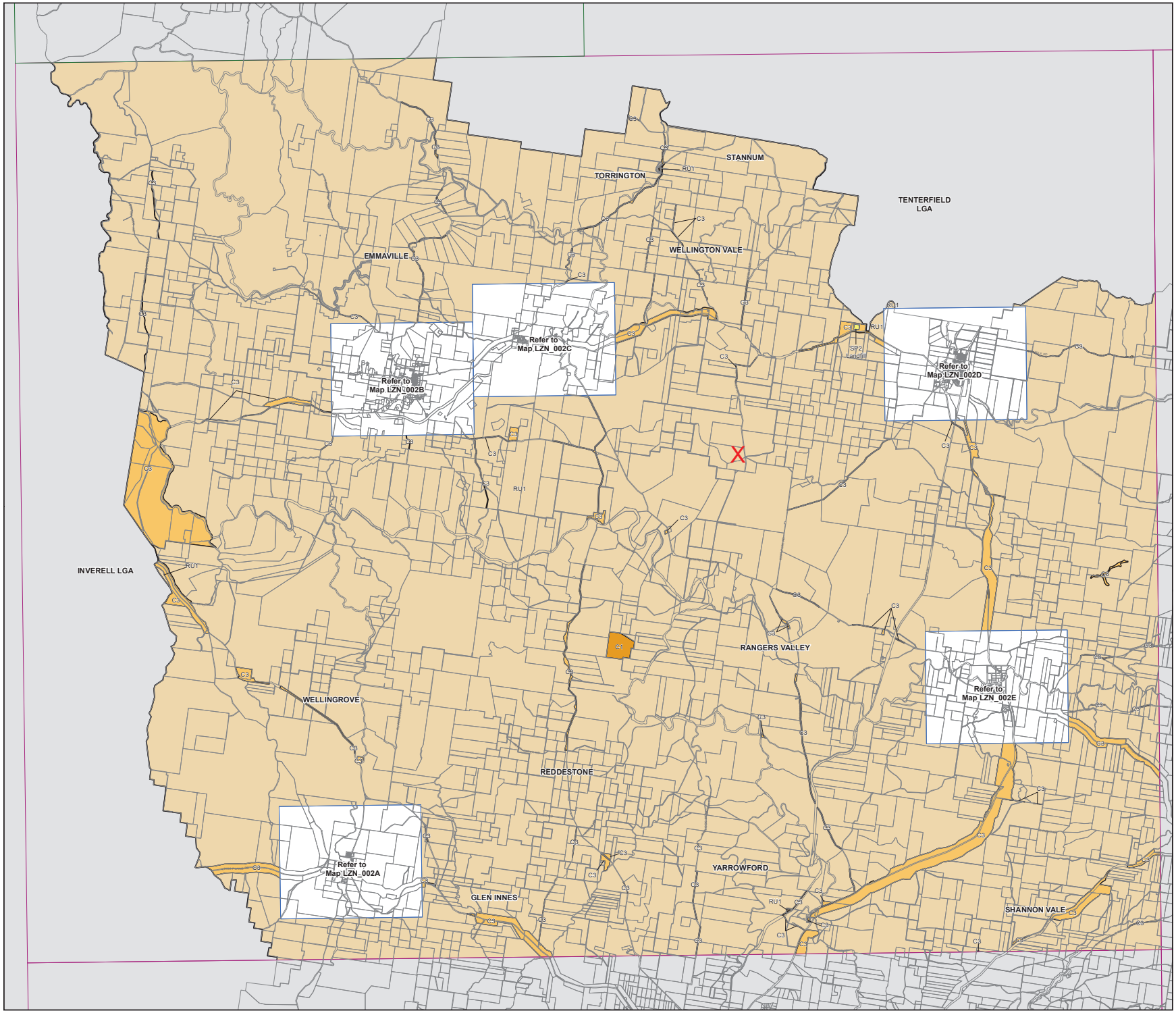


7.5.2.3 GISLEP 2012 Part 2 – Permitted or prohibited development - Land Use Table

7.5.2.3.1 Land Use Table

The objectives for the RU1 Primary Production zone are:

- To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.
- To encourage diversity in primary industry enterprises and systems appropriate for the area.
- To minimise the fragmentation and alienation of resource lands.
- To minimise conflict between land uses within this zone and land uses within adjoining zones.

The proposed development being a beef cattle feedlot (Intensive livestock agriculture) is permitted with consent.

The proposed development is consistent with these zone objectives. The proposed development is sustainable primary production, creates diversity in the primary production enterprise; does not fragment or alienate the subject land; is not associated with a non-agricultural land use and is consistent with the objectives of the RU1 Primary Production zone and compatible with the adjoining land which is zone RU1 Primary Production.

7.5.2.4 GISLEP 2012 Part 3 – Exempt and complying development

The proposed development is not identified as being exempt or complying development under Part 3 of the GISLEP 2012.

7.5.2.5 GISLEP 2012 Part 4 – Development provisions

4.1 Minimum subdivision lot size

(1) The objectives of this clause are as follows—
  (a) to ensure that lot sizes have a practical and efficient layout to meet intended use,
  (b) to prevent the fragmentation of rural lands.
(2) This clause applies to a subdivision of any land shown on the Lot Size Map that requires development consent and that is carried out after the commencement of this Plan.

The proposed development does not involve subdivision of land as outlined in section 4. Consequently, clause 4.1 is not relevant to the proposed development.

4.2 Rural subdivision

(1) The objective of this clause is to provide flexibility in the application of standards for subdivision in rural zones to allow land owners a greater chance to achieve the objectives for development in the relevant zone.

(2) This clause applies to the following rural zones—
(a) Zone RU1 Primary Production,
(b) Zone RU2 Rural Landscape,
(baa) Zone RU3 Forestry,
(a) Zone RU4 Primary Production Small Lots,
(b) Zone RU6 Transition.

Note—
When this Plan was made, it did not include Zone RU2 Rural Landscape, Zone RU4 Primary Production Small Lots or Zone RU6 Transition.

The proposed development does not involve rural subdivision as outlined in section 4. Consequently, clause 4.2 is not relevant to the proposed development.

4.3 Height of buildings

[Not adopted]

4.4 Floor space ratio

[Not adopted]

4.5 Calculation of floor space ratio and site area

[Not adopted]

4.6 Exceptions to development standards

(1) The objectives of this clause are as follows—
(a) to provide an appropriate degree of flexibility in applying certain development standards to particular development,
(b) to achieve better outcomes for and from development by allowing flexibility in particular circumstances.
(2) Development consent may, subject to this clause, be granted for development even though the development would contravene a development standard imposed by this or any other environmental planning instrument. However, this clause does not apply to a development standard that is expressly excluded from the operation of this clause.
(3) Development consent must not be granted to development that contravenes a development standard unless the consent authority is satisfied the applicant has demonstrated that—
(a) compliance with the development standard is unreasonable or unnecessary in the circumstances, and
(b) there are sufficient environmental planning grounds to justify the contravention of the development standard.

The proposed development does not involve contravene a development standard imposed by this or any other environmental planning instrument as outlined in this SEE. Consequently, clause 4.6 is not relevant to the proposed development.

7.5.2.6 GISLEP 2012 Part 5 – Miscellaneous provisions

7.5.2.6.1 Clause 5.10 Heritage conservation

The objectives for heritage conservation are:

(a) to conserve the environmental heritage of Glen Innes Severn,
(b) to conserve the heritage significance of heritage items and heritage conservation areas, including associated fabric, settings and views,
(c) to conserve archaeological sites,
(d) to conserve Aboriginal objects and Aboriginal places of heritage significance.

7.5.2.6.1.1 European Heritage

As outlined in section 5.8.2, the subject land is not listed on the National Heritage List. Further, there are no listed historic heritage places owned or controlled by the Australian Government as listed on the Commonwealth Heritage List on the proposed development site.

There are no items listed by the heritage council under the NSW Heritage Act or by the Glen Innes Severn Council and state government agencies on the subject land on which the development is proposed.

There are no heritage items listed in Schedule 5 of the GISLEP 2012 on the subject land or in the vicinity of the development site.

There are no heritage conservation areas shown on the Heritage Map or described in Schedule 5 of the GISLEP 2012 on the subject land or in the vicinity of the development site.

The closest listed heritage item is the Wellington Vale Homestead (I196) located in the locality of Wellington Vale located some 5 km north of the subject land as shown in Figure 44. The proposed development shall not impact on the Wellington Vale Homestead.

Glen Innes Severn Local Environmental Plan 2012

Heritage Map -
Sheet HER_002

Heritage

- Conservation Area - General
- Item - Archaeological
- Item - General

Cadastre

Base Data 1/5/2012 ©
Land and Property Information (LPI)

X - PROPOSED DEVELOPMENT COMPLEX SITE

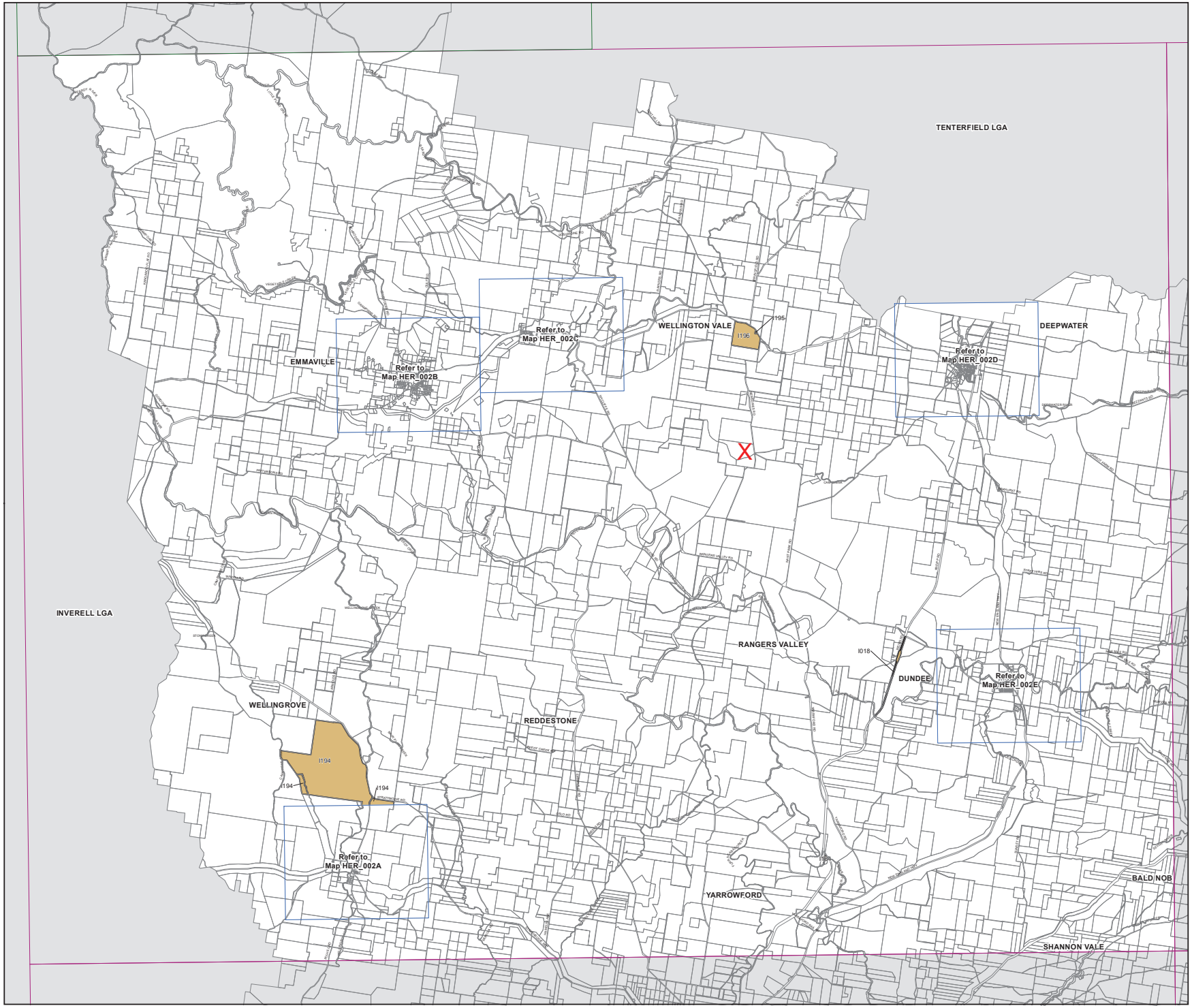
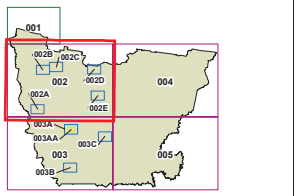


FIGURE 44



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MGA Zone 56

Map Identification Number
3010_COM_HER_002_160_20120712

7.5.2.6.1.2 Aboriginal Heritage

As outlined in section 5.8.1, a search of recorded aboriginal cultural heritage from the Aboriginal Heritage Inquiry System (AHIS) indicates that there are no Aboriginal sites currently registered on the subject land. The Aboriginal Heritage Inquiry System (AHIS) indicates that there are no heritage places or heritage survey areas currently registered on the subject land.

The subject land has been affected by impacts commonly associated with agricultural development including livestock grazing, pasture improvement and cropping operations. This existing disturbance includes native vegetation clearing and pasture improvement.

Consequently, pursuant to the Aboriginal Heritage Due Diligence Guidelines, the proposed development can be considered a 'Category 4 activity' – Significant Disturbance in a significantly altered environment.

The proposed development will comply with the Aboriginal Heritage Due Diligence Guidelines.

Although the area has previously been extensively cleared and developed for agricultural purposes, the applicant shall take all reasonable and practical measures to ensure the activity does not harm any as yet undiscovered Aboriginal cultural heritage.

7.5.2.6.2 Clause 5.18: Intensive livestock agriculture

(1) The objectives of this clause are –
  (a) to ensure appropriate environmental assessment of development for the purpose of intensive livestock agriculture that is permitted with consent under this Plan, and
  (b) to provide for certain capacity thresholds below which development consent is not required for that development subject to certain restrictions as to location.

(2) This clause applies if development for the purpose of intensive livestock agriculture is permitted with consent under this Plan.

(3) In determining whether or not to grant development consent under this Plan to development for the purpose of intensive livestock agriculture, the consent authority must take the following into consideration –
  (a) the adequacy of the information provided in the statement of environmental effects or (if the development is designated development) the environmental impact statement accompanying the development application,
  (b) the potential for odours to adversely impact on the amenity of residences or other land uses within the vicinity of the site,
  (c) the potential for the pollution of surface water and ground water,
  (d) the potential for the degradation of soils,
  (e) the measures proposed to mitigate any potential adverse impacts,
  (f) the suitability of the site in the circumstances,

(g) whether the applicant has indicated an intention to comply with relevant industry codes of practice for the health and welfare of animals,
(h) the consistency of the proposal with, and any reasons for departing from, the environmental planning and assessment aspects of any guidelines for the establishment and operation of relevant types of intensive livestock agriculture published, and made available to the consent authority, by the Department of Primary Industries (within the Department of Industry) and approved by the Planning Secretary.

(4) Despite any other provision of this Plan, development for the purpose of intensive livestock agriculture may be carried out without development consent if –
(a) the development is of a type specified in subclause (5), and
(b) the consent authority is satisfied that the development will not be located –
(i) in an environmentally sensitive area, or
(ii) within 100 metres of a natural watercourse, or
(iii) in a drinking water catchment, or
(iv) within 500 metres of any dwelling that is not associated with the development, or a residential zone, or
(v) for a poultry farm used for breeding poultry—within 5km of another poultry farm, or
(vi) for a poultry farm not used for breeding poultry –
(A) within 5km of a poultry farm used for breeding poultry, or
(B) within 1km of a poultry farm not used for breeding poultry, or
(vii) for a pig farm—within 3km of another pig farm.

(5) The following types of development are specified for the purposes of subclause (4) –
(a) a cattle feedlot having a capacity to accommodate fewer than 50 head of cattle,
(b) a goat feedlot having a capacity to accommodate fewer than 200 goats,
(c) a sheep feedlot having a capacity to accommodate fewer than 200 sheep,
(d) a pig farm having a capacity to accommodate fewer than 20 breeding sows, or fewer than 200 pigs (of which fewer than 20 may be breeding sows),
(e) a dairy (restricted) having a capacity to accommodate fewer than 50 dairy cows,
(f) a poultry farm having a capacity to accommodate fewer than 1,000 birds for meat or egg production (or both).

(6) For the avoidance of doubt, subclause (4) does not apply to development that is prohibited or that may be carried out without development consent under this or any other environmental planning instrument.

(7) In this clause –

environmentally sensitive area has the same meaning as in clause 1.5 of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

The proposed development is for the purpose of intensive livestock agriculture and may not be carried out without development consent. Consequently Part 4 and 5 of this clause are not relevant.

The proposed cattle feedlot development complies with all of Part 3 of this clause GISLEP 2012 intensive animal criteria.

7.5.2.6.3 Clause 5.21: Flood Planning

(1) The objectives of this clause are as follows –
   (a) to minimise the flood risk to life and property associated with the use of land,
   (b) to allow development on land that is compatible with the flood function and behaviour on the land, taking into account projected changes as a result of climate change,
   (c) to avoid adverse or cumulative impacts on flood behaviour and the environment,
   (d) to enable the safe occupation and efficient evacuation of people in the event of a flood.

(2) Development consent must not be granted to development on land the consent authority considers to be within the flood planning area unless the consent authority is satisfied the development –
   (a) is compatible with the flood function and behaviour on the land, and
   (b) will not adversely affect flood behaviour in a way that results in detrimental increases in the potential flood affectation of other development or properties, and
   (c) will not adversely affect the safe occupation and efficient evacuation of people or exceed the capacity of existing evacuation routes for the surrounding area in the event of a flood, and
   (d) incorporates appropriate measures to manage risk to life in the event of a flood, and
   (e) will not adversely affect the environment or cause avoidable erosion, siltation, destruction of riparian vegetation or a reduction in the stability of river banks or watercourses.

(3) In deciding whether to grant development consent on land to which this clause applies, the consent authority must consider the following matters—
   (a) the impact of the development on projected changes to flood behaviour as a result of climate change,
   (b) the intended design and scale of buildings resulting from the development,
   (c) whether the development incorporates measures to minimise the risk to life and ensure the safe evacuation of people in the event of a flood,
   (d) the potential to modify, relocate or remove buildings resulting from development if the surrounding area is impacted by flooding or coastal erosion.

(4) A word or expression used in this clause has the same meaning as it has in the Considering Flooding in Land Use Planning Guideline unless it is otherwise defined in this clause.

(5) In this clause— Considering Flooding in Land Use Planning Guideline means the Considering Flooding in Land Use Planning Guideline published on the Department's website on 14 July 2021. flood planning area has the same meaning as it has in the Flood Risk Management Manual. Flood Risk Management Manual means the Flood Risk Management Manual, ISBN 978-1-923076-17-4, published by the NSW Government in June 2023.

As outlined in section 5.5.3 and shown on Figure 26, the subject land is not subject to riverine flooding or local catchment flooding. Consequently, the proposed development is appropriately located above the level of a 1:100year ARI flood event (1% AEP).

7.5.2.7 GISLEP 2012 Part 7 Local provisions

7.5.2.7.1 Clause 7.3 Essential services

Development consent must not be granted to development unless the consent authority is satisfied that any of the following services that are essential for the development are available or that adequate arrangements have been made to make them available when required –

(a) the supply of water,
(b) the supply of electricity,
(c) the disposal and management of sewage,
(d) stormwater drainage or on-site conservation,
(e) suitable road access.

The following outlines the requirements for services to be provided as part of the proposed development.

(a) the supply of water

The subject land is in the primary production zone and not located within Council's reticulated water supply network.

The proposed development does not require the provision of reticulated water supply.

The applicant has harvestable rights of 50 ML on the subject land which shall be used as a source of water for the proposed development.

(b) the supply of electricity,

Energy supply is available to the subject land if required via connection to an existing overhead supply. The provision of electrical supply and telecommunications services are not required for the proposed development.

(c) the disposal and management of sewage

The subject land is in the primary production zone and not located within Council's reticulated sewerage network. The proposed development does not require the provision of reticulated sewerage infrastructure.

All workforce personnel shall be Newsome family. All domestic waste generated by the workforce personnel can be disposed of via existing on-site wastewater disposal systems (septic and soil absorption) associated with dwellings on adjoining land which are the place of residence of the Newsome family and which shall be used as an administration office for the development.

(d) stormwater drainage or on-site conservation

The proposed development maintains as far as practical the pre-development stormwater drainage patterns. The proposed development avoids overland flow paths and maintains over 50 m setback to watercourses.

No road drainage or an underground piped stormwater network to existing natural watercourse are required.

(e) suitable road access.

Access to the proposed development will be via Newsomes Road. Newsomes Road is an existing formed and gravelled road with a 4 m unsealed pavement on a 6 m formation. Newsomes Road provides the location of a safe access point to the subject land.

7.5.2.7.2 Clause 7.2 Drinking water catchments

(1) The objective of this clause is to protect drinking water catchments by minimising the adverse impacts of development on the quality and quantity of water entering drinking water storages.

(2) This clause applies to land identified as "Drinking Water Catchment" on the Drinking Water Catchment Map.

The subject land on which the development is proposed is not located within a "Drinking Water Catchment" on the Drinking Water Catchment Map as shown on Figure 45.

Glen Innes Severn Local Environmental Plan 2012

Drinking Water Catchment
Map - Sheet DWC_002

Drinking Water Catchment

Drinking Water Catchment

Cadastre

Base Data 1/5/2012 ©
Land and Property Information (LPI)

X - PROPOSED DEVELOPMENT COMPLEX SITE

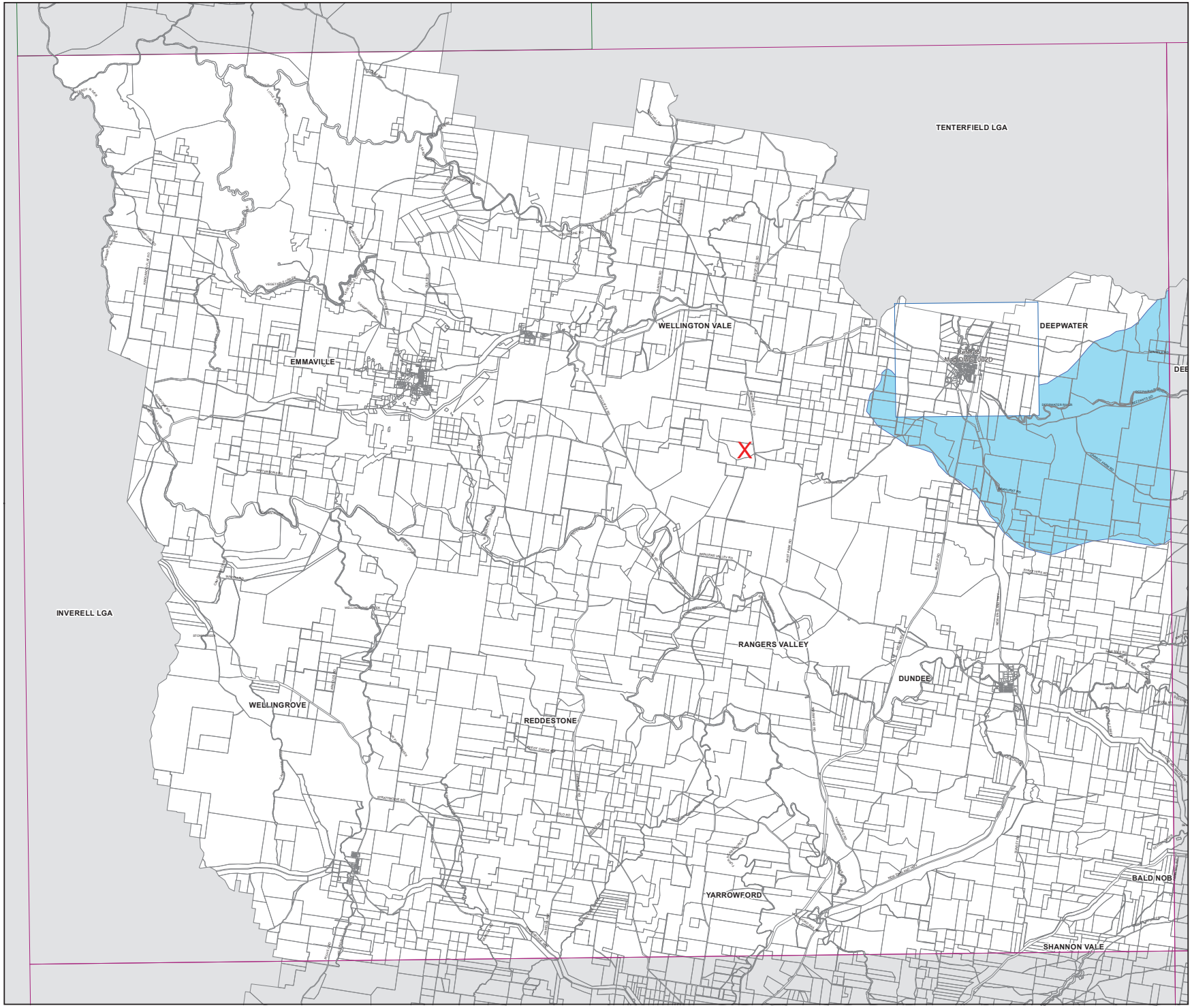
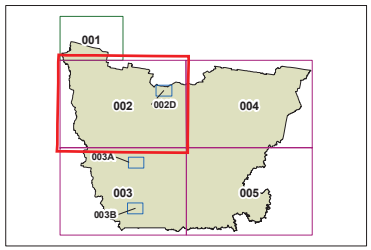


FIGURE 45



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Projection: GDA 1994
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Map Identification Number
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7.5.2.7.3 Clause 7.7 Riparian land and watercourses

(1) The objective of this clause is to protect and maintain the following –
  (a) water quality within watercourses,
  (b) the stability of the bed and banks of watercourses,
  (c) aquatic and riparian habitats,
  (d) ecological processes within watercourses and riparian areas.

(2) This clause applies to the land shown as "Riparian Land" on the Riparian Lands and Watercourses Map.

(3) In deciding whether to grant development consent for development on land to which this clause applies, the consent authority must consider –
  (a) whether the development is likely to have an adverse impact on the following –
    (i) the water quality and flows within the watercourse,
    (ii) aquatic and riparian species, habitats and ecosystems of the watercourse,
    (iii) the stability of the bed and banks of the watercourse,
    (iv) the free passage of fish and other aquatic organisms within or along the watercourse,
    (v) the future rehabilitation of the watercourse and riparian areas, and
  (b) whether the development is likely to increase water extraction from the watercourse, and
  (c) appropriate measures to avoid, minimise or mitigate the impacts of the development.

(4) Development consent must not be granted to development on land to which this clause applies unless the consent authority is satisfied that –
  (a) the development is designed, sited and will be managed to avoid a significant adverse environmental impact, or
  (b) if a significant adverse environmental impact cannot be avoided – the development is designed, sited and will be managed to minimise the impact, or
  (c) if a significant adverse environmental impact cannot be minimised – the development will be managed to mitigate the impact.

The subject land is not impacted by "Riparian Land" on the Riparian Lands and Watercourses Map.

The proposed development is sited, designed and will be managed to protect waterways, wetlands and riparian vegetation.

Glen Innes Severn Local Environmental Plan 2012

Riparian Lands and Watercourses Map - Sheet WCL_002

Watercourse

Watercourse

Cadastre

Cadastre 08/06/2022 © Spatial Services

X - PROPOSED DEVELOPMENT COMPLEX SITE

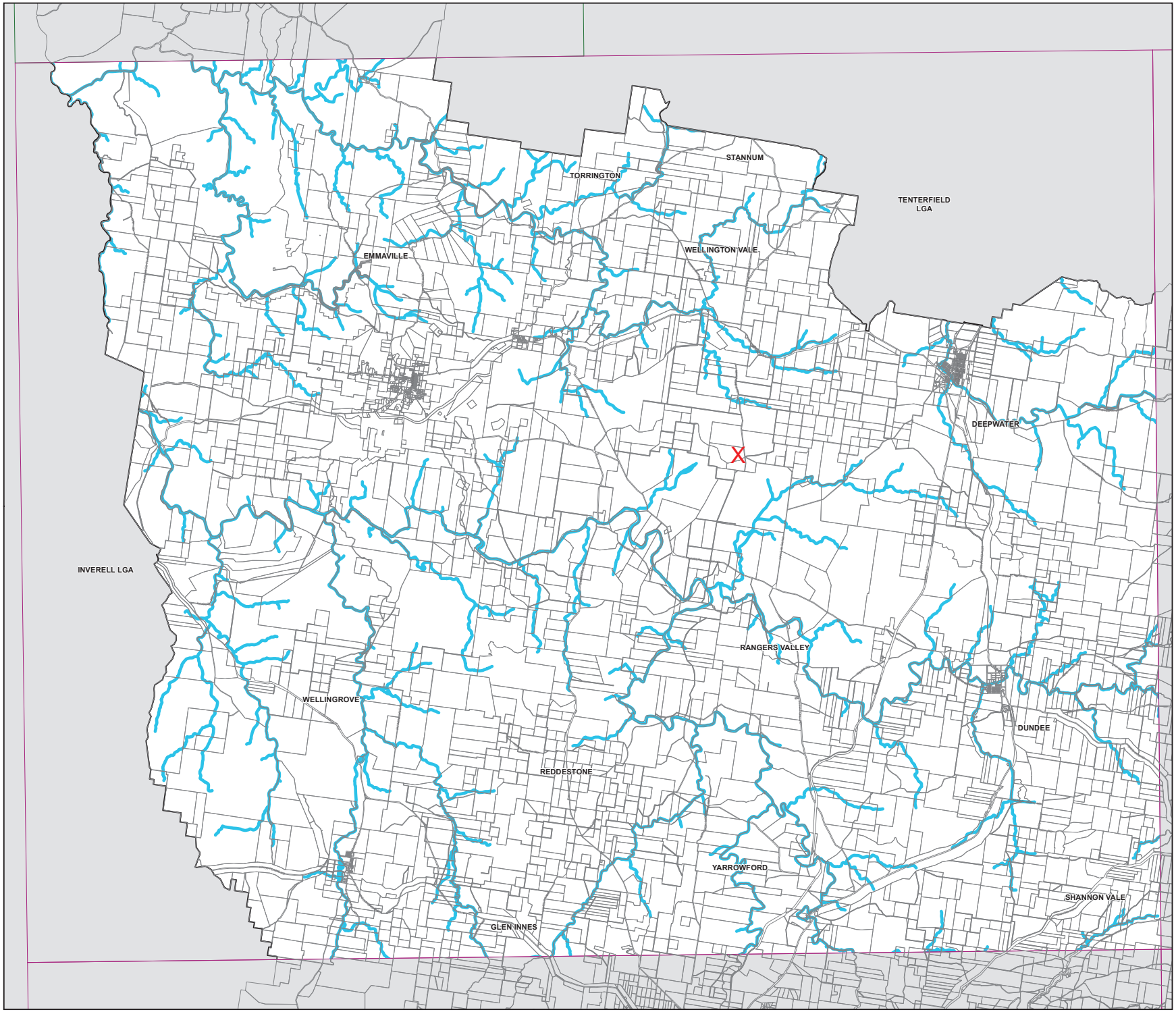
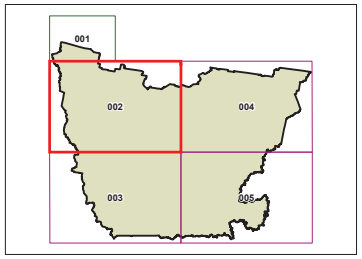


FIGURE 46



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7.5.3 Draft Environmental Plans

There are no applicable proposed instruments that are subject of public consultation under the *Environmental Planning and Assessment Act 1979*.

7.5.4 Development Control Plans

The Glen Innes Severn Council has one development control plan titled the Glen Innes Severn Council Development Control Plan 2014 (GISCDCP 2014) to support the planning controls in the GISLEP 2012.

The aims and objectives of the plan is to:

- Clearly state Council's requirements for the notification of development applications and formulation of guidelines and policy.
- Provide for public participation in the DA process for certain development proposals.
- Allow for a reasonable time for inspection and making submissions on applications while recognising the obligations of the Council to determine applications within prescribed periods.
- Provide a direct avenue of access to the application process by affected residents and owners who wish to express their concerns about proposals to Council staff, Councillors or the relevant Council Committee.
- Explain matters for which the Council will have regard when forming its opinion as to whether or not the enjoyment of adjoining land may be detrimentally affected by a proposed development.
- Specify the circumstances when notification is not required.
- Detail the form that notification will take and an applicant's responsibility to provide a notification plan.

The provisions of the GISCDCP 2014 relevant to this application are outlined in the following sections.

7.5.4.1 GISCDCP 2014 Chapter 2 – Notification Procedures

7.5.4.1.1 Clause 2.3 – Notification Procedures and Guidelines for Applications

This section provides detailed guidelines on procedural processes that must be followed when notifying the community of applications. This plan provides for two levels of public consultation that an application may be subject to. These are notification and advertising.

7.5.4.1.1.1 Notification of Applications

Adjoining landowners will be given notice of an application if, in the opinion of Council, land adjoining the development may be detrimentally affected by a development proposal. The following issues will be considered in the assessment and determination of a development:

- Views to from the land;
- Overshadowing;
- Privacy and amenity;
- Noise, odour, dust, light spill or other polluting emissions;
- Proposed hours of use for the development;
- The scale or bulk of the proposed development; and
- The positioning of the development in relation to site boundaries.

The proposed development is a small scale development and is located is a rural area and well separated from sensitive receptors as outlined in section 2, 4 and 5.

However, notification shall be undertaken in accordance with Table 2.1 of the Glen Innes Severn Council Development Control Plan 2014.

7.5.4.1.2 Clause 2.4 –Notification of Amendments prior to determination & Modification of Applications under S96

This clause is not relevant at this stage.

7.5.4.1.3 Clause 2.5 – Integrated, Designated Development and other Categories of Development

Statutory notification requirements exist under the EP&A Act for certain categories of development such as:

- Integrated Development;
- Designated development;
- Regionally Significant Development; and
- Other types of Approvals, including assessment of "activities" under Part 5 of the EP&A Act. These must be advertised and exhibited in accordance with the requirements as outlined in the EP&A Act and the Regulations.

The proposed development is not Integrated Development, Designated Development or Regionally Significant Development nor any other type of development as outlined in section 4 and 5.

7.5.4.2 GISCDCP 2014 Chapter 3 – Residential Developments

7.5.4.2.1 Clause 3.2 – Where this chapter applies

This chapter applies to residential development undertaken on residential land zoned R1, R5 and RU5 in the Glen Innes Severn LGA including associated development

The proposed development is for Intensive livestock agriculture and does not involve residential development. Consequently, this chapter is not relevant to the proposed development.

7.5.4.3 GISCDCP 2014 Chapter 4 – Rural Development

7.5.4.3.1 Clause 4.1 – About this Chapter

This section refers to dwellings, dual occupancy development, rural worker's dwellings, additions, tourist development and other forms development permitted in the Rural and Environmental Zones contained within Glen Innes Severn Local Environmental Plan 2012.

7.5.4.3.2 Clause 4.2 – Where this Chapter applies

All Rural, Rural Residential and Environmental zoned land (RU1, RU2, R5 and E3) within the Glen Innes Severn LGA that is subject to a development proposal.

7.5.4.3.3 Clause 4.3 – Aims and Objectives

- To enhance the character of the rural areas.
- To encourage the use of existing or potentially productive land for agricultural purposes.
- To reduce potential for rural land use conflict.
- To protect old-growth, significant hollow-bearing trees and conservation significant vegetation through recognition of their ecological value and scarcity in the landscape.
- To improve the ecological function of riparian areas within the landscape.
- To improve the stability of the bed and banks of waterways through the management of riparian vegetation.

7.5.4.3.4 Clause 4.4 – General controls

- Rural dwellings and dual occupancies are subject to the provisions of Clause 4.2A of the GISC LEP 2013. Refer to Note below.

Note: Clause 4.2A of the GISC LEP provides development standards for the erection of dwellings on rural land. To summarise, dwellings may only be erected on rural land if:

  - The lot has an area of at least the minimum lot size shown on the GISC LEP map; or
  - The lot was created by a Council approved and certified subdivision of land prior to 1991, or
  - The dwelling is intended to replace a lawfully erected dwelling, or
  - The lot is identified on the GISC LEP Dwelling Opportunity Map.
- Council may require the consolidation of undersized rural lots (vacant lots with an area of less than the minimum rural lot size) within the same rural property holding as a condition of consent for new rural dwellings.
- Buildings shall be sited so that they are not located or project above ridgelines or knolls and are sensitively placed within the rural landscape.
- Rural buildings, including garages and sheds should be clustered to form a group and where possible, buildings shall be broken into smaller elements rather than presenting a large building mass.
- All buildings should be setback at least 15 metres from the front property boundary (with frontage to a public road).
- Materials and/or finishes should not give rise to visual intrusion by virtue of texture, colour or arrangement. The use of recessive earthy tones is required. The use of reflective materials is discouraged.
- Development involving the on-site management of wastewater must comply with Council's On-site Sewage Management Strategy.
- Development within bushfire prone land must meet the relevant requirements of the Rural Fire Service and Planning for Bushfire Protection 2006.
- The carrying out of development ('works' including excavation or deposition of material) on waterfront land requires a Controlled Activity Approval (CAA) under the Water Management Act 2000. Council will refer DAs involving works within waterfront land to the NSW Office of Water as integrated development.

There are no general controls of relevance to the proposed development for the following reasons:

- the proposed development does not involve the establishment of buildings or rural dwellings;
- the proposed development does not involve on-site disposal of domestic wastewater;
- the proposed development complex is not sited on bushfire prone land as outlined n section 5.12.1; and
- a Controlled Activity is not required for the proposed development as outlined in Appendix G.

7.5.4.3.5 Clause 4.5 – Vehicular Access Requirements

Where access from a public road to a private property is required:

- Access to a development shall be located having regard to its potential impact on the landscape and native vegetation and shall be unobtrusive and sympathetic to the existing landform and neighbouring development.
- All development is required to have coincidental legal and physical access from a public road to the development site. In this regard, Council may require evidence from a registered surveyor that this is the case.
- Where a part of any access is via an unformed Crown road, the road may first require dedication as a Council public road, and then construction to an appropriate standard once Council approval has been gained for the work. For a single residential dwelling, the minimum standard of construction where the owner will be responsible for ongoing track maintenance is in accordance with the former Department of Land and Water Conservation publication "Guidelines for the Planning, Construction and Maintenance of Tracks".
- Road and drainage designs may need to be submitted to Council at the applicant's expense prior to approval of any roadworks within a Council public road reserve.
- The developer will be responsible for construction or upgrading of any vehicle access in accordance with Council standards, including:
    - A suitable width all-weather pavement from the road to the entrance gate or stock grid.
    - Where the access crosses a table drain, a minimum 375mm diameter pipe with headwalls, or concrete dish drain on the alignment of the table drain.
    - Any entrance gate or stock grid should be set back a minimum distance of 15 metres from the edge of the traffic lane for single unit truck access, or 22 metres for semi-trailer access.
    - The access is to be located at where safe intersection sight distances can be achieved, including a minimum gap sight distance of 5 seconds.
    - A Council Road Opening Permit is required prior to performing any work within a public road reservation. Forms and advice on relevant fees can be obtained from Council's Engineering Services department.

The proposed development has legal and physical access from Newsomes Road a Council controlled road as outlined in section 2 and 4.3.5.

7.5.4.3.6 Clause 4.6 – Environmental Considerations – Requirements

- Development shall not be carried out on slopes greater than 20%. If development on slopes greater than 20% is unavoidable, Council may require a geotechnical assessment.
- Clearing of native vegetation – applications are to identify the area and number of trees to be cleared as part of the application. Clearing which does not form part of a Development Application to Council must be approved by the relevant Local Land Services (LLS) (refer to Note below).

- Where development is likely to have a significant impact on threatened species, populations or ecological communities, or their habitats within the meaning of the Threatened Species Conservation Act 1995, Environment Protection and Biodiversity Conservation Act (EPBC) Act 1999 and Fisheries Management Act 1994., Council will require the submission of the following:
  - An ecological assessment prepared by a suitably qualified, experienced and independent person or persons; and/or
  - A preliminary Vegetation Management Plan (VMP) prepared by a suitably-qualified and experienced person such as an Ecologist, Bush Regenerator, Horticulturist or Landscape Architect with practical, demonstrated experience in bush regeneration., and/or
  - Compensatory planting prepared in accordance with Table 4.1.
- Riparian lands within a subdivision are to be stabilised and revegetated according to stream order and buffer category. Water courses classified as stream order 3 or greater (Strahler method) require a riparian buffer of at least 40 m
- Roads are to be located outside riparian buffer areas where possible. Where roads traverse the riparian buffer area, the road design is to minimise the area of disturbance and demonstrate minimal impact on the riparian function and integrity.
- Driveway/roadway crossings/other infrastructure located over waterways are to have regard to the requirements for fish passage in accordance with relevant NSW State Government requirements under the Fisheries Management Act 1994.

The proposed development shall not be carried out on slopes greater than 20% as outlined in section 5.3. Therefore, a geotechnical assessment is not required.

The vegetation assessment for the proposed development presented in Appendix I, concluded that less than 1 ha of native vegetation will be no impacted by the proposed development and therefore a BDAR is not required.

7.5.4.3.7 Clause 4.7 – Flooding

In low-lying areas a flood study may be required to determine appropriate floor levels for habitable structures. Waterway crossings on any access roadways should be designed to permit two-wheel drive access from a public road to the residence during a critical one (1) in 100 year storm event.

The proposed development is not located in a low-lying area as outlined in section 5.2.2 and 5.3 and shown on Figure 15. Consequently a flood study is not required.

7.5.4.3.8 Clause 4.8 – Land Use Buffers

- Buffers from development to rural land uses are to be established in accordance with the NSW DPI Land Use Conflict Risk Assessment Guide.

- Where a proposed development for a dwelling or tourist accommodation will adjoin an agricultural enterprise on an adjoining property, a minimum 100 m separation shall be provided. Where the 100 m buffer cannot be achieved, Council will consider the use of vegetative buffers on the proposed development site.
- Any new residence should be located a minimum distance of 2 km from any active or proposed wind turbine, unless suitable measures are taken in the design and construction of the dwelling to ameliorate any noise or other impacts.

The proposed development involves Intensive livestock agriculture being the establishment of a beef cattle feedlot. The proposed development is a rural use which is a permitted use with consent where located and has been sited to ensure no detrimental impact on the amenity of the surrounding rural or residential land or rural landscape character. Further, the proposed development is compatible with surrounding rural uses. The proposed development has been sited and designed and shall be operated to ensure no detrimental impacts on the amenity of the local area. Refer to section 2, 4, 5 and 6, Figure 3, Figure 4 and Figure 41. Consequently, a Land Use Conflict Risk Assessment (LUCRA) is to identify and assess the potential for land use conflict issues and risk of occurrence is not deemed warranted.

7.5.4.3.9 Clause 4.9 – Glen Innes Aerodrome

The proposed development is not located in the vicinity of the Glen Innes Aerodrome. Consequently, the provisions of clause are not relevant.

7.5.4.3.10 Clause 4.10 – Services

Electricity and Telecommunications Infrastructure

- Any structures associated with the provision of electricity and telecommunications to the development shall be sited to have minimal environmental impact including vegetation removal and visual impact.
- Applications are required to demonstrate the method of power supply.
- Council supports the use of solar energy supplies.
- Where generators are proposed, controls shall be placed on the hours of operation and levels of noise emission having regard to the proximity of neighbouring development and the environment.

The proposed development shall use a diesel generator for supply of power for the proposed development as outlined in section 4.3.13.1. Whilst the proposed development complex is well removed from sensitive receptors the diesel generator shall be operated during the approved operating hours of the proposed development.

7.5.4.3.11 Clause 4.11 – Farm Dams

The NSW Office of Water regulates and licenses farm dams. Dams that do not need a licence or development consent are:

- Dams that capture up to 10 per cent of run-off;
- Dams up to one megalitre on small properties:
- Licences are not required for dams up to one megalitre in size on small properties where the Maximum Harvestable Right Dam Capacity (MHRDC) is less than one megalitre and where the property was approved for subdivision before 1 January 1999. No further harvestable right dams may be constructed; any new dams above this allowance must be licensed.

Note: Under the Fisheries Management Act 1994, any new dam or modification to an existing dam may require the owner to provide for fish passage. Contact NSW Fisheries office for further advice.

The subject land several existing farm dams which shall be utilised for water supply for the proposed development and which when combined are not greater than Maximum Harvestable Right Dam Capacity (MHRDC).

7.5.4.4 GISCDCP 2014 Chapter 5 – Subdivision

The proposed development is an Intensive livestock agriculture being the establishment of a beef cattle feedlot and does not involve subdivision of land as outlined in section 4. Consequently, the provisions of Chapter 5 of the GISCDCP 2014 are not relevant.

7.5.4.5 GISCDCP 2014 Chapter 6 – Development in commercial and industrial areas

The proposed development is an Intensive livestock agriculture being the establishment of a beef cattle feedlot and is located in a rural zoned area (RU1) and is not located in a commercial or industrial area as outlined in section 2 and 4. Consequently, the provisions of Chapter 6 of the GISCDCP 2014 are not relevant.

7.5.4.6 GISCDCP 2014 Chapter 7 – Access and Parking

7.5.4.3.11 Clause 7.1 – About this Chapter

This chapter of the DCP has been prepared as a guide to Council's requirements for car parking, access and loading facilities as part of development proposals.

7.5.4.6.1 Clause 7.2 – Where this Chapter applies

This Chapter applies to all zones under the GISC LEP 2012. This chapter applies to new development and re-development of existing sites.

7.5.4.6.2 Clause 7.3 – Aims and Objectives

To ensure that new development:

- maintains or improves traffic safety and management;
- provides adequate provision for access and parking for people with disabilities;
- minimises the visual impact of on-site parking; and
- provides for the ongoing maintenance of on-site car parking and manoeuvring areas.

7.5.4.6.3 Clause 7.4 – Access and Traffic Generation

Minor development proposals are unlikely to significantly impact the receiving road network, however, consideration of traffic generation and access locations is still required. For more significant developments, Council may require a Traffic Impact Assessment to be prepared addressing the following matters:

- Development involving access off a classified road (New England Highway and Gwydir Highway) will be referred to the Roads and Maritime Services (RMS) for comment.
- Traffic Generating Development (Schedule 3 of SEPP Infrastructure) will be referred to the RMS as Integrated Development and will require their General Terms of Approval.
- The rate of traffic generation associated with the proposed development.
- Any impact additional traffic generated may have on traffic efficiency, amenity, safety, and road pavement life.

7.5.4.6.4 Clause 7.5 – Vehicular Crossover and Driveway Width

Footway crossings shall generally be constructed from concrete. Applicants are to lodge a Road Opening Application Form with Council, and receive a Road Opening Permit, prior to performing any work within a public road reservation. Any conditions of the Road Opening Permit are to be complied with in association with the work.

Generally, the internal driveways and crossovers associated with multi dwelling housing development shall have a minimum clear trafficable width of 5.5 metres. However, a minimum of 4.5 metres may be acceptable where justified in an assessment of site access requirements and traffic usage.

All existing vehicular crossings not utilised by the development will generally be required to be removed, and the area restored to match the adjoining section of kerb and footpath, prior to occupation or use of the development.

7.5.4.6.4.1 Design Requirements

The following requirements must be taken into consideration at the design stage of a medium density development:

driveways, manoeuvring areas and parking areas are generally to be designed in accordance with the provisions of AS2890.1 Parking Facilities: Off-Street Parking

- long straight driveways are to be avoided
- all vehicles must enter and leave the site in a forward direction
- the location of visitor parking facilities should be evident from the street so that their use is encouraged
- the location of resident and visitor parking shall be behind the building line;
- one car parking space per unit is to be enclosed and form part of the unit entitlement should the development be strata subdivided and,
- all driveways, parking areas and vehicular turning areas are to be constructed with a base course of adequate depth to suit design traffic, and are to be sealed from kerbline with either bitumen, asphaltic concrete or interlocking pavers. Full details should be indicated on the plans submitted with the Development Application. The use of decorative paving e.g. interlocking pavers, grasscrete etc for access and visitor parking is strongly encouraged.
- each resident car parking space is to have minimum dimensions of 6m x 3m. Other parking spaces are to have minimum dimensions of 5.5m x 2.6m. Car parking spaces are to be adequately delineated and maintained at all times.

The proposed development shall utilise the existing subject land point of access to Newsomes Road.

The existing subject land point of access provides safe and functional operation for motorists to and from the subject land without compromising the efficiency, function, convenience of use or capacity of the local road system.

As the vehicles servicing the proposed development shall be identical to those servicing the existing agricultural operations on the subject land and no changes are proposed to the geometric design of the subject land entrance.

7.5.4.6.5 Clause 7.6 – Parking Controls

7.5.4.6.5.1 General

- Car-parking spaces are to be provided on the same lot as the proposed development. Multi-lot land holdings may require consolidation to comply with this control. (Reason: To ensure car parking remains annexed to the approved development.)
- Additional parking spaces required for any new development or redevelopment shall comply with the controls of this chapter and Table 7.1: Off-street Parking Rates.
- Accessible car parking spaces are to be provided in accordance with the Disability (Access to Premises - Buildings) Standards 2010.

- Accessible car parking spaces are to be located as close as possible to the main pedestrian entrance and should have regard to the use and function of the building.
- Council will apply the controls of this Chapter if it considers a proposed Change of Use requiring consent will produce a substantially different parking requirement than those attributable to the previous use of premises.
- Development proposals that provide less parking than required by this Chapter shall be supported by a parking study.
- On-site parking design must meet the relevant Australian Standards (AS 2890.1 and 2890.2 2004).
- All required car parking areas, driveways, turning areas and loading areas are paved in either a bitumen seal coat, asphaltic or bituminous concrete, cement concrete, concrete paving blocks, or brick paving blocks. The standard of paving required will be dependent upon the type of development proposed, with regard to traffic loadings including turning movements of heavy vehicles.
- In villages and rural areas all-weather paving of driveways, turning areas, loading areas and car parking areas is required. Surface materials to be at the discretion of Council's Director of Infrastructure Services

All parking spaces shall be suitably line-marked and sign-posted and be graded and drained to Council's stormwater system.

- Free and uninterrupted access to car parking areas shall be maintained at all times.
- Stacked car parking is only permissible in conjunction with single dwelling houses and dual occupancies. Exceptions to this control are at the discretion of Council.
- Car parking areas are to be incorporated into the building or provided at, or behind, the front setback of the building.

The subject land is located within the Rural zone and the proposed use is for Intensive Livestock agriculture being the establishment of a beef cattle feedlot. Refer to section 4.

The requirements for on-site vehicle parking for an Intensive Livestock agriculture are not specified in Table 7.1 Off-Street Parking Rates in the GISCDCP 2014.

The proposed development has been provided with adequate on-site vehicle parking for the expected demand. Refer to section 4.3.6 and Figure 4.

The nature of the development and rural character of the site is such that the provision of a formal car parking area is unnecessary.

7.5.4.7 GISCSCP 2014 Chapter 8 – Central Business District and East Avenue

The proposed development is an Intensive livestock agriculture being the establishment of a beef cattle feedlot and is located in a rural zoned area (RU1) and is not located in the Glen Innes Central Business District and East Avenue as outlined in section 2 and 4. Consequently, the provisions of Chapter 8 of the GISCDCP 2014 are not relevant.

7.5.4.8 GISCDCP 2014 Chapter 9 – Wind Power Generation

The proposed development is an Intensive livestock agriculture being the establishment of a beef cattle feedlot and does not involve wind power generation as outlined in section 2 and 4. Consequently, the provisions of Chapter 9 of the GISCDCP 2014 are not relevant.

7.5.4.9 GISCDCP 2014 Chapter 10 – Hunter Street URA

The proposed development is an Intensive livestock agriculture being the establishment of a beef cattle feedlot and is located in a rural zoned area (RU1) and is not located in the Hunter Street Urban Land Release Area as outlined in section 2 and 4. Consequently, the provisions of Chapter 10 of the GISCDCP 2014 are not relevant.

7.5.4.10 GISCDCP 2014 Chapter 11 – Shipping Containers

The proposed development is an Intensive livestock agriculture being the establishment of a beef cattle feedlot and is located in a rural zoned area (RU1) and does not involve the use of shipping containers as outlined in section 2 and 4. Consequently, the provisions of Chapter 10 of the GISCDCP 2014 are not relevant.

7.5.4.11 GISCDCP 2014 Chapter 12 – Statement of Environmental Effects Requirements

7.5.4.11.1 Clause 12.1 – What is a Statement of Environmental Effects

A Statement of Environmental Effects (SEE) is a document that is to be submitted with your development application (DA) that puts forward reasons why the development is suitable for the area. The document should state what the impacts of the development are on the natural and built environment and how these impacts are going to be managed.

The SEE is your opportunity to tell Council how you have taken the environment into account when designing your proposal and why, if impacts do occur, they are acceptable. The matters listed below are not exhaustive and additional matters may be relevant to your proposal, depending on the type of development proposed and the constraints of the land.

Matters regarding the requirements for a statement of environmental effects have been addressed in this document.

Consequently, the proposed development will satisfy this planning outcome.

7.5.4.11.2 Clause 12.2 – Requirements

The Environmental Planning and Assessment Regulation 2021 requires that a SEE must provide an assessment of the following matters:

- Environmental planning instruments and policies, including:
  - GISC LEP 2012;
  - State Environmental Planning Policies*.
- the environmental impacts of the development;
- how the environmental impacts of the development have been identified;
- the steps to be taken to protect the environment or to lessen the expected harm to the environment;
- where development is likely to significantly affect threatened species, populations or ecological communities, or their habitats, a species impact statement is required to be submitted;
- BASIX certificate; and
- an assessment of those matters specified in clause 5A of the Environmental Planning and Assessment Act 1979.

* The following State Environmental Planning Policies are relevant to many local development proposals and if applicable, must be addressed in the SEE: –

  - SEPP (Biodiversity and Conservation) 2021
  - SEPP (Exempt and Complying Development Codes) 2008
  - SEPP (Housing) 2021
  - SEPP (Industry and Employment) 2021
  - SEPP (Planning Systems) 2021
  - SEPP (Primary Production) 2021
  - SEPP (Resilience and Hazards) 2021
  - SEPP (Resources and Energy) 2021
  - SEPP (Sustainable Buildings) 2022
  - SEPP (Transport and Infrastructure) 2021
  - SEPP No 65—Design Quality of Residential Apartment Development

Complex development proposals such as medium density residential development, commercial and industrial development requires consideration of the following issues:

- Appropriateness of built form and landscape in relation to the site context, topography and urban character;
- Building arrangement and their relationship to streets and open spaces;
- Location, function and opportunities for casual surveillance of open space;
- Personal privacy and security;

- Energy efficiency in building design;
- Heritage and conservation opportunities and constraints.

This report addresses the mandatory requirements as prescribed by Chapter 12 of the GISCDCP 2014.

7.5.5 Planning agreements

Not Applicable.

7.5.6 Any matter prescribed by the regulation

Part 4 determination of development applications of the Environmental Planning and Assessment Regulation 2021 prescribes certain matters that must be considered by Council in determining a development application.

The following information is provided in respect of the prescribed matters:

7.5.6.1 Demolition

Not Applicable. There are no demolition works to be undertaken with the proposed development.

7.5.6.2 Fire safety and other considerations

Not Applicable. The proposed development does not involve a change of building use for an existing building.

7.5.6.3 Consent authority may require buildings to be upgraded

Not Applicable. The proposed development does not comprise the use of existing buildings.

7.5.6.4 Fire safety and other considerations applying to erection of temporary structures

Not Applicable. The proposed development does not comprise the erection of temporary structures.

7.5.6.5 Deferred commencement consent

Not Applicable. The potential impacts of the proposed development have been properly addressed.

7.5.6.6 Imposition of conditions - ancillary aspects of development

Not Applicable. There are no ancillary aspects of the proposed development.

7.5.6.7 Imposition of conditions - conditions limited to State significant development

Not Applicable. The proposed development is not state significant development.

7.5.6.8 Modification or surrender of development consent or existing use right

Not Applicable. The development application does not involve a notice of modification or surrender of a development consent or existing use right.

7.5.6.9 Fulfilment of BASIX commitments

Not Applicable. The proposed development does not comprise any new dwellings, renovations or installing a pool or spa of more than 40,000 litres.

7.5.7 Impacts of the Development

7.5.7.1 Context and setting

The proposed development is located on several land parcels on Newsomes Road approximately 11 km by road west of Deepwater. The subject land is a beef cattle grazing and cropping property which has historically run sheep for wool production. The subject land is co-located with other rural properties which operate similar agricultural pursuits. The proposed development will establish a beef cattle feedlot as part of drought mitigation and diversification and is development compatible with these adjoining uses.

The proposed development complex site is in the centre-south of the subject land. The nearest rural dwelling is located over 3,000 m to the northwest of the proposed development complex site, and this is separated by an existing established vegetation buffer with scattered paddock trees and grassy woodland. Rural dwellings are sparsely located across surrounding lands.

The proposed development is considered compatible with the surrounding area and will have minimal impact regarding impacts on adjacent properties and land uses and minimal impact regarding interruptions of important views and vistas.

7.5.7.2 Access, traffic and parking

Access to the proposed development shall be from the existing subject land access off Newsomes Road.

Construction and operation vehicles will arrive at the site via Newsomes Road and Wellington Vale Road. All construction vehicles will enter and exit the proposed development from the east (Deepwater/Glen Innes). Vehicles associated with the operation of the proposed development will predominantly enter and exit the proposed development from the east (Deepwater/Glen Innes) but may also originate from the west (Emmaville).

All unloading / loading of materials and equipment shall occur within the subject land.

Vehicle movements to and from the site will occur in a forward direction, and vehicles will turn around on – site. Due to its location in a rural area, potential pedestrian movements at the site access point off Newsomes Road and conflicts with construction and operation traffic are unlikely.

Therefore, the traffic generated by the construction and operation of the proposed development is relatively minor and not of a level normally associated with unacceptable traffic implications in terms of road network capacity or traffic related environmental effect.

7.5.7.3 Impact on adjacent properties and public domain

The effect of the proposed development on the existing and likely amenity of adjoining properties is minimal.

The traffic generated by the construction and operation of the proposed development is relatively minor and not of a level normally associated with unacceptable traffic implications in terms of road network capacity or traffic related environmental effect.

The proposed development has a large horizontal and low vertical scale. Whilst the visual effect of the proposed development is high, the low vertical scale ensures that all viewing locations are generally screened by some of the intervening topography and/or vegetation, limiting the visibility of the proposed development from receptors in adjacent areas. All residential dwellings are unsighted due to intervening topographic and vegetation features. Long viewing distances lower the visual sensitivity of the proposed development.

Disturbed areas and embankments of the proposed development shall be revegetated and assimilate into the landscape, thereby lowering the visual sensitivity.

The construction and operation of the proposed development is not a source of low frequency noise or vibration to the surrounding community, with bulk earthworks activities being limited to vibration sources that will produce only localised impacts. The proposed activities do not involve vibration type sources such as heavy vehicles operating close to residences such as jackhammering, blasting etc.

On occasions it is possible that noise levels may be higher than predicted due to plant start-up or upset conditions. These events are transient in nature, short-duration and are not considered to impact the long-term background noise level.

Further, the proposed development does not generate long-term noise source and noise management and mitigation measures are proposed to reduce potential noise impacts.

7.5.7.4 Utilities

Matters regarding utilities have been assessed against the provisions of clause 6.6 of the GISLEP 2012 as outlined in section 3 and 7.5.2.

7.5.7.5 Construction

Construction impacts are not anticipated to have an adverse impact on the locality. Works to occur during daytime hours, to minimise impacts on the local amenity.

Erosion and sedimentation control measures are to be implemented during construction to minimise any erosion and sedimentation at the site. All disturbed areas shall be rehabilitated as soon as practical.

All construction machinery would be fitted with appropriate muffling devices to limit noise generation during construction. The construction period would be for a limited period, and thus any impacts would be limited to that time frame.

All construction work will be undertaken in accordance with Council's conditions of consent.

7.5.7.6 Heritage

Matters regarding European and Aboriginal Heritage have been assessed against the provisions of Clause 5.10 of the GISLEP 2012 as outlined in section 5.8, 7.5.2.6.1.1 and 7.5.2.6.1.2.

7.5.7.7 Air quality

The proposed development has been designed, sited and shall be operated to minimise impacts to air quality as far as practical.

Refer to section 6.2.5 which provides details of the separation distance from the proposed development and all nearby sensitive receptors as calculated in accordance with the separation distance guidelines described in the National Guidelines for Beef Cattle Feedlots in Australia (MLA, 2012a).

The proposed development is appropriately located to provide sufficient separation distances to sensitive receptors as shown in Table 59 and Figure 41 to mitigate odour and dust impact. Matters regarding air quality have been assessed against the provisions of relevant guidelines as outlined in section 6.2.

The proposed development is for Intensive livestock agriculture. The SEE has demonstrated that the use will not interfere with the amenity of the surrounding area or cause any unacceptable land use conflicts on surrounding properties or the environment.

7.5.7.8 Hazards

7.5.7.8.1 Bushfire

There are areas of Vegetation Category 1, Category 2 and Category 3 on the subject land. Category 1 and Category 2 land are designated bush fire prone areas as identified by the NSW Rural Fire Service bush fire prone land mapping tool certified by the Commissioner of the Rural Fire Service as outlined in 5.12.1. The proposed development complex is located on Category 3 land which is not considered bush fire prone.

Further, the proposed development does not include new buildings or alterations to existing buildings as outlined in section 4.

7.5.7.8.2 Flooding

Given the location of the subject land in the landscape the site shall not be impacted by riverine or local catchment flooding.

The proposed development has been sited above the 1% AEP flood level. The infrastructure of the proposed development has been sited on elevated land rising away from watercourses and shall not affect or be subject to inundation during flood events as shown in Figure 15 and Figure 26.

Consequently, the proposed development shall not increase the potential for flood damage on-site or to other property and the risk to life, property, community, economic activity and the environment during flood events remains at the same level as that exists pre-development.

7.5.7.8.3 Landslip and spring activity

The proposed development site is characterised by uniform gentle slope and does not have topographical features that are likely to create a landslip risk. The slopes are in the order of 3-4 % well less than 15% and the soils are stable light to medium clays.

There are no springs known to occur on the proposed development complex site.

7.5.7.9 Water quality

The proposed development has been sited and designed to prevent any adverse impacts on water quality.

Erosion and sedimentation control measures are to be implemented during construction to minimise any erosion and sedimentation of downstream waterways.

Stormwater management shall be appropriately managed as outlined in section 4.5.7 to prevent environmental harm to ensure that development has a neutral or beneficial effect on water quality.

7.5.7.10 Key economic effects

The proposed development promotes the orderly and economic use of the site is in accordance with statutory provisions under the Glen Innes Severn Local Environmental Plan 2012.

The proposed development provides an opportunity to be an employment generating development.

7.5.7.10.1 Key social effects

The local region has historically been dependent on the agricultural sector. The proposed development is for Intensive livestock agriculture being a beef cattle feedlot which is a consistent land use associated with primary production.

The proposed development has been appropriately sited, designed and shall be constructed to mitigate direct and indirect impacts to the wider community for example transport network, downstream water users, built or natural features having social value or importance, the environment and visual character of the site.

The proposed development will provide direct through sustainable beef production on the subject land and indirect employment through requirement of ancillary activities (commodity / cattle supply) and will support potential diversification of employment opportunities in the Glen Innes Severn Local Government area.

7.5.8 Site suitability

Section 4.15 (c) of the *Environmental Planning and Assessment Act 1979* requires consideration of the suitability of the site for the development. The primary matters under Section 4.15(c) are whether the proposal fits into the locality and if the site attributes are conducive to development.

The site and surrounding locality do not present any significant physical, ecological, technological or social constraints on the proposed development. The proposed development has suitable access to the existing road network and is compatible with the surrounding land uses. There are no constraints to the development of the site and minimal conflicts will occur with surrounding land uses. Therefore, the proposed development is deemed as an acceptable development and use of the land.

7.5.8.1 Physical attributes

The subject land is suitable for the proposed development as the land is identified as primary production. As indicated in section 5, there are no aspects of the proposed development site that would suggest that it is not suitable for the proposed development.

The proposal is consistent with the aims and objectives of the New England North West Regional Plan 2041, the Glen Innes Severn Council Local Strategic Planning Statement 2040 and the Glen Innes Severn Local Environmental Plan 2012.

7.5.8.2 Servicing

Due to the location of the subject land in a rural area and given the nature of the proposed development connections to Council's sewer, town water and stormwater infrastructure is not required nor provision of Council's garbage or recycling collection services.

The subject land has good mobile phone coverage. Whilst overhead electricity supply is within close proximity to the propose development complex site, the proposed development shall be self sufficient in relation to electrical energy use.

7.5.9 Public submissions

Section 4.15 (d) of the *Environmental Planning and Assessment Act 1979* require that any public submissions made in accordance with the Act be considered in the development assessment process.

No submissions have been made on the proposed development.

7.5.10 Public interest

Section 4.15 (e) of the *Environmental Planning and Assessment Act 1979* require that the public interest be considered in the development assessment process.

The public interest is addressed by the orderly and economic use of land for purposes permissible under the relevant planning instruments and in accordance with the applicable planning controls relevant to the site.

Given the type of proposed development, its permissibility, general compliance with the planning controls, measures implemented to minimise adverse environmental impact, the lack of significant environmental impact, and the suitability of the site, the proposed development is in the public's interest. Further, the site is appropriately zoned for the development and the proposed use of the site aligns with the surrounding rural activities of the area.

There are no aspects of the proposed development that would be contrary to the public interest.

8 Justification for the Proposal

The proposed development will provide a long-term, high quality supply of grain-fed beef into the domestic and export markets.

During drought years, the proposed development would be used to reduce grazing pressure on paddocks, preserving sufficient groundcover to mitigate erosion. It is considered that this sized development is a good compromise between increasing land use efficiency and protecting amenity and the environment.

When operating at full capacity the proposed development will also provide direct employment for approximately 1 person, plus additional flow-on employment, including providing improved security of employment for personnel working in the applicants farming business.

The proposed development has been sited in the RU1 zone. A beef cattle feedlot is an allowable use in this zone, with development approval.

The site is well suited to the proposed development site as:

- It is appropriately separated from nearby sensitive land uses;
- has a suitable topography that is conducive to good drainage but not excessively steep;
- it is not subject to flooding;
- there is no native vegetation proposed to be disturbed;
- the topography and existing native vegetation provide visual amenity;
- the soils are suitable for sustainable utilisation of liquid waste (effluent) and solid waste (manure).

The proposed development has been designed to:

- promote good drainage; important for helping pens dry and minimising odour;
- protect surface waters through the use of a controlled drainage area and a suitably sized effluent holding pond;
- protect groundwater by underlying the solid waste stockpile area, catch drains, sedimentation basin and effluent holding pond with compacted clay;
- prevent soil erosion during construction by implementing the diversion banks of the controlled drainage area first; and
- meet all relevant best practice guidelines.

The proposed development will benefit the local economy through commodity and cattle purchases, and opportunities to transport commodities and cattle. Impacts to amenity will be mitigated through good management of effluent and solid waste.

On considering the balance of the potential impacts of the proposed development on the environment and community, and the benefits of and the need for the proposed development, it would be reasonable to conclude that the benefits of the proposed development outweigh the impacts.

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Appendix A – Certificate of Title

Provided by CITEC Confirm

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: 1/612287

SEARCH DATE	TIME	EDITION NO	DATE
25/11/2024	8:35 AM	5	22/9/2018

LAND

LOT 1 IN DEPOSITED PLAN 612287
AT DEEPWATER
LOCAL GOVERNMENT AREA GLEN INNES SEVERN
PARISH OF WELLINGTON VALE COUNTY OF GOUGH
TITLE DIAGRAM DP612287

FIRST SCHEDULE

BRUCE RODERICK NEWSOME (T S386677)

SECOND SCHEDULE (2 NOTIFICATIONS)

1 LAND EXCLUDES MINERALS AND IS SUBJECT TO RESERVATIONS AND CONDITIONS IN FAVOUR OF THE CROWN - SEE CROWN GRANT(S)
2 AM537653 MORTGAGE TO RABOBANK AUSTRALIA LIMITED

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

Provided by CITEC Confirm

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: 133/753323

SEARCH DATE	TIME	EDITION NO	DATE
25/11/2024	8:35 AM	5	22/9/2018

LAND

LOT 133 IN DEPOSITED PLAN 753323
LOCAL GOVERNMENT AREA GLEN INNES SEVERN
PARISH OF WELLINGTON VALE COUNTY OF GOUGH
(FORMERLY KNOWN AS PORTION 133)
TITLE DIAGRAM CROWN PLAN 3638.1761

FIRST SCHEDULE

BRUCE RODERICK NEWSOME (T R2413)

SECOND SCHEDULE (2 NOTIFICATIONS)

1 LAND EXCLUDES MINERALS AND IS SUBJECT TO RESERVATIONS AND CONDITIONS IN FAVOUR OF THE CROWN - SEE CROWN GRANT(S)
2 AM537653 MORTGAGE TO RABOBANK AUSTRALIA LIMITED

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

Provided by CITEC Confirm

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: AUTO CONSOL 5394-2

SEARCH DATE	TIME	EDITION NO	DATE
25/11/2024	8:35 AM	5	22/9/2018

LAND

LAND DESCRIBED IN SCHEDULE OF PARCELS
LOCAL GOVERNMENT AREA GLEN INNES SEVERN
PARISH OF RANGERS VALLEY COUNTY OF GOUGH
PARISH OF WELLINGTON VALE COUNTY OF GOUGH
TITLE DIAGRAM CROWN PLAN 3638.1761

FIRST SCHEDULE

BRUCE RODERICK NEWSOME (T R2413)

SECOND SCHEDULE (2 NOTIFICATIONS)

1 LAND EXCLUDES MINERALS AND IS SUBJECT TO RESERVATIONS AND CONDITIONS IN FAVOUR OF THE CROWN - SEE CROWN GRANT(S)
2 AM537653 MORTGAGE TO RABOBANK AUSTRALIA LIMITED

NOTATIONS

UNREGISTERED DEALINGS: NIL

SCHEDULE OF PARCELS

LOT 135 IN DP753303
LOT 134 IN DP753323.

*** END OF SEARCH ***

Provided by CITEC Confirm

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: AUTO CONSOL 5394-2

SEARCH DATE	TIME	EDITION NO	DATE
25/11/2024	8:42 AM	5	22/9/2018

LAND

LAND DESCRIBED IN SCHEDULE OF PARCELS
LOCAL GOVERNMENT AREA GLEN INNES SEVERN
PARISH OF RANGERS VALLEY COUNTY OF GOUGH
PARISH OF WELLINGTON VALE COUNTY OF GOUGH
TITLE DIAGRAM CROWN PLAN 3638.1761

FIRST SCHEDULE

BRUCE RODERICK NEWSOME (T R2413)

SECOND SCHEDULE (2 NOTIFICATIONS)

1 LAND EXCLUDES MINERALS AND IS SUBJECT TO RESERVATIONS AND CONDITIONS IN FAVOUR OF THE CROWN - SEE CROWN GRANT(S)
2 AM537653 MORTGAGE TO RABOBANK AUSTRALIA LIMITED

NOTATIONS

UNREGISTERED DEALINGS: NIL

SCHEDULE OF PARCELS

LOT 135 IN DP753303
LOT 134 IN DP753323.

*** END OF SEARCH ***

Provided on 25/11/2024 07:42 AM by CITEC Confirm

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NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: 136/753323

SEARCH DATE	TIME	EDITION NO	DATE
25/11/2024	8:35 AM	5	22/9/2018

LAND

LOT 136 IN DEPOSITED PLAN 753323
LOCAL GOVERNMENT AREA GLEN INNES SEVERN
PARISH OF WELLINGTON VALE COUNTY OF GOUGH
(FORMERLY KNOWN AS PORTION 136)
TITLE DIAGRAM CROWN PLAN 3638.1761

FIRST SCHEDULE

BRUCE RODERICK NEWSOME (T R2413)

SECOND SCHEDULE (2 NOTIFICATIONS)

1 LAND EXCLUDES MINERALS AND IS SUBJECT TO RESERVATIONS AND CONDITIONS IN FAVOUR OF THE CROWN - SEE CROWN GRANT(S)
2 AM537653 MORTGAGE TO RABOBANK AUSTRALIA LIMITED

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

Provided by CITEC Confirm

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: 137/753323

SEARCH DATE	TIME	EDITION NO	DATE
25/11/2024	8:35 AM	5	22/9/2018

LAND

LOT 137 IN DEPOSITED PLAN 753323
LOCAL GOVERNMENT AREA GLEN INNES SEVERN
PARISH OF WELLINGTON VALE COUNTY OF GOUGH
(FORMERLY KNOWN AS PORTION 137)
TITLE DIAGRAM CROWN PLAN 3638.1761

FIRST SCHEDULE

BRUCE RODERICK NEWSOME (T R2413)

SECOND SCHEDULE (3 NOTIFICATIONS)

1 LAND EXCLUDES MINERALS AND IS SUBJECT TO RESERVATIONS AND CONDITIONS IN FAVOUR OF THE CROWN - SEE CROWN GRANT(S)
2 LAND EXCLUDES THE ROAD(S) SHOWN IN THE TITLE DIAGRAM
3 AM537653 MORTGAGE TO RABOBANK AUSTRALIA LIMITED

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

Provided by CITEC Confirm

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: 200/753323

SEARCH DATE	TIME	EDITION NO	DATE
25/11/2024	8:36 AM	5	22/9/2018

LAND

LOT 200 IN DEPOSITED PLAN 753323
LOCAL GOVERNMENT AREA GLEN INNES SEVERN
PARISH OF WELLINGTON VALE COUNTY OF GOUGH
(FORMERLY KNOWN AS PORTION 200)
TITLE DIAGRAM CROWN PLAN 4764.1761

FIRST SCHEDULE

BRUCE RODERICK NEWSOME (T R2413)

SECOND SCHEDULE (2 NOTIFICATIONS)

1 LAND EXCLUDES MINERALS AND IS SUBJECT TO RESERVATIONS AND CONDITIONS IN FAVOUR OF THE CROWN - SEE CROWN GRANT(S)
2 AM537653 MORTGAGE TO RABOBANK AUSTRALIA LIMITED

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

Provided on 25/11/2024 07:36 AM by CITEC Confirm

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NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: 225/753323

SEARCH DATE	TIME	EDITION NO	DATE
25/11/2024	8:36 AM	5	22/9/2018

LAND

LOT 225 IN DEPOSITED PLAN 753323
LOCAL GOVERNMENT AREA GLEN INNES SEVERN
PARISH OF WELLINGTON VALE COUNTY OF GOUGH
(FORMERLY KNOWN AS PORTION 225)
TITLE DIAGRAM CROWN PLAN 2265.1761

FIRST SCHEDULE

BRUCE RODERICK NEWSOME (T R2413)

SECOND SCHEDULE (2 NOTIFICATIONS)

1 LAND EXCLUDES MINERALS AND IS SUBJECT TO RESERVATIONS AND CONDITIONS IN FAVOUR OF THE CROWN - SEE CROWN GRANT(S)
2 AM537653 MORTGAGE TO RABOBANK AUSTRALIA LIMITED

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

Provided on 25/11/2024 07:36 AM by CITEC Confirm

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Provided by CITEC Confirm

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: 236/753323

SEARCH DATE	TIME	EDITION NO	DATE
25/11/2024	8:36 AM	4	22/9/2018

LAND

LOT 236 IN DEPOSITED PLAN 753323
LOCAL GOVERNMENT AREA GLEN INNES SEVERN
PARISH OF WELLINGTON VALE COUNTY OF GOUGH
(FORMERLY KNOWN AS PORTION 236)
TITLE DIAGRAM CROWN PLAN 4884.1761

FIRST SCHEDULE

BRUCE RODERICK NEWSOME (TA 9522453)

SECOND SCHEDULE (2 NOTIFICATIONS)

1 LAND EXCLUDES MINERALS AND IS SUBJECT TO RESERVATIONS AND CONDITIONS IN FAVOUR OF THE CROWN - SEE CROWN GRANT(S)
2 AM537653 MORTGAGE TO RABOBANK AUSTRALIA LIMITED

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

Provided on 25/11/2024 07:36 AM by CITEC Confirm

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Appendix B – Effluent Pond Hydrological Modelling Results

General Information

SCENARIO REPORT: Full run

General information

Enterprise: Westholme Feedlot
Client: Narrie Holdings Pty Ltd as trustee
MEDLI user: RDC Engineers Pty Ltd

Description:

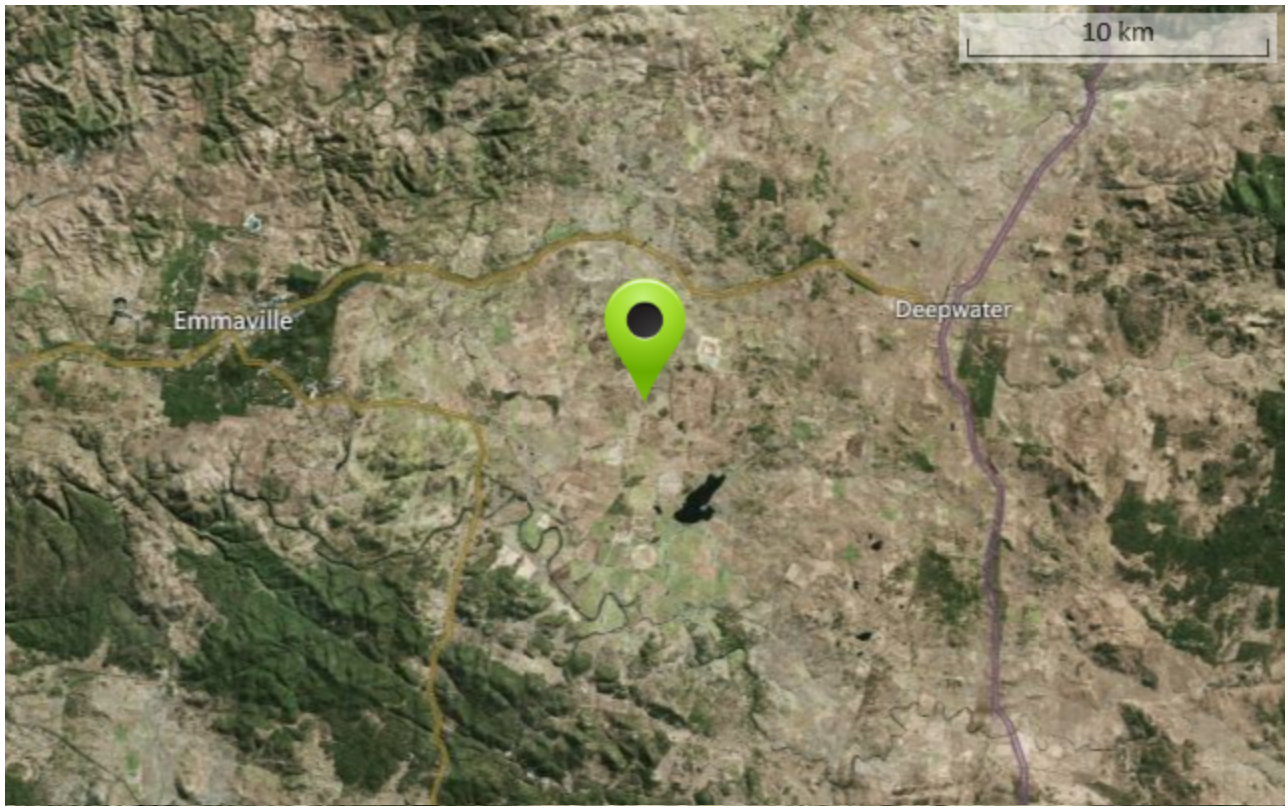
849 SCU

Scenario details:

This feedlot has a number of areas that contribute runoff to a sedimentation basin which then flows into a holding pond. The runoff from each area is represented by particular wastestream type. The holding pond desludge protocol is to maintain required active treatment volume by desludging when sludge exceeds 20% of pond volume.

Map of location:

Note: If the map above appears as a dark box, check that the network is accessible and that the coordinates are not for a location in the ocean.



Description

Climate information

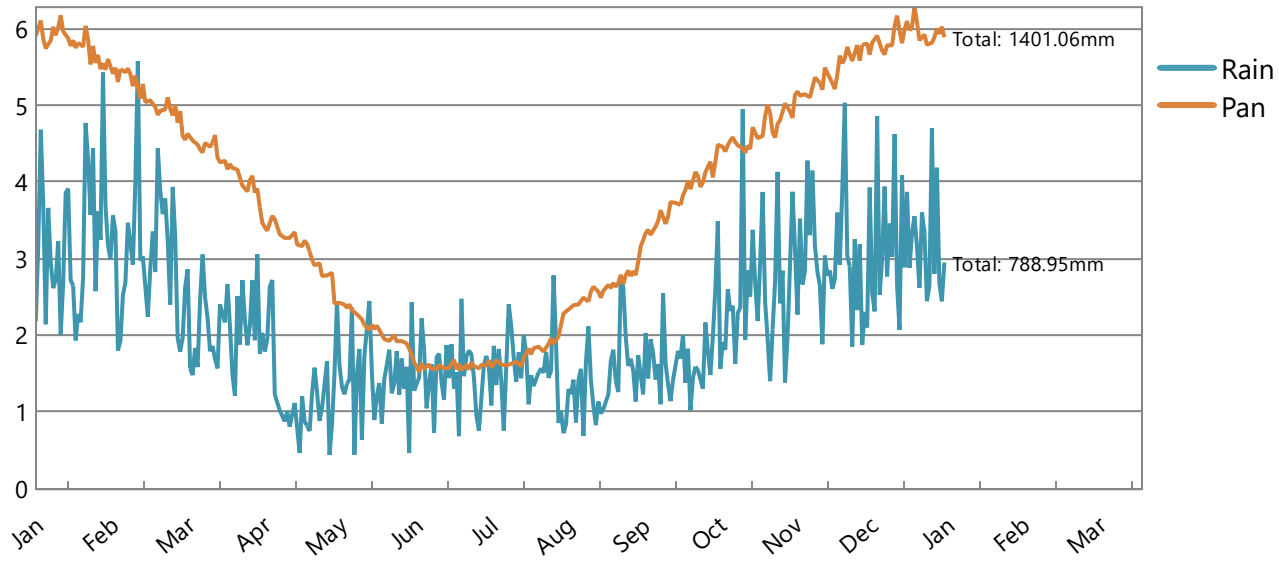
Climate Data Location: Westholme, -29.47°, 151.74°
Run Period: 01/01/1924 to 31/12/2023 (100 years)

Climate statistics

	5th Percentile		50th Percentile		95th Percentile	
Rainfall (mm/year)	(Year 1957)	576.4	(Year 1955)	785.1	(Year 1950)	1067.6
Pan evaporation (mm/year)	(Year 1974)	1231.7	(Year 1996)	1400.5	(Year 1994)	1551.2

Climate data

Daily average across run period:



Description

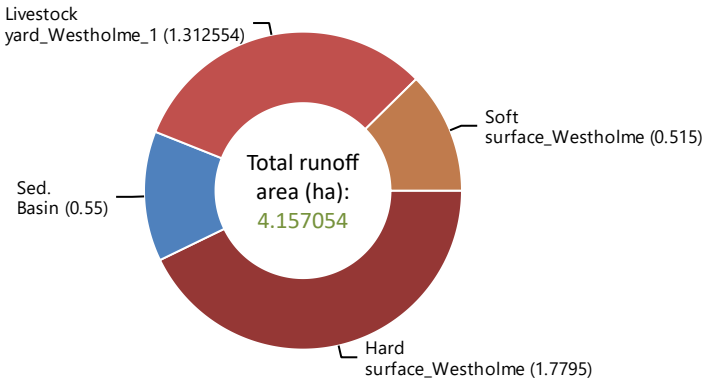
Livestock yard information

Enterprise Name: Westholme Feedlot

Design of cattle feedlot

Name	Value
Maximum capacity (SCU)*	849
Number of pens (pens)	5
Pen area (m2/pen)	2625.11
Stocking density (m2/SCU)	15.46
Working head (head)	958
Calculated mortality rate (%)	0.34

*SCU - Standard Cattle Unit (kg/head) is 600



Herd details for each market type (before any mortalities)

	Long Fed	Mid Fed
Proportion of total SCUs (fraction)	0.76	0.24
SCU factor (factor)	0.89	0.72
Proportion of pens occupied (fraction)	0.95	0.95
Av. no. per occupied pen (head)	172.25	269.00
No. occupied pens (pens)	4	1
Working head (head)	689	269
Entry weight (kg/head)	325	300
Exit weight (kg/head)	515	390
Daily weight gain (kg/head)	0.95	2

Raw manure production (kg/head/year)

	Long Fed	Mid Fed
Excreted nitrogen	69.2	83.6
Excreted phosphorus	16	16
Excreted salt	2.9	3.2
Excreted volatile solids	411.1	559.5
Excreted total solids	674.1	873.5
Excreted water	3820	4950

Drinking Water Salinity (dS/m): 0.5

Drinking Water Used: 11.52 ML/year or 0.01 ML/SCU/year

Manure management

Name	Value
Minimum number of days between cleaning events for a pen (days)	70
Pad depth above base after cleaning (mm)	25
Pad moisture content range suitable for pen cleaning (%g/g dry basis) (min - max)	20.00 - 120.00
Pad moisture content range suitable for pen cleaning (%g/g wet basis) (min - max)	16.67 - 54.55
Maximum number of pens cleaned in one day (pens)	5

Pad details (applies to both surface and subsurface layer)

Name	Value
Moisture content range (air dry to maximum) (%g/g dry basis)	7.00 - 190.00
Moisture content range (air dry to maximum) (%g/g wet basis)	6.54 - 65.52
Maximum percolation rate (mm/hour)	0.417

Description

Wastestream information

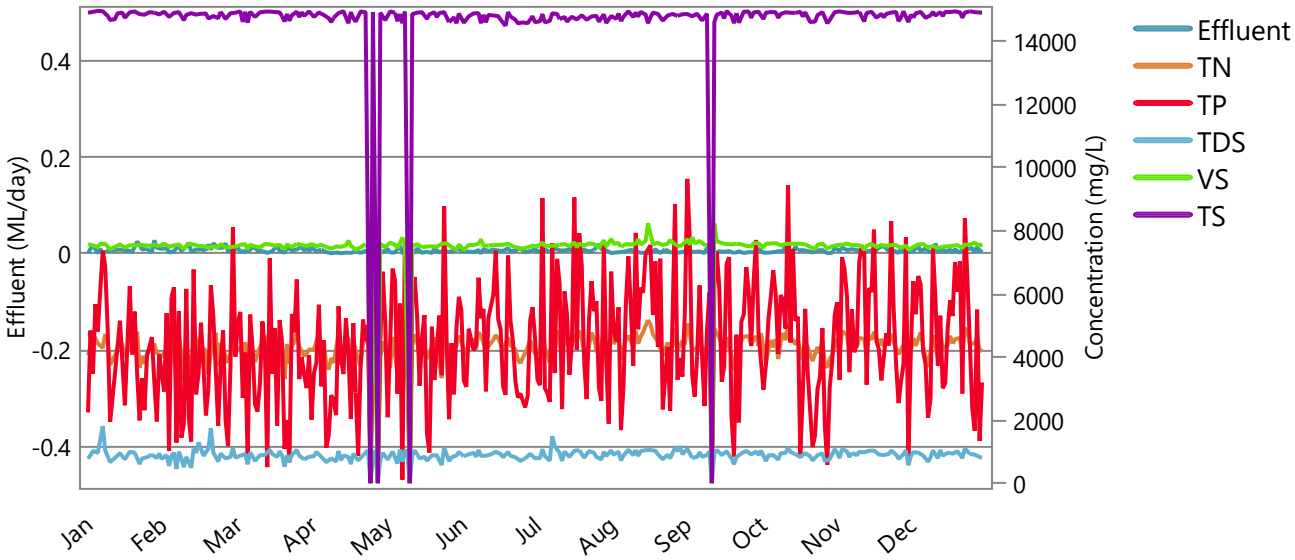
Wastestream Name: Waste estimation system - Livestock yard_Westholme_1

Wastestream production description

Runoff from Livestock yard_Westholme_1, a manure pad (impermeable) surface, with area 1.3126 ha with maximum capacity of 849 SCU, 0.2500 % mortality, drinking water at 0.5000 dS/m salinity, and with 0.4000 (fraction) of total nitrogen in urine, and 0.6000 (fraction) of urine total nitrogen volatilised. Runoff quality assumes a nutrient enrichment ratio of 6.10 for total nitrogen, 50.00 for total phosphorus and 10.00 for salt. This wastestream is not separately pretreated. The sedimentation basin was used to treat the runoff.

Wastestream

Average Daily Quantity and Flow-Weighted Average Quality:



Wastestream (before sedimentation basin)

Effluent Quantity: 2.18 ML/year or 0.01 ML/day (Min-Max 0.00 - 1.71)

Flow-Weighted Average (Min - Max) Daily Effluent Quality:

	Concentration (mg/L)	Load (kg/year)
Total nitrogen	4349.61 (0.00 - 5286.51)	9474.74 (54.91 - 25398.08)
Total phosphorus	4356.76 (0.00 - 14157.87)	9490.32 (115.64 - 15033.37)
Total dissolved salts	905.09 (0.00 - 4087.31)	1971.56 (11.09 - 5388.28)
Volatile solids	7539.39 (0.00 - 8352.23)	16423.02 (81.92 - 49978.10)
Total solids	14844.20 (0.00 - 14987.00)	32335.09 (155.09 - 98008.12)

Description

Wastestream information

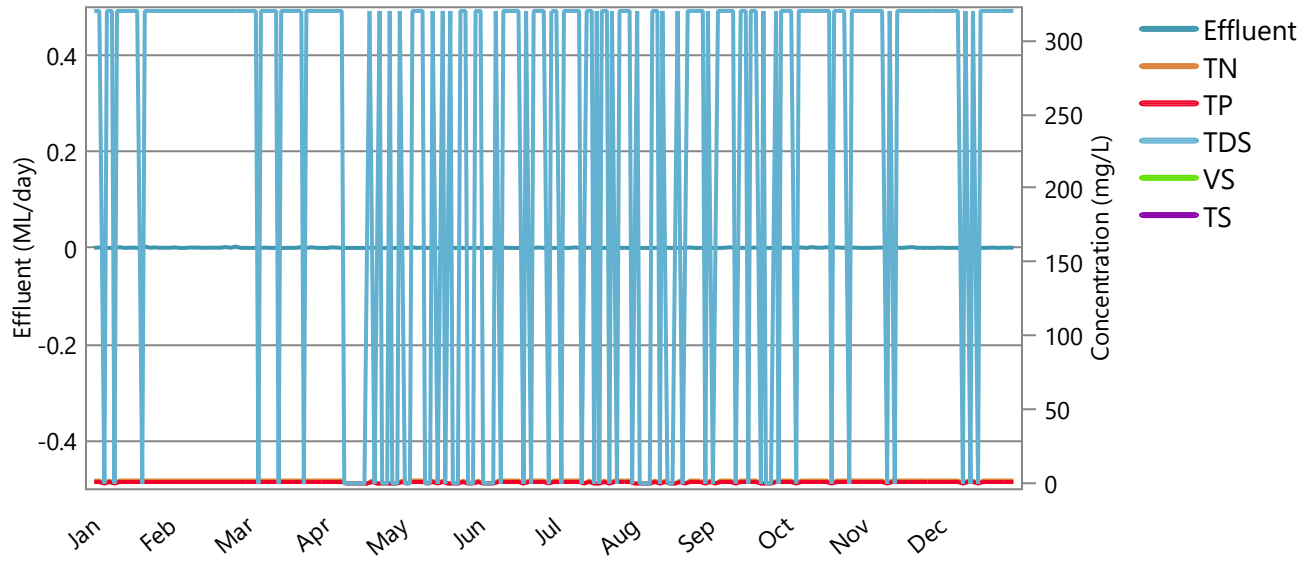
Wastestream Name: Waste estimation system - Soft surface_Westholme

Wastestream production description

Runoff from Soft surface_Westholme, a soft surface, with area 0.52 ha and assuming concentrations of 2.00 mg/L for total nitrogen, 1.00 mg/L for total phosphorus and 320.00 mg/L for total dissolved salt. This wastestream is not separately pretreated. The sedimentation basin was used to treat the runoff.

Wastestream

Average Daily Quantity and Flow-Weighted Average Quality:



Wastestream (before sedimentation basin)

Effluent Quantity: 0.10 ML/year or 0.00 ML/day (Min-Max 0.00 - 0.24)

Flow-Weighted Average (Min - Max) Daily Effluent Quality:

	Concentration (mg/L)	Load (kg/year)
Total nitrogen	2.00 (2.00 - 2.00)	0.21 (0.00 - 1.40)
Total phosphorus	1.00 (1.00 - 1.00)	0.10 (0.00 - 0.70)
Total dissolved salts	320.00 (320.00 - 320.00)	32.87 (0.00 - 224.25)
Volatile solids	0.00 (0.00 - 0.00)	0.00 (0.00 - 0.00)
Total solids	0.00 (0.00 - 0.00)	0.00 (0.00 - 0.00)

Description

Wastestream information

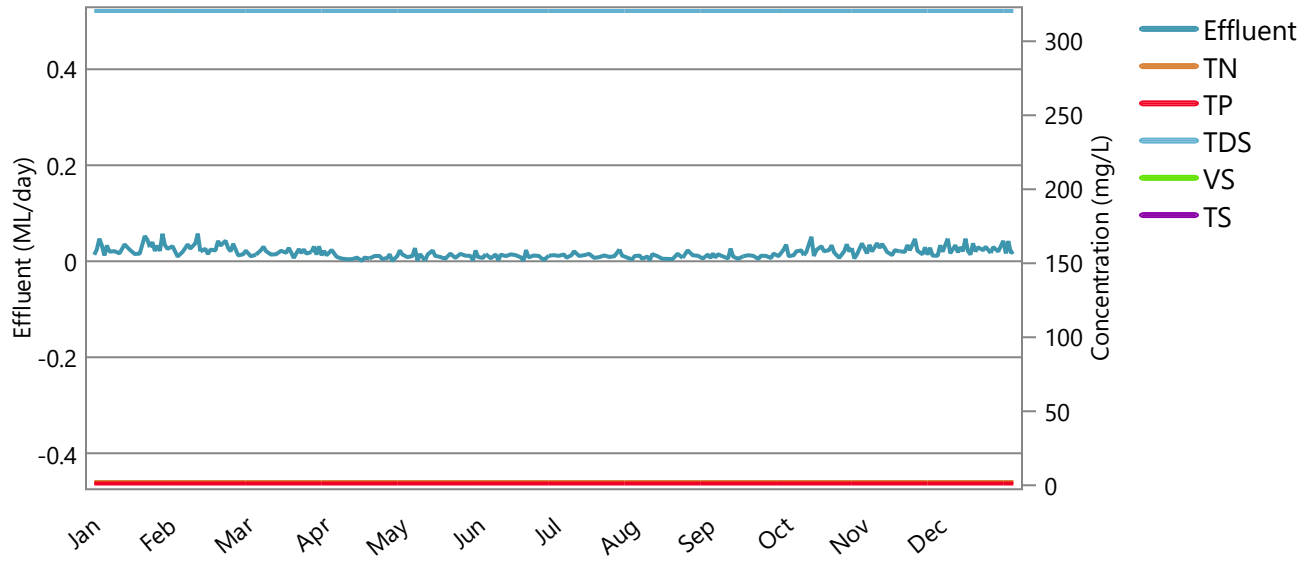
Wastestream Name: Waste estimation system - Hard surface_Westholme

Wastestream production description

Runoff from Hard surface_Westholme, a hard surface, with area 1.78 ha and assuming concentrations of 2.00 mg/L for total nitrogen, 1.00 mg/L for total phosphorus and 320.00 mg/L for total dissolved salt. This wastestream is not separately pretreated. The sedimentation basin was used to treat the runoff.

Wastestream

Average Daily Quantity and Flow-Weighted Average Quality:



Wastestream (before sedimentation basin)

Effluent Quantity: 6.35 ML/year or 0.02 ML/day (Min-Max 0.00 - 2.46)

Flow-Weighted Average (Min - Max) Daily Effluent Quality:

	Concentration (mg/L)	Load (kg/year)
Total nitrogen	2.00 (2.00 - 2.00)	12.70 (2.57 - 24.19)
Total phosphorus	1.00 (1.00 - 1.00)	6.35 (1.29 - 12.10)
Total dissolved salts	320.00 (320.00 - 320.00)	2031.89 (411.68 - 3870.91)
Volatile solids	0.00 (0.00 - 0.00)	0.00 (0.00 - 0.00)
Total solids	0.00 (0.00 - 0.00)	0.00 (0.00 - 0.00)

Description

Wastestream information

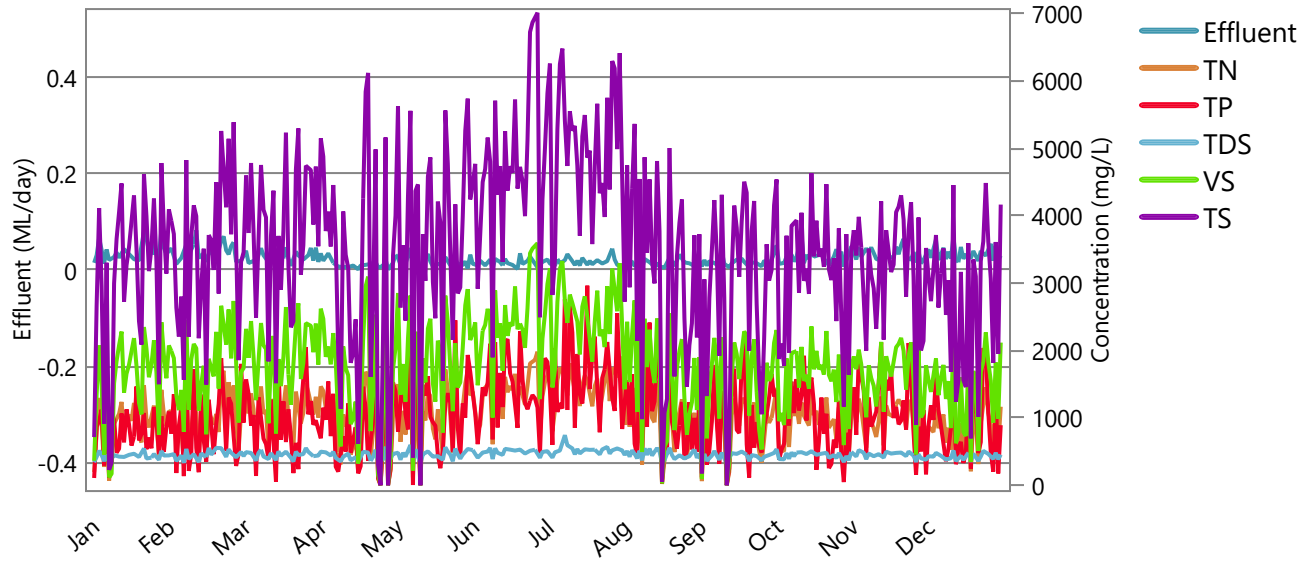
Combined Wastestream Name: Westholme Feedlot - Waste estimation system

Wastestream production description

The enterprise Waste estimation system has a combined wastestream primarily consisting of flows from Livestock yard_Westholme_1 and with additional flows from Soft surface_Westholme, and Hard surface_Westholme. This includes runoff from a total of 4.16 ha of land when including the sedimentation basin area.

Wastestream before sedimentation basin

Average Daily Quantity and Flow-Weighted Average Quality:



Sedimentation basin

The sedimentation basin was assumed to remove 0.25 (fraction) of total nitrogen, 0.10 (fraction) of total phosphorus, 0.32 (fraction) of volatile solids, and 0.64 (fraction) of total solids from the effluent. Rainfall runoff from the 0.55 ha basin also contributed on average an additional 0.17 ML to the annual flow into the pond system.

Combined wastestream (after sedimentation basin)

Effluent Quantity: 8.80 ML/year or 0.02 ML/day (Min-Max 0.00 - 4.84)

Flow-Weighted Average (Min - Max) Daily Effluent Quality Entering the Pond System:

	Concentration (mg/L)	Load (kg/year)
Total nitrogen	808.45 (0.00 - 3939.58)	7115.73 (43.11 - 19067.23)
Total phosphorus	971.08 (0.00 - 8239.87)	8547.09 (105.24 - 13541.23)
Total dissolved salts	458.59 (0.00 - 1786.09)	4036.32 (422.77 - 8787.96)
Volatile solids	1268.81 (0.00 - 5656.49)	11167.66 (55.71 - 33985.11)
Total solids	1322.55 (0.00 - 5250.36)	11640.63 (55.83 - 35282.92)

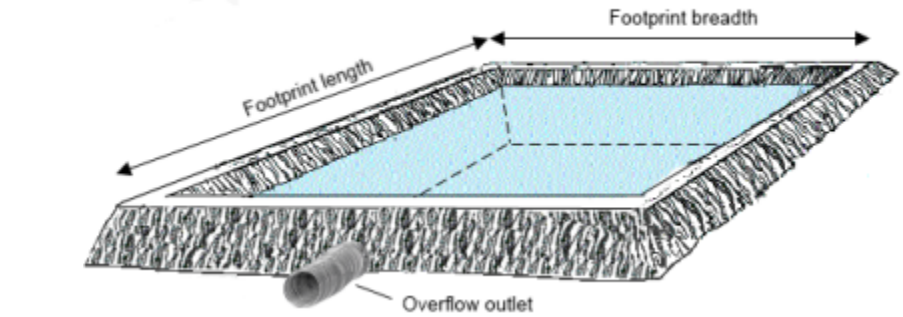
Description

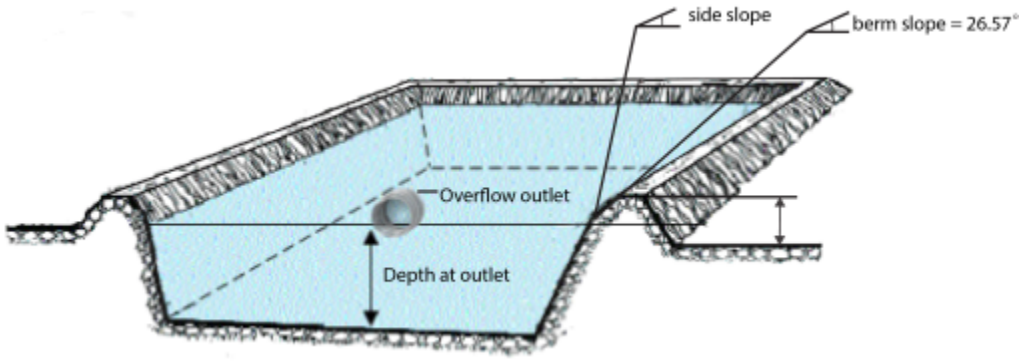
Pond system information

Pond System Configuration: 1 anaerobic pond

Pond system details

	Pond 1
Maximum pond volume (ML)	10.00
Minimum allowable pond volume (ML)	0.56
Pond depth at overflow outlet (m)	2.25
Maximum water surface area (m2)	6613.69
Pond footprint length (m)	235.52
Pond footprint width (m)	42.50
Pond catchment area (m2)	10008.41
Average active volume (ML)	1.13





Irrigation pump limits

Minimum pump rate limit (ML/day)	0.00
Maximum pump rate limit (ML/day)	5.00

Shandying water

Annual allocation of fresh water available for shandying (ML/year)	0.00
Maximum rate of application of fresh water (ML/day)	0.00
Nitrogen concentration (mg/L)	0.00
Salinity (dS/m)	0.00
Minimum shandy water is used	No

Description

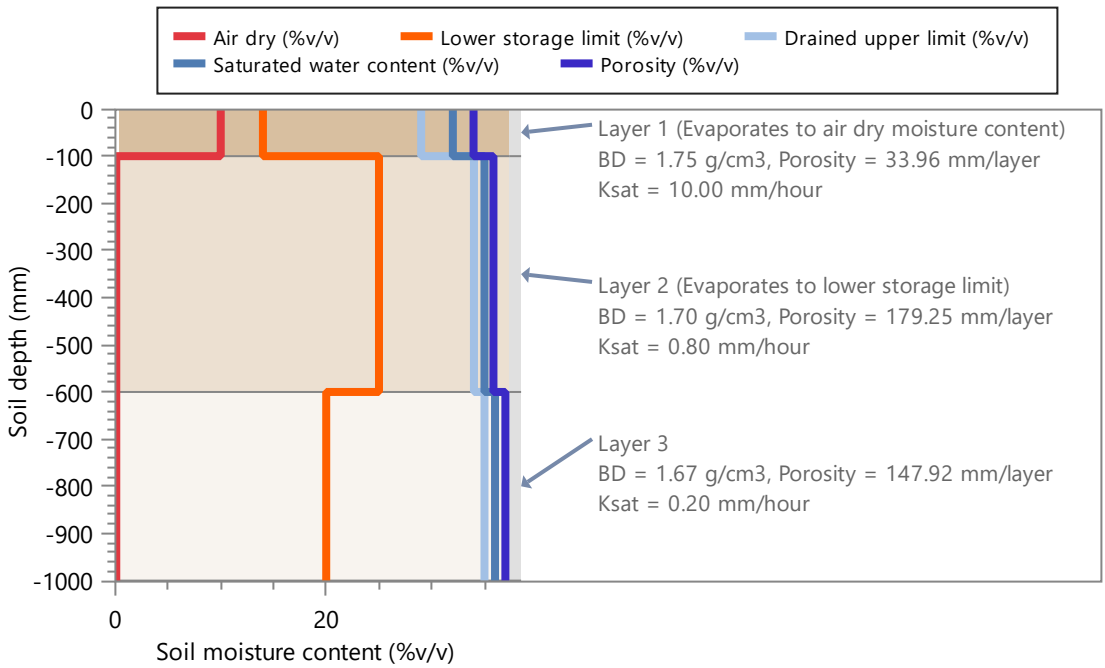
Paddock information

Paddock: Irrigation, 20 ha

Soil type: Kurosol 1, 1000.00 mm defined profile depth

Profile porosity (mm)	361.13
Profile saturation water content (mm)	351.00
Profile drained upper limit (or field capacity) (mm)	339.00
Profile lower storage limit (or permanent wilting point) (mm)	219.00
Profile available water capacity (mm)	120.00
Profile limiting saturated hydraulic conductivity (mm/hour)	0.20
Surface saturated hydraulic conductivity (mm/hour)	10.00
Runoff curve number II (coefficient)	82.00
Soil evaporation U (mm)	8.00
Soil evaporation Cona (mm/sqrt day)	4.00

Profile



Planting regime: Rotated Maize crop | Ryegrass 1 pasture, resown

Maximum crop factor at 100% cover (mm/mm) (Maximum crop coefficient 0.8 | 0.8 x Pan coefficient 1 | 1)	0.80 | 0.80
Dead cover (if Mthly Covers) or Tot. cover left after harvest (fraction)	0.00 | 0.97
Potential rooting depth in defined soil profile (mm)	1000.00 | 542.99
Salt tolerance	Moderately sensitive | Moderately tolerant
Salinity threshold (dS/m soil saturation extract)	1.70 | 5.60
Proportion of yield decrease per dS/m increase (fraction/dS/m)	0.12 | 0.08

Irrigation rules: Low travelling irrigator

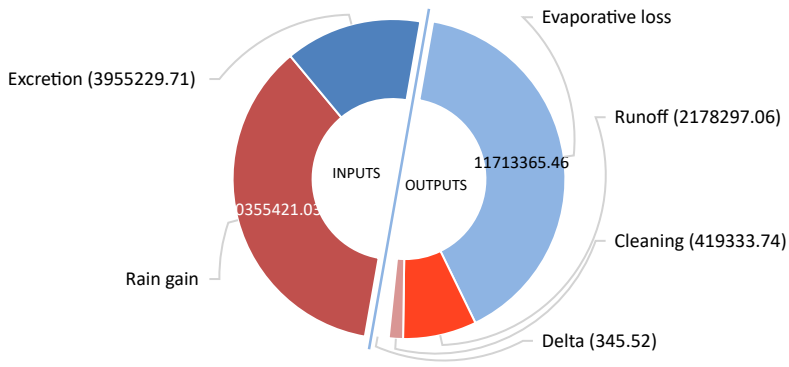
Rule 1. Irrigation triggered when soil water deficit reaches 25.00 mm and rainfall is less than or equal to 30.00 mm
Rule 2. Irrigate up to a soil water content of drained upper limit plus 0.00 mm
Rule 3. Irrigation window from 1/1 to 31/12 including the days specified
Rule 4. A minimum of 0 days must be skipped between irrigation events

Performance

Livestock yard information

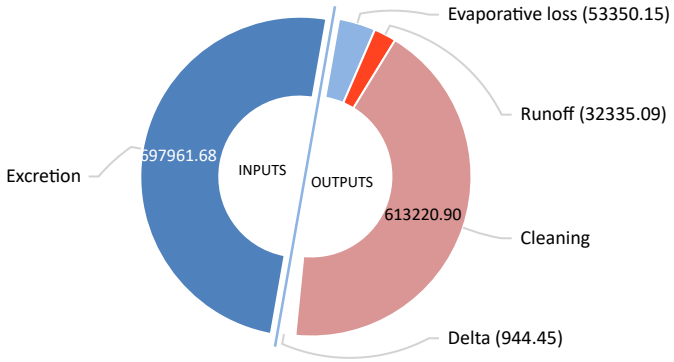
Enterprise Name: Westholme Feedlot - Livestock yard_Westholme_1

Yard water balance (kg/year)



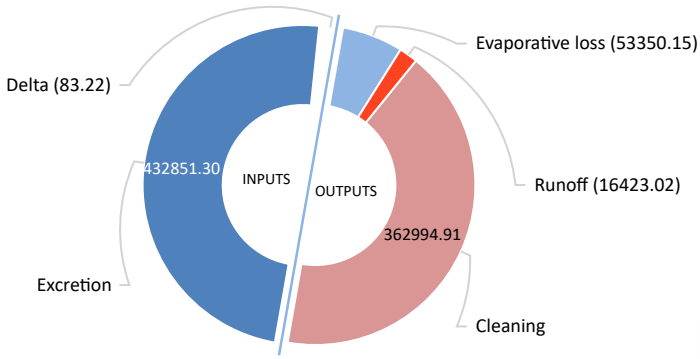
Name	Value
Rain gain	10355421.03
Excretion	3955229.71
Evaporative loss	11713365.46
Runoff	2178297.06
Cleaning	419333.74
Delta	345.52

Yard total solids balance (kg/year)



Name	Value
Excretion	697961.68
Evaporative loss	53350.15
Runoff	32335.09
Cleaning	613220.90
Delta	944.45

Yard volatile solids balance (kg/year)



Name	Value
Excretion	432851.30
Evaporative loss	53350.15
Runoff	16423.02
Cleaning	362994.91
Delta	-83.22

Pen cleaning: across the 5 -pen yard

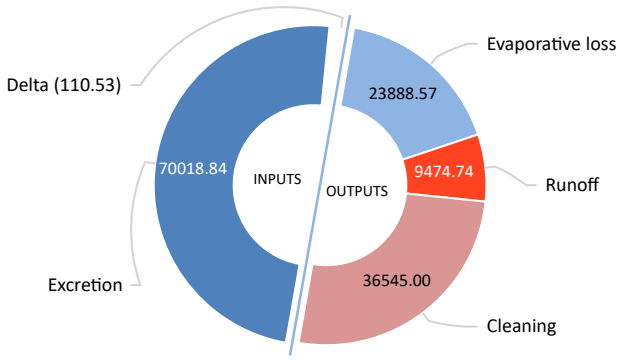
No. Days When At Least One Pen Was Cleaned: Over the simulation, at least one pen was cleaned on 971 days over 100 years or 9.71 days/year.

Performance

Livestock yard information

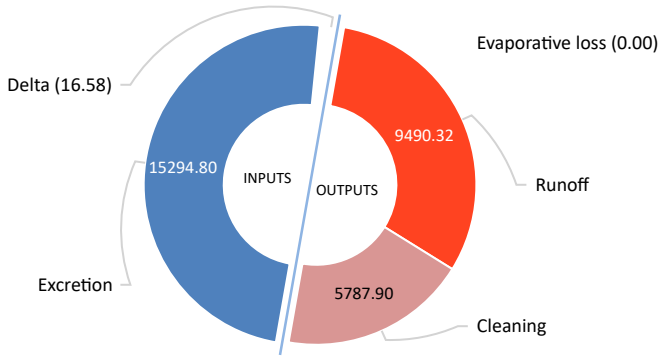
Enterprise Name: Westholme Feedlot - Livestock yard_Westholme_1

Yard total nitrogen balance (kg/year)



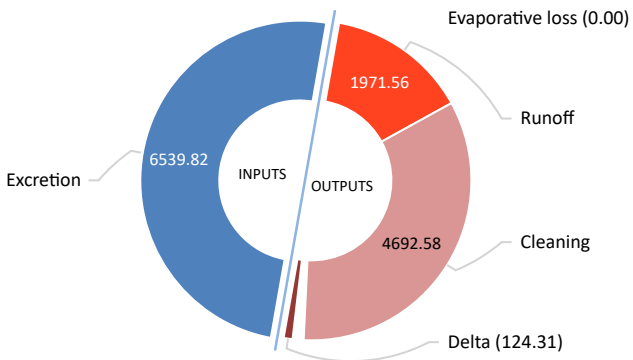
Name	Value
Excretion	70018.84
Evaporative loss	23888.57
Runoff	9474.74
Cleaning	36545.00
Delta	-110.53

Yard total phosphorus balance (kg/year)



Name	Value
Excretion	15294.80
Evaporative loss	0.00
Runoff	9490.32
Cleaning	5787.90
Delta	-16.58

Yard salts balance (kg/year)



Name	Value
Excretion	6539.82
Evaporative loss	0.00
Runoff	1971.56
Cleaning	4692.58
Delta	124.31

Enrichment ratios used

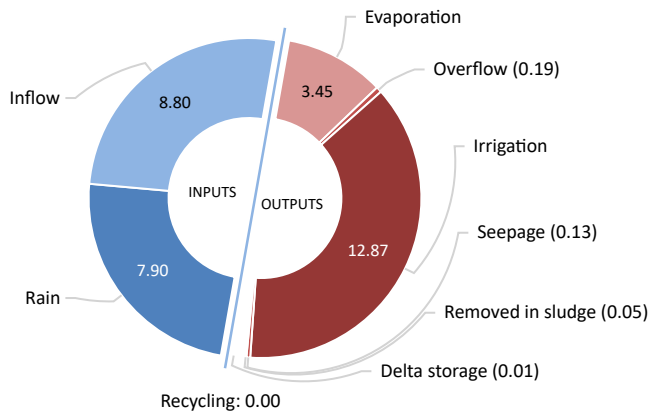
	Enrichment ratio
Total nitrogen	6.10
Total phosphorus	50.00
Salt	10.00

Performance

Pond system information

Pond System Configuration: 1 anaerobic pond (wet weather storage pond: 10 ML)

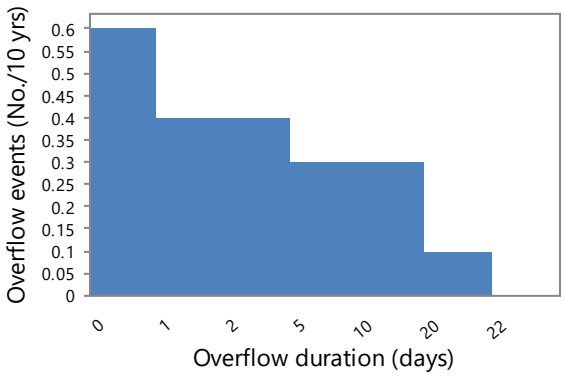
Pond system water balance (ML/year)

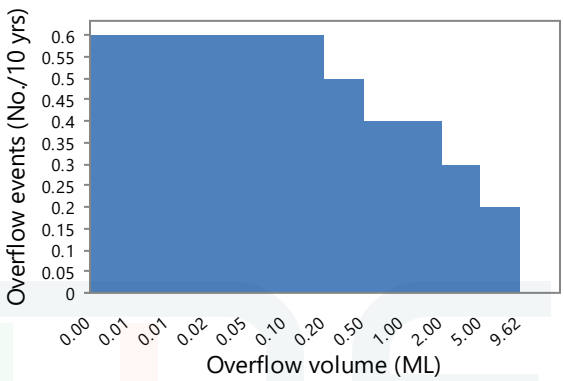


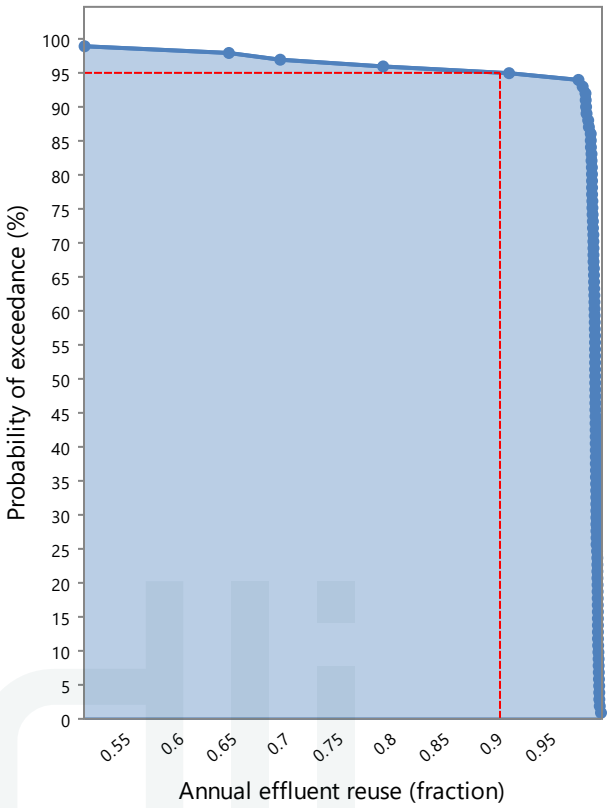
Name	Value
Rain	7.90
Inflow	8.80
Recycling	0.00
Evaporation	3.45
Overflow	0.19
Irrigation	12.87
Seepage	0.13
Removed in sludge	0.05
Delta storage	0.01

Overflow and reuse diagnostics

Metric	Value
Total volume of overflow (ML/10 years)	1.94
Total number of overflow events (events/10 years)	0.60
Total number of pond overflow days (days/10 years)	5.80
Probability of at least 90% effluent reuse (%)	95.12
Effluent reuse (Proportion of inflow + net gain in rain that is irrigated) (fraction)	0.97





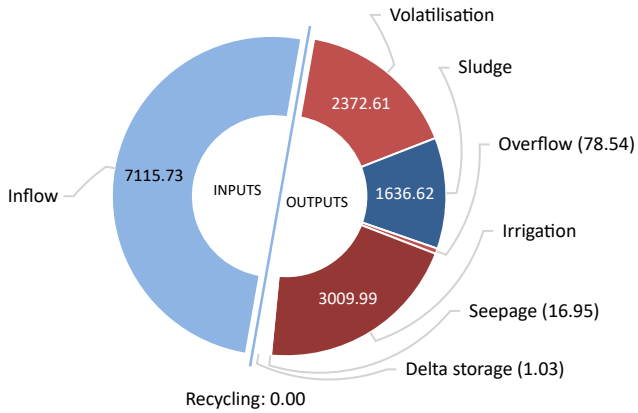


Performance

Pond system information

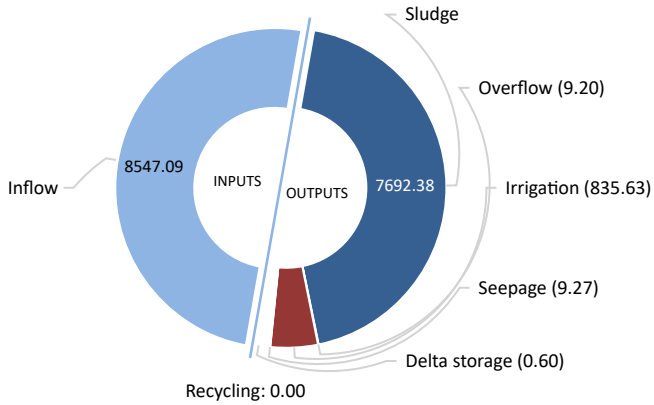
Pond System Configuration: 1 anaerobic pond

Pond system nitrogen balance (kg/year)



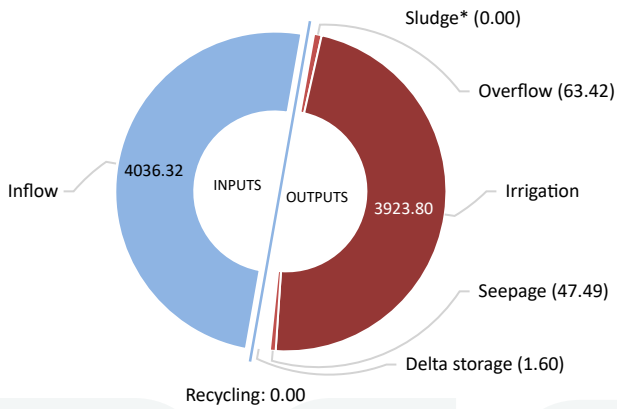
Name	Value
Inflow	7115.73
Recycling	0.00
Volatilisation	2372.61
Sludge	1636.62
Overflow	78.54
Irrigation	3009.99
Seepage	16.95
Delta storage	1.03

Pond system phosphorus balance (kg/year)



Name	Value
Inflow	8547.09
Recycling	0.00
Sludge	7692.38
Overflow	9.20
Irrigation	835.63
Seepage	9.27
Delta storage	0.60

Pond system salt balance (kg/year)



Name	Value
Inflow	4036.32
Recycling	0.00
Sludge*	0.00
Overflow	63.42
Irrigation	3923.80
Seepage	47.49
Delta storage	1.60

* Salt removal in sludge is not calculated from the pond salt balance. However if salt could be assumed to be present in the sludge at the same concentration as in the pond supernatant (up to a maximum of salt added in inflow) - then salt accumulation in the sludge could be 5.42 kg/year

Pond system sludge accumulation: 32308.57 kg dwt/year

Performance

Pond system information

Pond System Configuration: 1 anaerobic pond

Pond nutrient concentrations and salinity

Average across simulation period	Pond 1
Average nitrogen concentration of pond liquid (mg/L)	235.45
Average phosphorus concentration of pond liquid (mg/L)	65.92
Average salinity of pond liquid (dS/m)	0.50

Value on final day of simulation period	Pond 1
Final nitrogen concentration of pond liquid (mg/L)	185.68
Final phosphorus concentration of pond liquid (mg/L)	109.54
Final salinity of pond liquid (dS/m)	0.45

Performance

Water use (assumes 100% irrigation efficiency)

Metric	Value
Pond water irrigated (ML/year)	12.87
Average shandy water irrigation (ML/year) (minimum - maximum)	0.00 (0.00 - 0.00)
Total water irrigated (ML/year)	12.87
Proportion of irrigation events requiring shandying (fraction of events)	0.00
Proportion of years shandying water allocation of 0 ML/year is exceeded (fraction of years)	0.00
Average exceedance as a proportion of annual shandy water allocation (fraction of allocation) (minimum - maximum)	0.00 (0.00 - 0.00)

Irrigation quality

Metric	Value
Average nitrogen concentration of irrigation water - before ammonia loss during irrigation (mg/L)	233.86
Average nitrogen concentration of irrigation water - after ammonia loss during irrigation (mg/L)	204.02
Average phosphorus concentration of irrigation water (mg/L)	64.92
Average salinity of irrigation water (dS/m)	0.48

Irrigation diagnostics

Metric	Value
No. periods/year without any irrigable effluent in the wet weather storage pond (periods/year)	20.44
Average length of such periods (days)	11.22

Irrigation triggering and application

No. Days without Irrigation Applied per Year: 327.91 (with pond water volume below minimum volume for irrigation [216.85], water demand too small to trigger irrigation [107.06], rain exceeding specified rainfall threshold [3.98] and irrigation too small, <0.0001 mm, to apply [0.02])
No. Days without Irrigation Applied per Year: 327.91 (with no supply - no application [216.87] and not triggered [111.04])
No. Days with Irrigation Applied per Year: 37.34 (with supply limited - partial application [36.34] and full application [1.00])
No. Days with Irrigation Triggered per Year: 254.21

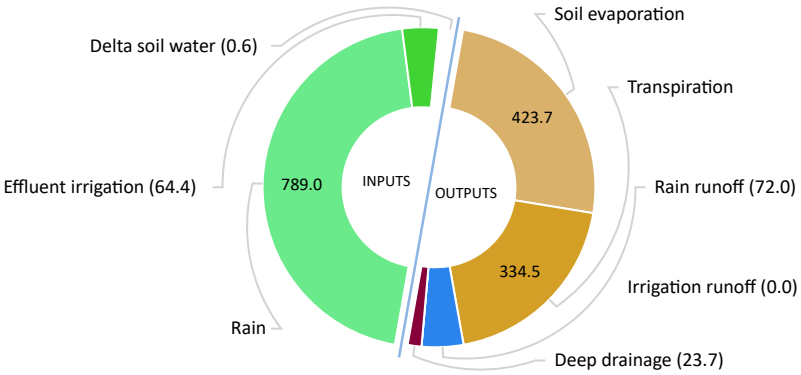
Performance

Paddock information

Paddock: Irrigation, 20 ha

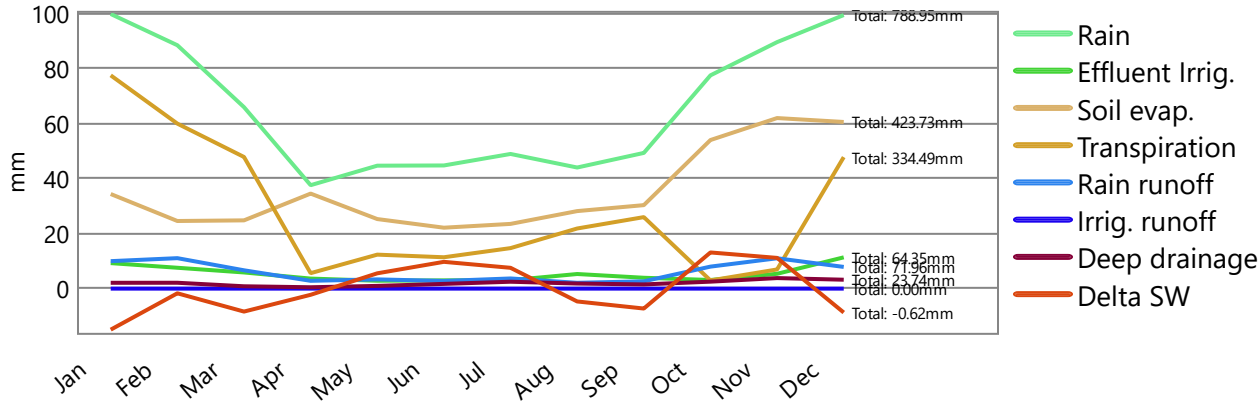
Soil Type: Kurosol 1, 120.00 mm PAWC at maximum root depth

Soil water balance (mm/year)

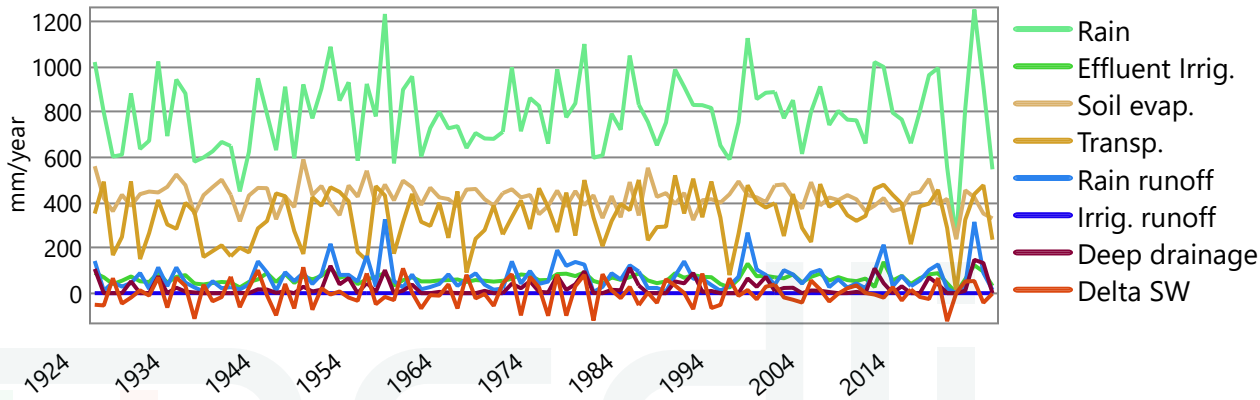


Name	Value
Rain	789.0
Effluent irrigation	64.4
Soil evaporation	423.7
Transpiration	334.5
Rain runoff	72.0
Irrigation runoff	0.0
Deep drainage	23.7
Delta soil water	-0.6

Average monthly totals (mm)



Average annual totals (mm/year)

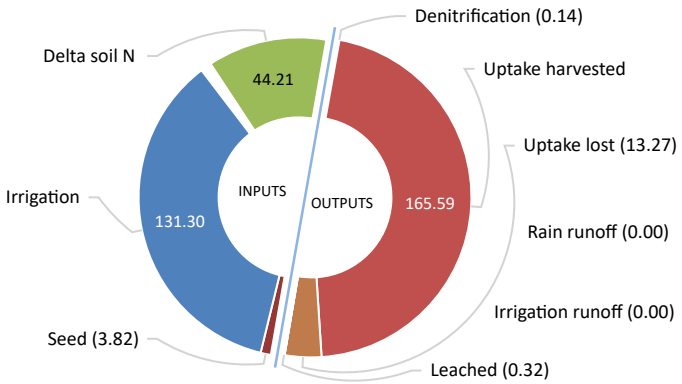


Performance

Paddock information

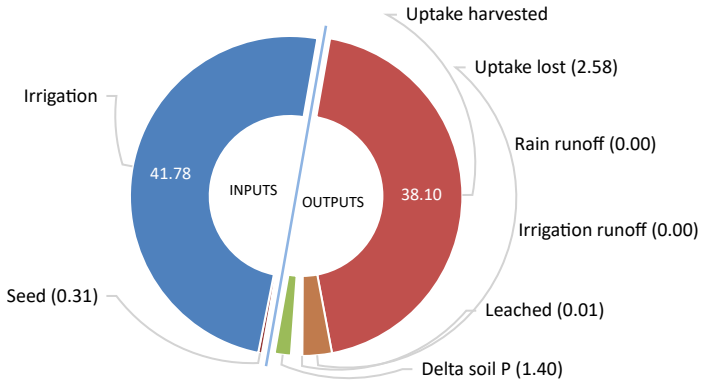
Paddock: Irrigation, 20 ha
Soil Type: Kurosol 1
Irrigation Ammonia-N Volatilisation Losses (kg/ha/year): 19.20
Proportion of Total Nitrogen in Irrigated Effluent as Ammonium (fraction): 0.58

Soil nitrogen balance (kg/ha/year)



Name	Value
Seed	3.82
Irrigation	131.30
Denitrification	0.14
Uptake harvested	165.59
Uptake lost	13.27
Rain runoff	0.00
Irrigation runoff	0.00
Leached	0.32
Delta soil N	-44.21

Soil phosphorus balance (kg/ha/year)



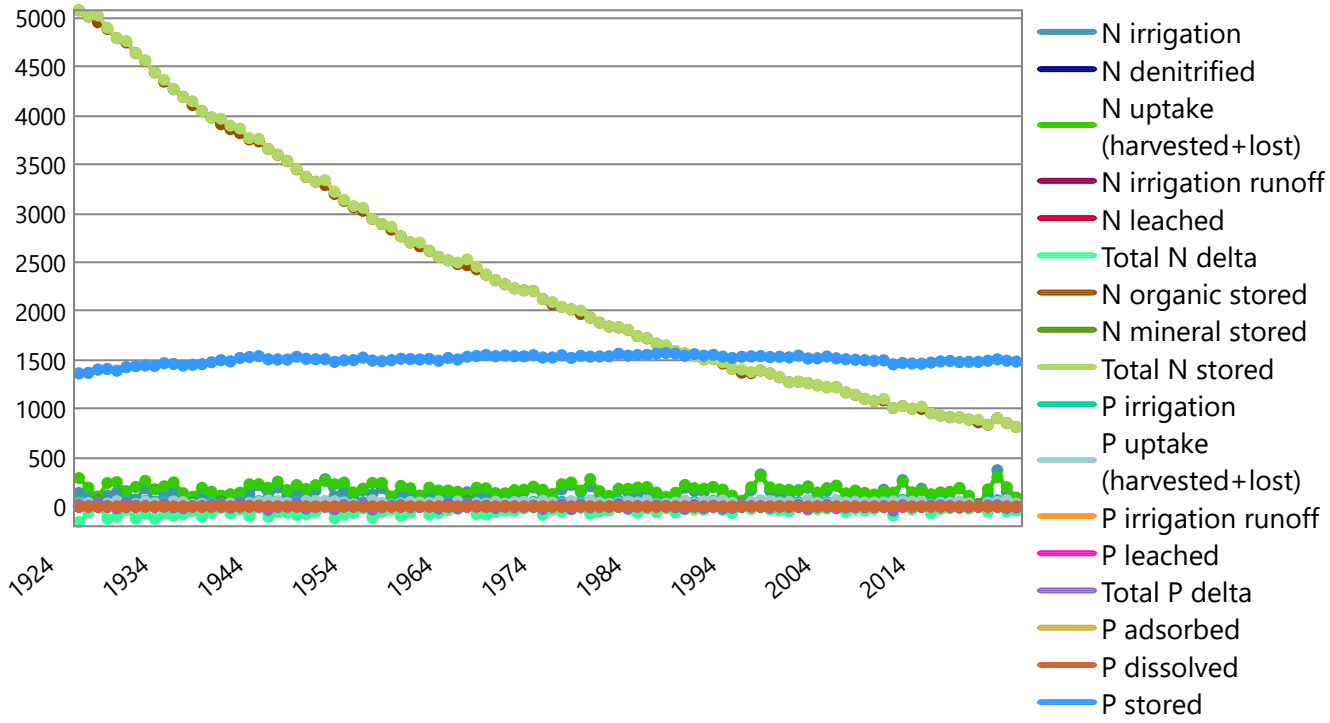
Name	Value
Seed	0.31
Irrigation	41.78
Uptake harvested	38.10
Uptake lost	2.58
Rain runoff	0.00
Irrigation runoff	0.00
Leached	0.01
Delta soil P	1.40

Performance

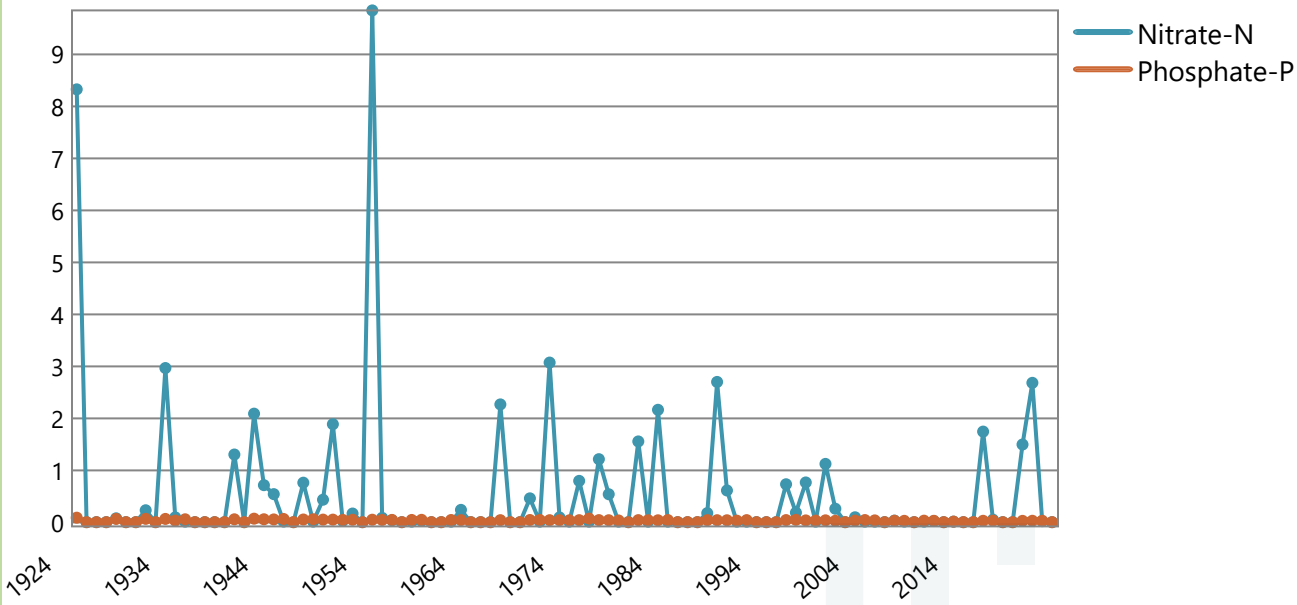
Paddock information

Paddock: Irrigation, 20 ha
Soil Type: Kurosol 1

Annual nutrient totals (kg/ha)



Annual nutrient leaching concentration (mg/L)



Performance

Paddock information

Paddock: Irrigation, 20 ha
Soil Type: Kurosol 1
Planting Regime: Rotated Maize crop & Ryegrass 1 pasture, resown

Plant growth (minimum - maximum)

Season one plant metrics	Value
Average annual shoot dry matter harvestable yield* (kg/ha/year)	11631.81 (-58.73 - 21345.11)
Average annual shoot dry matter lost (kg/ha/year)	343.11 (0.00 - 1296.03)
Average monthly plant (green) cover (fraction)	0.25 (0.00 - 0.70)
Average monthly root depth (mm)	766.10 (114.49 - 1000.00)

Season two plant metrics	Value
Average annual shoot dry matter harvestable yield* (kg/ha/year)	1815.30 (-420.87 - 4080.60)
Average annual shoot dry matter lost (kg/ha/year)	564.29 (0.00 - 1288.67)
Average monthly plant (green) cover (fraction)	0.25 (0.00 - 0.45)
Average monthly root depth (mm)	189.87 (0.00 - 308.51)

Plant nutrient uptake (minimum - maximum)

Season one plant metrics	Value
Average annual shoot nitrogen in harvestable yield* (kg/ha/year)	116.59 (1.00 - 232.87)
Average annual shoot nitrogen lost (kg/ha/year)	5.53 (0.00 - 15.26)
Average annual shoot phosphorus in harvestable yield* (kg/ha/year)	32.73 (-0.21 - 63.08)
Average annual shoot phosphorus lost (kg/ha/year)	0.97 (0.00 - 3.58)
Average annual shoot nitrogen concentration (fraction dwt)	0.02 (0.01 - 0.03)
Average annual shoot phosphorus concentration (fraction dwt)	0.003 (0.002 - 0.003)

Season two plant metrics	Value
Average annual shoot nitrogen in harvestable yield* (kg/ha/year)	49.00 (-5.87 - 123.58)
Average annual shoot nitrogen lost (kg/ha/year)	7.74 (0.00 - 15.21)
Average annual shoot phosphorus in harvestable yield* (kg/ha/year)	5.38 (-1.04 - 12.24)
Average annual shoot phosphorus lost (kg/ha/year)	1.61 (0.00 - 3.82)
Average annual shoot nitrogen concentration (fraction dwt)	0.03 (0.01 - 0.03)
Average annual shoot phosphorus concentration (fraction dwt)	0.003 (0.003 - 0.003)

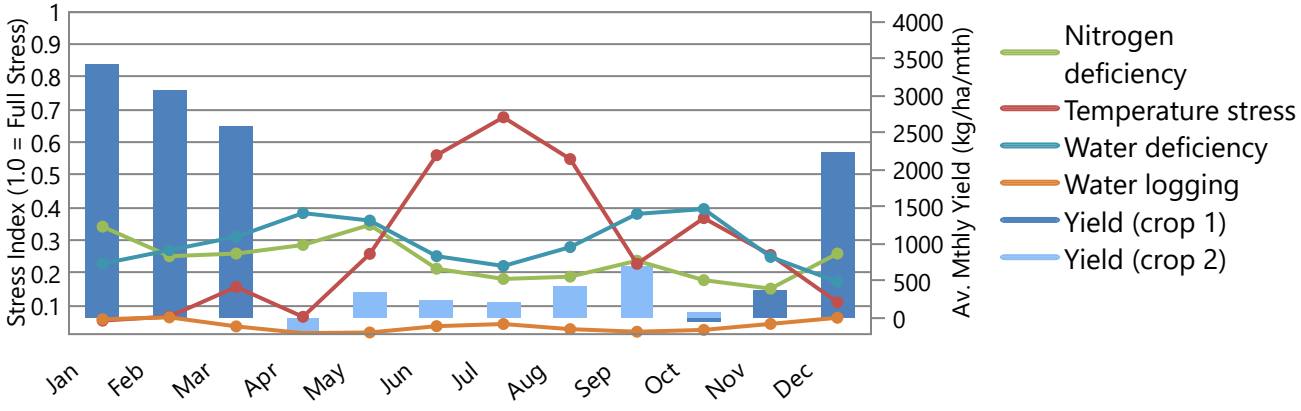
*Harvestable yield is a measure of *net* gain over a nominated period - say monthly. It is the total shoot-dry-matter gain minus any shot-dry-matter loss within a given period. Hence, just like financial investments, negative harvestable yields may occur when the (episodic) losses exceed the gains made within a particular accounting period.

Performance

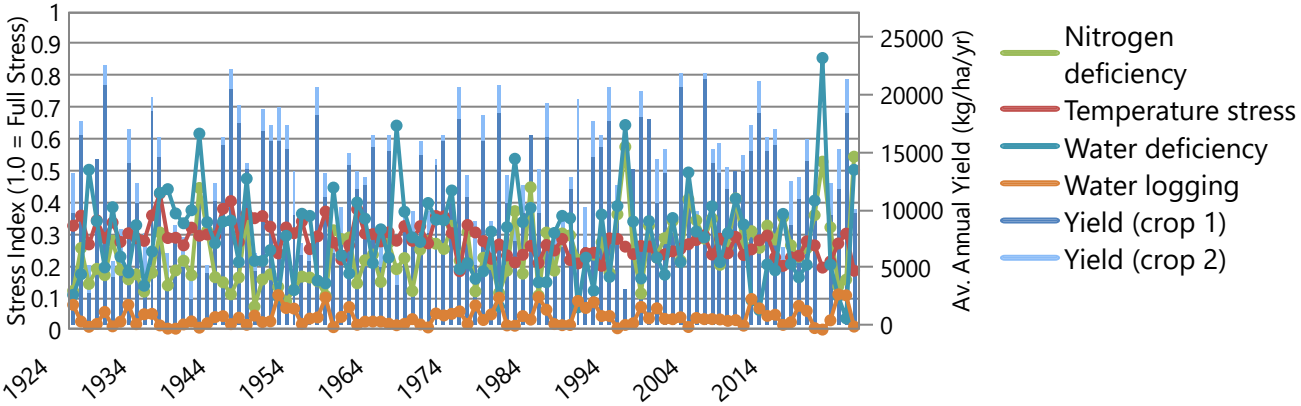
Paddock information

Paddock: Irrigation, 20 ha
Soil Type: Kurosol 1
Planting Regime: Rotated Maize crop & Ryegrass 1 pasture, resown

Av. monthly stresses & harvestable yield* (kg/ha/month)



Av. annual stresses & harvestable yield* (kg/ha/year)



*Harvestable yield is a measure of *net* gain over a nominated period - say monthly. It is the total shoot-dry-matter gain minus any shot-dry-matter loss within a given period. Hence, just like financial investments, negative harvestable yields may occur when the (episodic) losses exceed the gains made within a particular accounting period.

Normal and forced harvest information

No. of Harvests per Year: 1.70 (normal), 1.75 (forced by crop death due to water stress [1.73] and frosting [0.02]).
No. Days without Crop per Year (no./year): 38.28 (due to water stress [31.15], frosting [7.12] and temperature stress - not frost [0.01])

Performance

Paddock information

Paddock: Irrigation, 20 ha
Soil Type: Kurosol 1
Planting Regime: Rotated Maize crop & Ryegrass 1 pasture, resown

Plant salinity tolerance

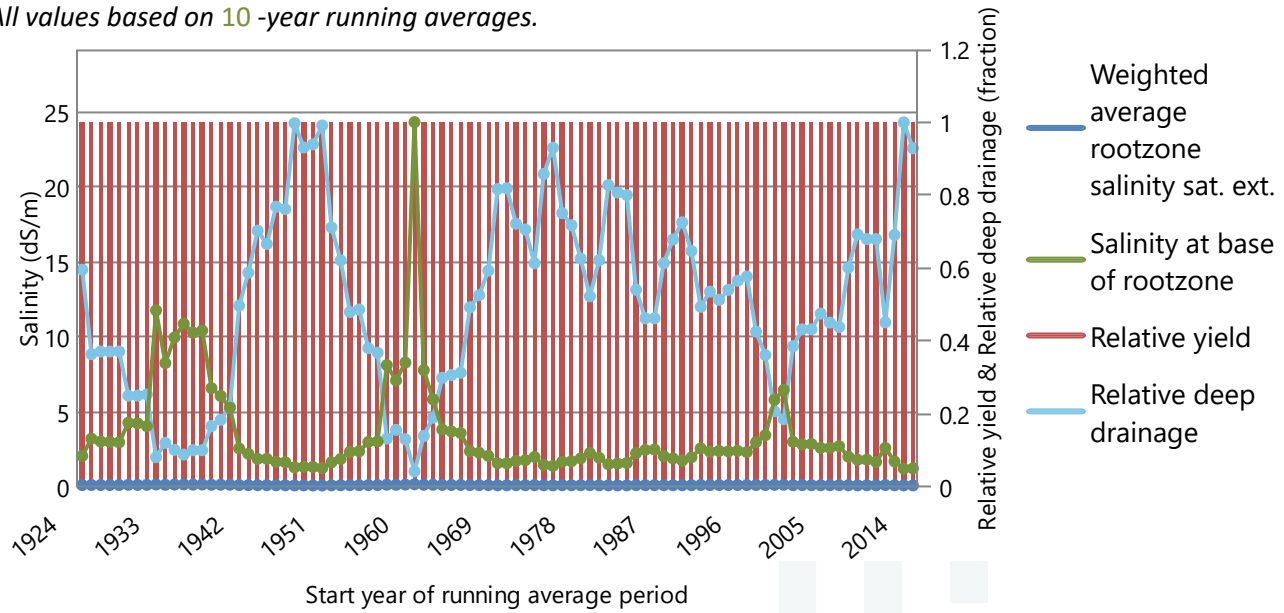
Metric	Value
Salt tolerance	Moderately sensitive | Moderately tolerant
Salinity threshold (dS/m soil saturation extract)	1.70 | 5.60
Proportion of yield decrease per dS/m increase (fraction/dS/m)	0.12 | 0.08
No. years assumed for leaching to reach steady-state (years)	10.00

Soil salinity

Metric	Value
Salinity of infiltrated water (Average salinity of rainwater = 0.03 dS/m) (dS/m)	0.07
Salt added by rainfall (kg/ha/year)	137.66
Average annual salt added & leached at steady state (kg/ha/year)	333.85
Average leaching fraction based on 10 -year running averages (fraction)	0.20
Average water-uptake-weighted rootzone salinity sat. ext. (dS/m)	0.15
Salinity of the soil solution (at drained upper limit) at base of rootzone (dS/m)	3.56
Relative crop yield expected due to salinity (fraction)	1.00
Proportion of years that crop yields would be expected to fall below 90% of potential due to salinity (fraction)	0.00

Average annual rootzone salinity and relative yield

All values based on 10 -year running averages.

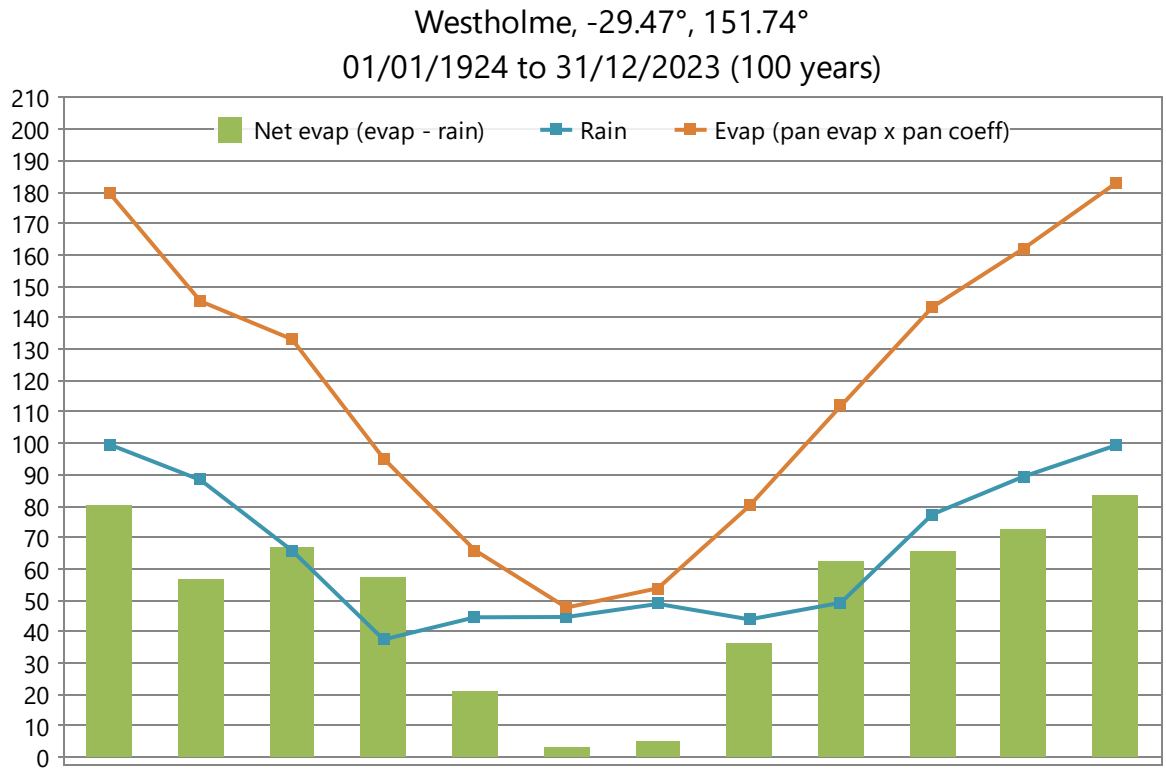


Diagnostics

Scenario information

Enterprise: Westholme Feedlot

Climate long-term monthly averages (mm)



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Rain	99.7	88.3	65.9	37.5	44.6	44.7	48.9	44.0	49.2	77.4	89.5	99.3	789.0
Evap	179.8	145.2	133.1	95.2	65.9	47.7	53.9	80.1	111.9	143.4	162.1	182.7	1401.1
Net evap	80.2	56.9	67.3	57.7	21.3	3.0	5.0	36.1	62.7	66.0	72.6	83.4	612.1
Net evap/day	2.6	2.0	2.2	1.9	0.7	0.1	0.2	1.2	2.1	2.1	2.4	2.7	1.7

Diagnostics

Enterprise name:

Enterprise Name: Westholme Feedlot - Livestock yard_Westholme_1 - 807 SCU stocked - 0.342 % mortality

Key pad details

Name	Value
Pen pan factor for evaporation (at air dry MC - at max pugging MC)	0 - 1.2
Pad moisture content (at air dry MC - at max pad MC) (%g/g wet basis)	6.54 - 65.52
Bulk density (surface layer - subsurface layer) (g/cm3)	750 - 1000
Maximum percolation rate (mm/hour)	0.42
Baseline pad volatile solids decay rate (%pad VS/day)	0.15

Average pad manure composition

Component	Value	Powell (1994)	Sinclair (1994)
Dry matter content using wet basis (%g/g)	68.12	66	60
Water content using wet basis (%g/g)	31.88	34	40
Water content using dry basis (%g/g)	46.80	52	67
Total nitrogen content using dry basis (%g/g)	4.83	2.37	2.78
Total phosphorus content using dry basis (%g/g)	0.71	0.75	0.67
Salt content using dry basis (%g/g)	0.64	> 2.3	4.3

Note: The cattle used 11.52 ML/year of drinking water, at a salinity of 0.50 dS/m. The output assumes 0.40 (fraction) of total nitrogen excreted is in the urine, of which 0.60 (fraction) volatilises.

Pen cleaning (tonnes/head/year)

Name	Value	Expected
Excreted manure (dry matter basis)	0.73	0.6 - 1.6
Manure removed in cleaning (dry matter basis)	0.64	0.41 - 1.05
Water removed in cleaning	0.44	0.02 - 0.3
Wet manure removed in cleaning	1.08	0.7 - 1.07

Pen cleaning operation - Average cleaning interval (min. - max.): 76.0 (71.0 - 247.0) days

Reasons for not cleaning pens	Fraction of non-cleaning days for Pen 1	Fraction of non-cleaning days for Yard
Insufficient buildup / too soon to clean	0.00 / 0.93	0.00 / 0.93
Pad too dry / too wet	0.05 / 0.02	0.04 / 0.03
Skipped as too many pens to clean	0.00	0.00

Average runoff quantity (ML/year) and quality (mg/L) from each surface defined.

Livestock Yard Enrichment Ratios Used: Total nitrogen 6.1 , Total phosphorus 50 , Salt 10

Area Names	Runoff	TS	VS	TN	TP	Salt
Livestock yard_Westholme_1	2.2	14844.2	7539.4	4349.6	4356.8	905.1
Soft surface_Westholme	0.1	0.0	0.0	2.0	1.0	320.0
Hard surface_Westholme	6.3	0.0	0.0	2.0	1.0	320.0

Mass lost in runoff as fraction of mass excreted

Runoff Expressed as a fraction of Rainfall, Yard: 0.21 , All Areas: 0.30

Area Names	TS	VS	TN	TP	Salt

Diagnostics

Pond system information

Pond System Configuration: 1 anaerobic pond, desludging 2 times during the run according to the rule: "Maintain required active volume and desludge when sludge reaches 20% of pond volume"

Effluent Type: Waste estimation system - 8.80 ML/year or 0.02 ML/day generated on average

Effluent entering pond system after any pretreatment and recycling

Average (Minimum-Maximum) influent quality calculated for 66.90 non-zero flow days/year.

Constituent	Concentration (mg/L)	Load (kg/year)
Total nitrogen	808.45 (0.00 - 3939.58)	7115.73 (43.11 - 19067.23)
Total phosphorus	971.08 (0.00 - 8239.87)	8547.09 (105.24 - 13541.23)
Total dissolved salts	458.59 (0.00 - 1786.09)	4036.32 (422.77 - 8787.96)
Volatile solids	1268.81 (0.00 - 5656.49)	11167.66 (55.71 - 33985.11)
Total solids	1322.55 (0.00 - 5250.36)	11640.63 (55.83 - 35282.92)

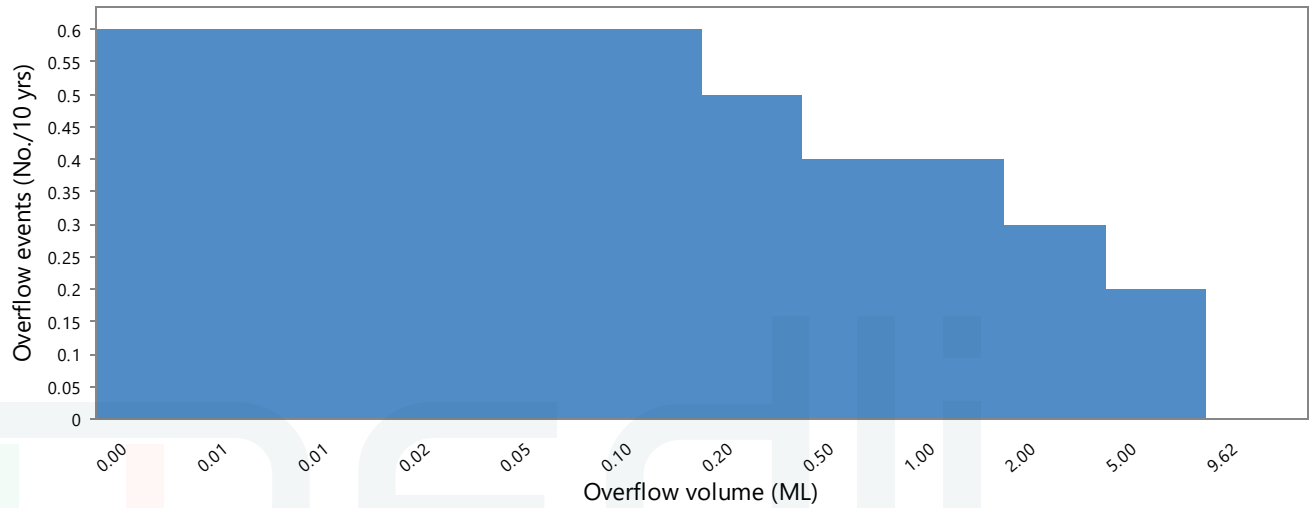
Ammonia-N loss from pond system water surface area: 67.36 kg/m2/year

Last pond (wet weather store): 10.00 ML

Metric	Value
Theoretical hydraulic retention time (days)	414.98
Volume of overflow (ML/year) Average (minimum-maximum)	0.19 (0.00 - 9.62)
Volume of overflow per day (m3/day) Average (minimum-maximum)	0.53 (0.00 - 2443.35)
No overflow days - Average per year (Total in run period)	0.58 (58)
No. overflow events per 10 years exceeding threshold of 0.010 ML* (events/10 years)	0.60
Average overflow event recurrence interval (years)	16.67
Average duration of overflow (days)	9.67
Probability of at least 90% effluent reuse (%)	95.12
Effluent reuse (proportion of inflow + net rain gain that is irrigated) (fraction)	0.97
Average salinity (dS/m)	0.50
Salinity on final day of simulation (dS/m)	0.45

* The overflow event is calculated as defined in WATBAL and based on the National Guidelines for Beef Cattle Feedlots in Australia

Volume distribution of the overflow events



Diagnostics

Scenario information

Area irrigated: 20 ha total area

Loading to whole irrigation area: (assuming 100% irrigation efficiency)

	Quantity/year	Quantity/ha/year
Total irrigation applied (ML)	12.87	0.64
Total nitrogen applied (kg)	2625.92	131.30
Total phosphorus applied (kg)	835.63	41.78
Total salts applied (kg)	3923.80	196.19

Shandying

Metric	Value
Annual allocation of fresh water for shandying (ML/year)	0.00
Average shandy water irrigation (ML/year) (minimum - maximum)	0.00 (0.00 - 0.00)
Average exceedance as a proportion of annual shandy water allocation (% of allocation) (minimum - maximum)	0.00 (0.00 - 0.00)
Minimum shandy water is used	No

Irrigation issues

Metric	Value
Number of days without irrigation (days/year)	327.91
Number of periods without irrigatable water (periods/year)	20.44
Average length of such periods (days)	11.22

Diagnostics

Paddock information

Paddock: - Irrigation, 20 ha

Irrigation: Low travelling irrigator with 0.22% ammonium loss during irrigation

Irrigation Rules
Irrigation triggered when soil water deficit reaches 25.00 mm and rainfall is less than or equal to 30.00 mm
Irrigate up to a soil water content of drained upper limit plus 0.00 mm
Irrigation window from 1/1 to 31/12 including the days specified
A minimum of 0 days must be skipped between irrigation events

Soil water balance (mm): Kurosol 1, 120.00 mm PAWC at maximum root depth

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Rain	99.7	88.3	65.9	37.5	44.6	44.7	48.9	44.0	49.2	77.4	89.5	99.3	789.0
Efflt. irrg.	9.3	7.6	5.9	3.6	2.9	3.0	3.1	5.3	3.9	3.1	5.4	11.4	64.4
Soil evap	34.3	24.5	24.8	34.5	25.2	22.1	23.5	28.1	30.3	53.9	61.9	60.5	423.7
Transpn.	77.4	59.9	47.8	5.6	12.3	11.4	14.7	21.8	25.9	3.0	7.0	47.7	334.5
Rain runoff	10.0	11.1	6.7	2.8	3.4	2.8	3.7	2.1	2.6	8.0	11.0	7.9	72.0
Irr. runoff	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Drainage	2.1	2.1	0.9	0.5	1.0	1.7	2.5	1.8	1.5	2.5	3.8	3.2	23.7
Delta SW	-14.9	-1.7	-8.3	-2.2	5.6	9.7	7.6	-4.7	-7.2	13.1	11.1	-8.7	-0.6

Soil nitrogen balance: (Concentrations are flow-weighted)

Metric	Value
Average annual nitrogen added in seed (kg/ha/year)	3.82
Average annual nitrogen added from irrigation (kg/ha/year)	131.30
Av. annual soil N removed by uptake (harvest + lost) (kg/ha/year)	178.86 (165.59, 13.27)
Av. annual soil nitrogen removed by denitrification (kg/ha/year)	0.14
Average annual soil nitrogen leached (kg/ha/year)	0.32
Average annual nitrate-N loading to groundwater (kg/ha/year)	0.32
Soil organic-N kg/ha (Initial - Final)	5150.00 - 814.10
Soil inorganic-N kg/ha (Initial - Final)	84.65 - 0.03
Average nitrate-N concentration of deep drainage (Max annual concentration)	
Across all years (mg/L)	1.37 (9.84)
Excluding first year of data (mg/L)	1.04 (9.84)

Soil phosphorus balance: (Concentrations are flow-weighted)

Metric	Value
Average annual phosphorus added in seed (kg/ha/year)	0.31
Average annual phosphorus added from irrigation (kg/ha/year)	41.78
Av. annual soil P removed by uptake (harvest + lost) (kg/ha/yr)	40.68 (38.10, 2.58)
Average annual soil phosphorus leached (kg/ha/year)	0.01
Dissolved phosphorus (kg/ha) (Initial - Final)	0.34 - 0.14
Adsorbed phosphorus (kg/ha) (Initial - Final)	1342.90 - 1483.25
Average phosphate-P concentration in rootzone (mg/L)	0.48
Average phosphate-P concentration of deep drainage (Max annual concentration)	
Across all years (mg/L)	0.00 (0.09)
Last year only (mg/L)	0.00 (N.D.*)
Design soil profile storage life based on average infiltrated water phosphorus concn. of 5.35 mg/L (years)	999.90

* Not determined

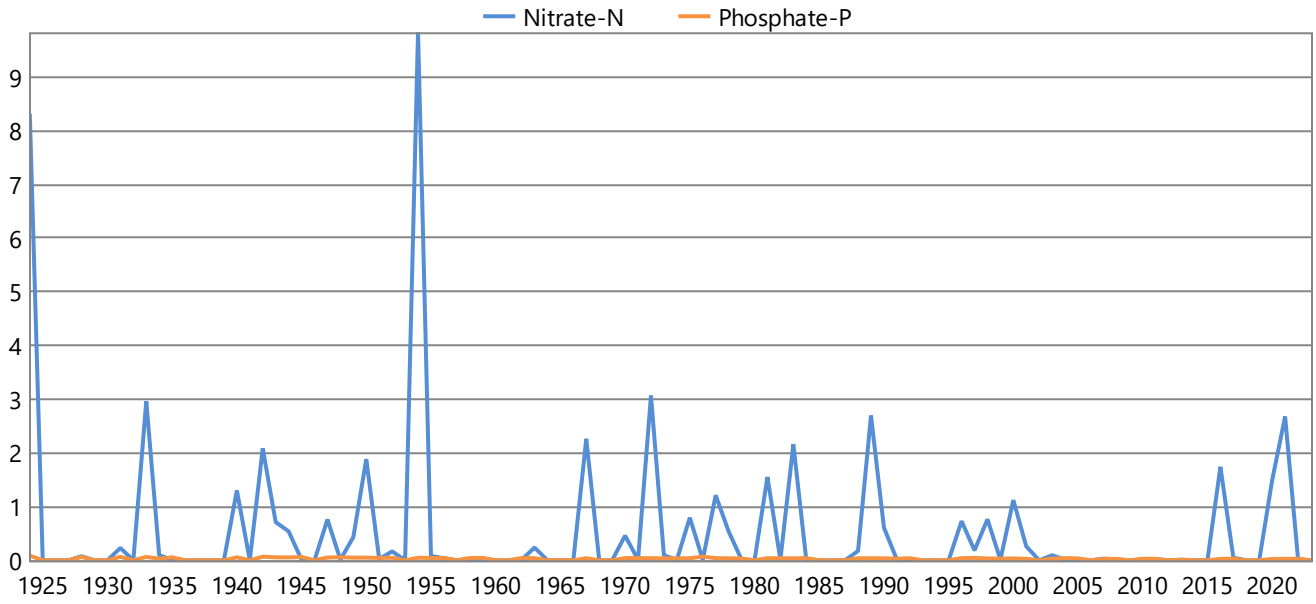
Diagnostics

Paddock information

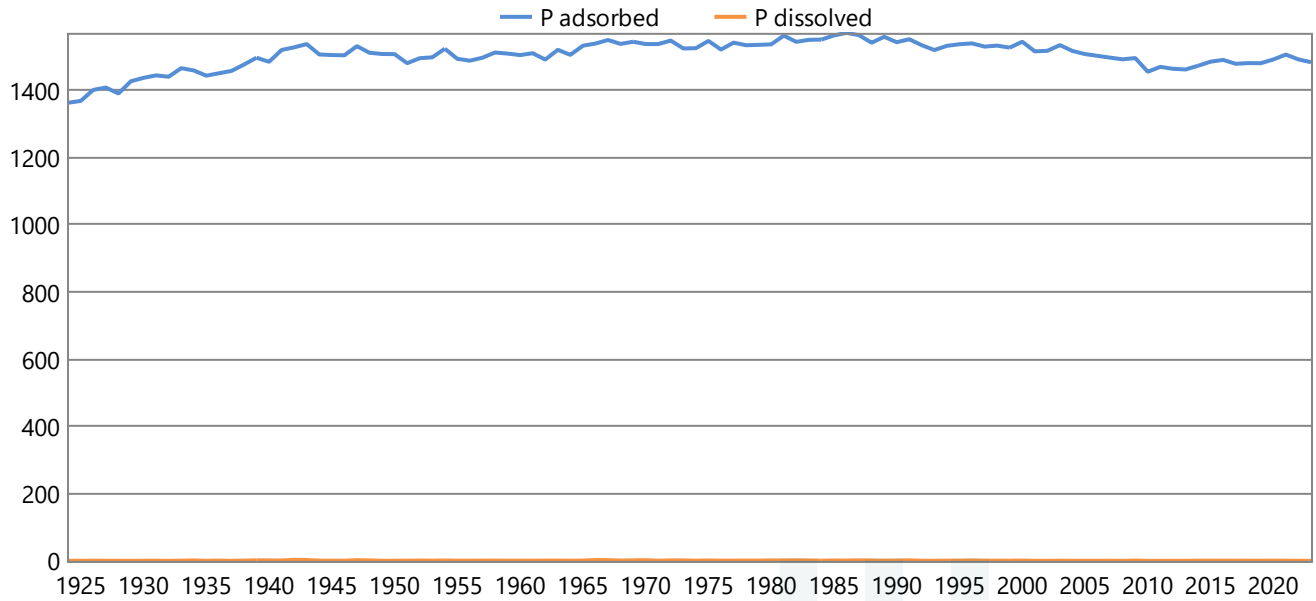
Paddock: Irrigation, 20 ha

Irrigation: Low travelling irrigator with 0.22% ammonium loss during irrigation

Annual nutrient leachate concentration (mg/L)



Annual phosphate-P in soil (kg/ha)



Diagnostics

Paddock information

Paddock: Irrigation, 20 ha

Planting Regime: Rotated Maize crop & Ryegrass 1 pasture, resown

Average plant performance (minimum - maximum)

Metric	Value
Average annual shoot dry matter harvestable yield (kg/ha/year)	13447.11 (-58.73 - 22623.98)
Average annual shoot dry matter lost (kg/ha/year)	907.40 (420.65 - 1460.86)
Average monthly plant (green) cover (fraction)	0.38 (0.05 - 0.70)
Average monthly crop factor (fraction)	0.30 (0.04 - 0.56)
Dead cover (if Mthly Covers) or Tot. cover left after harvest (fraction)	0.00 | 0.97
Average monthly root depth (mm)	457.12 (118.30 - 924.62)
Average number of normal harvests per year (no./year)	1.70 (0.00 - 3.00)
Average number of normal harvests for last five years only (no./year)	1.40
Average number of forced harvests per year (no./year)	1.75 (0.00 - 6.00)
Average number of forced harvests for last five years only (no./year)	1.60
Average annual nitrogen deficiency index (0 = no stress, 1 = full stress) (coefficient)	0.24 (0.07 - 0.58)
Average January temperature stress index (0 = no stress, 1 = full stress) (coefficient)	0.05 (0.00 - 0.25)
Average July temperature stress index (0 = no stress, 1 = full stress) (coefficient)	0.68 (0.16 - 0.94)
Average monthly water stress index (0 = no stress, 1 = full stress) (coefficient)	0.29 (0.17 - 0.40)
Average monthly waterlogging index (0 = no stress, 1 = full stress) (coefficient)	0.04 (0.02 - 0.06)
No. days without crop per year. Excludes bare fallow days (days)	38.28

Soil salinity - plant salinity tolerance: Moderately sensitive | Moderately tolerant

Assumes 1.0 dS/m Electrical Conductivity = 640 mg/L Total Dissolved Salts

All values based on 10 -year running averages.

Metric	Value
Salinity of infiltrated water (Average salinity of rainwater = 0.03 dS/m) (dS/m)	0.07
Salt added by rainfall (kg/ha/year)	137.66
Average annual salt added & leached at steady state (kg/ha/year)	333.85
Average leaching fraction based on 10 -year running averages (fraction)	0.20
Average water-uptake-weighted rootzone salinity sat. ext. (dS/m)	0.15
Salinity of the soil solution (at drained upper limit) at base of rootzone (dS/m)	3.56
Relative crop yield expected due to salinity (fraction)	1.00
Proportion of years that crop yields would be expected to fall below 90% of potential due to salinity (fraction)	0.00

Diagnostics

Run information

Messages generated when the scenario was run
No. Days without Irrigation Applied per Year: 327.91 (with pond water volume below minimum volume for irrigation [216.85], water demand too small to trigger irrigation [107.06], rain exceeding specified rainfall threshold [3.98] and irrigation too small, <0.0001 mm, to apply [0.02])
UNCONDITIONAL FINISH

Appendix C – Foundation and clay lining of feedlot pens, pads and drainage system

Appendix C. – Clay lining of feedlot pens, pads and drainage system

Preamble

Runoff from the feedlot pad contains organic and mineralised manure constituents that could pose a significant ecological hazard if they were released, uncontrolled, into the environment.

If a groundwater assessment indicates a high potential for contamination of underground water resources because of leaching of nutrients through permeable, underlying soil or rock strata, an impermeable barrier will be needed between the contaminant and the groundwater. This is required if the permeability of underlying soil/rock strata exceeds 0.1mm/day (3.5 cm/year).

This impermeable barrier is generally created using a liner made of compacted clay or other suitable compactable soil materials. Where these materials are not available, a synthetic liner (polymembrane) may be used. Synthetic liners tend to be expensive, require specialist installation and are hard to protect from damage by cattle and cleaning equipment. Clay liners tend to be the most common form employed in feedlot construction, and the following section outlines the characteristics of suitable clay lining material.

Design standard

- Clay liners should have a maximum permeability of 1 x 10^{-9} m/s (0.1mm/day) for distilled water with 1 m of pressure head.
- Clay liners must be of sufficient depth so that the integrity of the structure is maintained throughout the general working of the feedlot.

Clay liners

Clay liners are commonly used in industry for a range of contaminants including liquid effluent.

For a given soil, permeability is related to soil particle composition, moisture content and level of compaction; and there are limits to the permeability that can be achieved at any level of compaction. *In-situ* and laboratory measurement of permeability is difficult, and relatively inaccurate. Also, some soil types, because of their physical and chemical properties, are impermeable *in-situ*, but fail to meet the design standard when measured in the laboratory.

For these reasons, rather than relying on permeability standards, this section provides guidance on specifications for materials and construction methods to be used for clay lining.

The specifications in Table C.1 provide guidance on the selection of the correct materials for use in the liner. Soils may need to be mixed or engineered to produce a material that meets the specifications.

Table C.1 Specifications for clay liner materials

Soil characteristic	Acceptability criterion	Test method
Percentage fines	More than 25% passing 75 µm sieve	AS 1289 3.6
	More than 15% passing 2 µm sieve	
Liquid Limit	Less than 70	AS 1289 3.1.2
Plasticity Index	More than 15	AS 1289 3.3.1
Emerson class number	5 to 6	AS 1289 3.8.1

Areas to be clay lined within the controlled drainage area include:

- effluent catch drain
- sedimentation system
- holding ponds
- manure stockpile and composting pad
- any area where contaminants are stored or handled.

Because of the formation of a low permeability soil-manure interface layer, clay lining is not generally required on the feedlot pen and yard areas.

Trafficability of clay lined materials

The liner should be trafficable for cattle and equipment. To ensure that the integrity of the liner is maintained, the depth of the liner should be sufficient to ensure that equipment does not damage it during harvesting of manure. The minimum depth recommended for the clay liner is 300 mm after compaction. Periodic repair of the liner will be necessary due to the wear and tear associated with cattle traffic and normal cleaning operations.

The mechanical strength of liners can be tested using the Californian Bearing Ratio (CBR) test, which was developed for measuring the load-bearing capacity of soils used for building roads. The test is performed by measuring the pressure required to penetrate a soil sample with a plunger of standard area in both the saturated and dry conditions at a specified compaction. The minimum standard for CBR wet and dry is 20%.

Particular attention should be applied to the load-bearing capability of areas where cleaning or harvesting of dry waste is undertaken, including:

- feedlot pens
- effluent catch drain
- sedimentation system
- manure stockpile and composting pad.

Construction

All areas to be clay lined should be cleared and grubbed, stripped of top soil and prepared to the required levels and gradients by cutting and filling. The surface of the excavated area should also be tined before the clay material is placed to produce a satisfactory bonding surface.

The clay lining material should be placed in layers of 150 mm (±50 mm). Each layer should be tined, wetted to ±2% of optimum moisture content (AS 1289 5.1.1) and compacted to the required compaction (relative to the maximum dry density, AS 1289 5.4.2) that is needed to achieve the required permeability of 1mm/day.

Appendix E
Standard specification

CATTLE FEEDLOTS

QUEENSLAND GOVERNMENT

DPI QUEENSLAND DEPARTMENT OF PRIMARY INDUSTRIES

CLAY LINING OF DRAINS, SEDIMENTATION SYSTEMS, HOLDING PONDS AND MANURE STOCKPILE AREAS

Alan Skerman, Senior Environmental Engineer, DPI, Toowoomba

INTRODUCTION

This standard specification is intended to provide guidance and technical direction to licensees, contractors, consultants and project managers involved in the construction of cattle feedlots at sites where groundwater impact assessments have indicated a high potential for contamination of underground and/or surface water resources, because of leaching of nutrients through permeable, underlying soil or rock strata. It outlines this Department's recommended practices for the clay lining of drains, sedimentation systems, holding ponds and manure stockpile areas and provides a set of enforceable, quantitative standards to ensure that consistency is achieved throughout the industry.

This specification is based on established engineering principles and operational experience gained by the industry over several years. However, it may be revised from time to time as new methods are developed and/or as experience dictates. Proposals involving alternative materials and/or construction methods may be submitted to the administering authority for consideration.

1. PERMEABILITY STANDARD

If a groundwater impact assessment indicates a high potential for contamination of underground and/or surface water resources, because of the leaching of nutrients through permeable, underlying soil/rock strata, clay lining of the feedlot complex should be undertaken in accordance with this specification. For the purpose of this specification, it is considered that there is a significant risk of nutrient leaching if the permeability of underlying soil/rock strata exceeds 0.1 mm/day (37 mm/year).

Because in-situ and laboratory measurement of permeability is difficult and relatively inaccurate, rather than relying on permeability standards, this document provides proven standards for materials and methods used for clay lining. By applying these standards, the required permeability should be achieved consistently.

2. AREAS TO BE CLAY LINED

Unless the underlying soil type and geology changes significantly across the feedlot site, each of the following areas of the feedlot complex should be clay lined:

- internal catch drain(s),
- sedimentation system(s),
- holding pond(s) and
- manure stockpile area(s)

Because of the formation of a low permeability soil–manure interface layer, clay lining is not generally required on the pen and yard areas, unless directed by the administering authority.

3. CLAY LINING SURFACE PREPARATION

All surfaces to be clay lined shall be cleared and grubbed, stripped of topsoil and prepared to the required levels and gradients by cutting and filling, as required. This will involve over-excavation (excavation below the design level indicated on the plans) to accommodate the required thickness of clay lining while ensuring that the final design gradients, levels and dimensions are achieved, in accordance with the plans approved by the administering authority.

To produce a satisfactory bonding surface for the placement of subsequent layers, the following operations should be carried out on all areas to be clay lined:

(i) scarifying or ripping with a tined implement, to a minimum depth of 150 mm,
(ii) watering to produce the correct moisture content, as specified in Clause 6,
(iii) compaction in accordance with Clause 7.

4. CLAY LINING MATERIAL

Soils shall be considered suitable for use as clay lining materials, subject to compliance with the following requirements:

The material shall be classified as either CL, CI, CH, SC or GC in accordance with the soil classification system described in Appendix A of AS 1726. Furthermore, it shall conform with the following particle size distribution and plasticity limits:

(i) Particle Size Distribution:

AS Metric Sieve Size (mm)	**Percentage Passing** (by dry weight)
75	100
19	70 – 100
2.36	40 – 100
0.075	25 – 90

(ii) Plasticity Limits on fines fraction, passing 0.425 mm sieve:

Liquid Limit W_L	30 – 60 %
Plasticity Index I_p	> 10 %

***Note for explanatory purposes**: The material classification symbols CL, CI, CH, SC* and *GC represent clays having low, intermediate and high plasticity, clayey sands and clayey gravels respectively.*

If materials complying with the above plasticity limits are not readily available, clays having liquid limits between 60% and 80% may be used as lining material, provided that the clay lining layer is covered with a layer of compacted gravel (or other approved material), having a minimum thickness of 100 mm, to prevent the clay lining from drying out and cracking.

Topsoil, soils incorporating tree roots or organic matter and any other material which does not compact properly, must not be placed in any of the areas to be clay lined. Wherever non-dispersive materials are available, they are to be used in preference to materials shown to be dispersive using the Emerson test, as described in Method 8.1 of AS 1289.

5. MATERIAL SUITABILITY AND IDENTIFICATION

The visual identification methods described in AS 1726 may be used by suitably qualified and experienced persons, for classifying soils in the field. However, if there is doubt about the suitability of the material, the administering authority may direct the licensee to arrange for laboratory testing, in accordance with the appropriate sections of AS 1289. All such laboratory testing must be carried out by a soils laboratory, accredited by the National Association of Testing Authorities (NATA).

6. CLAY LINING THICKNESS

The minimum required thickness of clay lining depends on the maximum head of effluent in contact with the clay lining and the duration of that contact. The following table outlines minimum lining thicknesses (after compaction), for the different areas of the feedlot, for two maximum head conditions.

Area of Feedlot	**Maximum Head Over Clay Lining** (m)	**Minimum Clay Lining Thickness** (mm)
Internal Catch Drains Sedimentation Systems Holding Ponds Manure Stockpile Areas	< 2 m	300
Sedimentation Systems Holding Ponds	> 2 m	450

7. PLACEMENT OF MATERIAL

Clay lining material complying with Clause 4, shall be placed at the correct moisture content as defined in Clause 8, on surfaces prepared in accordance with Clause 3, in progressive, uniform, horizontal layers, not exceeding 200 mm in thickness, prior to compaction.

8. CORRECT MOISTURE CONTENT

Prior to compaction, all material used for lining purposes shall be conditioned to have a moisture content within the range of two (2) percent wet to two (2) percent dry of the optimum moisture content required to produce the maximum dry density when compacted in accordance with Method 5.1.1 of AS 1289.

Note for explanatory purposes: *This moisture content is consistent with the requirements for compaction using a sheepsfoot roller to produce maximum impermeability. As a guide, the required moisture content is as wet as can be rolled without clogging a sheepsfoot roller. A preliminary assessment of the required moisture content can be made by rolling a sample of the material between the hands. If it can be rolled to pencil thickness without breaking, it should be satisfactory.*

9. COMPACTION

Each layer of material placed in accordance with Clause 7, shall be compacted to produce **either** a field dry density of at least 95% of the standard maximum laboratory dry density determined in accordance with Method 5.4.1 of AS 1289, **or alternatively**, a Hilf density ratio of at least 95% when tested in accordance with Method 5.7.1 of AS 1289.

Note for explanatory purposes: *This degree of compaction may generally be achieved by rolling each layer of material, placed at the correct moisture content, with at least eight (8) passes of a sheepsfoot roller of the configuration described in Clause 10 below. As a guide, compaction will generally be sufficient when there is a clearance of 100 mm between the drum of the roller and the compacted material.*

10. SHEEPSFOOT ROLLER

The following specifications describe a sheepsfoot roller which is suitable for fulfilling the compaction requirements described in Clause 9:

(i) The diameter of the drum(s) shall be not less than 1m.
(ii) The length of each drum(s) shall be approximately 1.2 times the drum diameter.
(iii) The feet shall extend approximately 175mm radially from the drum and be of the taper-foot type, with a cross-sectional area close to the outer end of not less than 3200mm^2 and not more than 4500mm^2.
(iv) The number of feet shall be such that their total area close to the outer ends shall be between 5% and approximately 8% of the area of the cylinder which would enclose all the feet, *i.e.* a cylinder having a diameter equal to the diameter of the drum plus twice the length of each foot.
(v) The weight of the roller ballasted, shall be such that the bearing pressure thus obtained shall be not less than 1750 kilopascals, in accordance with the following formula:

$$\text{Bearing Pressure (kPa)} = \frac{\text{Mass (kg)} \times 9.81 \times 1000}{\text{Area of contact of one row of feet (mm}^2\text{)}}$$

Rollers of other types and configurations may be used provided that the required compaction is achieved in accordance with Clause 9.

11. TEST FOR ADEQUATE COMPACTION

The administering authority may direct the licensee to arrange for compaction testing, in accordance with the methods referred to in Clause 9 of this specification, to be carried out on appropriate sections of the works area. Compaction testing is to be performed by suitably qualified and experienced personnel, employed by a soils laboratory accredited by the National Association of Testing Authorities (NATA) for the specified testing method.

Failure of the test results to comply with the compaction requirements described in Clause 9 will result in the licensee being prohibited from stocking the feedlot until appropriate remedial measures are implemented, as directed by the administering authority.

12. EXEMPTION FROM CLAY LINING REQUIREMENTS

The administering authority may exempt a licensee from the requirement to clay line cattle feedlot facilities if the licensee can submit certified test results confirming that the permeability of soils underlying nominated areas of the feedlot does not exceed 0.1 mm/day.

Permeability testing is to be carried in accordance with the methods specified in either Part 6 of BS 1377 (Triaxial Permeability) or Section F7.1 of AS 1289. The test results shall be submitted to the administering authority, following certification by a National Association of Testing Authorities (NATA) accredited soils laboratory.

13. FINAL TRIMMING

Following the completion of compaction, final trimming of all clay lined areas shall be carried out to produce a smooth, uniform surface, in accordance with the design gradients, levels and dimensions shown on the plans, as previously approved by the administering authority.

14. SYNTHETIC LINERS

A licensee may submit to the administering authority, alternate material and installation specifications relating to the use of synthetic lining materials, in lieu of clay lining. Approval of synthetic lining proposals will be subject to assessment by the administering authority.

15. INDEMNITY

The Department of Primary Industries and Officers of that Department shall not be responsible for any costs incurred by either the licensee or his/her contractor, in carrying out any works, as directed by the administering authority, for the purpose of rectifying design and/or construction faults or omissions.

Appendix D – Geotechnical results

Material Test Report

Report Number: **MS03424-1**
Issue Number: 1
Date Issued: 29/08/2024
Client: RDC Engineers Pty Ltd
PO Box 1223, Toowoomba QLD 4350
Contact: Rod Davis
Project Number: MS03424
Project Name: Geotechnical Investigation
Project Location: Westholme, Deepwater
Work Request: 5391
Sample Number: S-245391A
Date Sampled: 26/06/2024
Dates Tested: 21/08/2024 - 28/08/2024
Sampling Method: Sampled by Client
The results apply to the sample as received
Preparation Method: AS 1289.1.1 - Sampling and Preparation of Soils
Sample Location: **TP1**
Material: Orange Brown Sandy Silty CLAY

SOILTECH Testing Services Pty Ltd
1300 736 724
www.soiltech.com.au
Soiltech Testing Services Pty Ltd
Site No. 2110
Soiltech Toowoomba Laboratory
194 Stephen Street Toowoomba QLD 4350
Phone: (07) 4633 1622
Email: makayla@soiltech.com

NATA WORLD RECOGNISED ACCREDITATION

Accredited for compliance with ISO/IEC 17025 - Testing

M.J. Mudge

Approved Signatory: Makayla Mudge
Geotechnical Laboratory Supervisor

NATA Accredited Laboratory Number: 2117

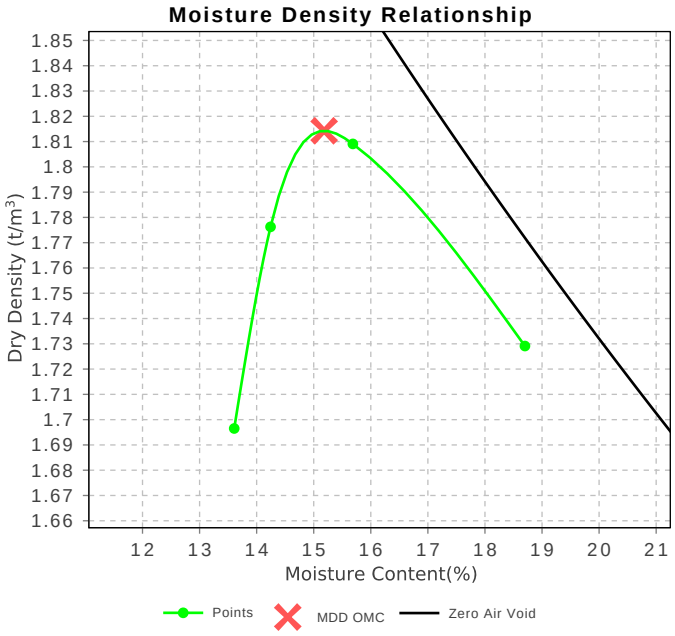
Dry Density - Moisture Relationship (AS 1289 5.1.1 & 2.1.1)		Min	Max
Mould Type	1 LITRE MOULD A		
Compaction	Standard		
Maximum Dry Density (t/m^3)	1.81		
Optimum Moisture Content (%)	15.0		
Oversize Sieve (mm)	19.0		
Oversize Material Wet (%)			
Method used to Determine Plasticity	Visual/Tactile		
Curing Hours (h)	28.8		

Moisture Content (AS 1289 2.1.1)	
Moisture Content (%)	

Atterberg Limit (AS1289 3.9.2 & 3.2.1 & 3.3.2)		Min	Max
Sample History	Oven Dried		
Preparation Method	Dry Sieve		
Retained 0.425 (%)			
Liquid Limit (%)	42		
Plastic Limit (%)	19		
Plasticity Index (%)	**23**		

Linear Shrinkage (AS1289 3.4.1)		Min	Max
Moisture Condition Determined By	AS 1289.3.9.2		
Linear Shrinkage (%)	**13.5**		
Cracking Crumbling Curling	Cracking & Curling		

Emerson Class Number of a Soil (AS 1289 3.8.1)		Min	Max
Emerson Class	**3**		
Soil Description	Orange Brown Sandy Silty CLAY		
Nature of Water	Distilled		
Temperature of Water (^{o}C)	21.6		



Material Test Report

Report Number: **MS03424-1**
Issue Number: 1
Date Issued: 29/08/2024
Client: RDC Engineers Pty Ltd
PO Box 1223, Toowoomba QLD 4350
Contact: Rod Davis
Project Number: MS03424
Project Name: Geotechnical Investigation
Project Location: Westholme, Deepwater
Work Request: 5391
Sample Number: S-245391B
Date Sampled: 26/06/2024
Dates Tested: 21/08/2024 - 28/08/2024
Sampling Method: Sampled by Client
The results apply to the sample as received
Preparation Method: AS 1289.1.1 - Sampling and Preparation of Soils
Sample Location: **TP2**
Material: Orange Brown Sandy Silty CLAY

SOILTECH Testing Services Pty Ltd
1300 736 724
www.soiltech.com.au
Soiltech Testing Services Pty Ltd
Site No. 2110
Soiltech Toowoomba Laboratory
194 Stephen Street Toowoomba QLD 4350
Phone: (07) 4633 1622
Email: makayla@soiltech.com

NATA WORLD RECOGNISED ACCREDITATION

Accredited for compliance with ISO/IEC 17025 - Testing

M.J. Mudge

Approved Signatory: Makayla Mudge
Geotechnical Laboratory Supervisor

NATA Accredited Laboratory Number: 2117

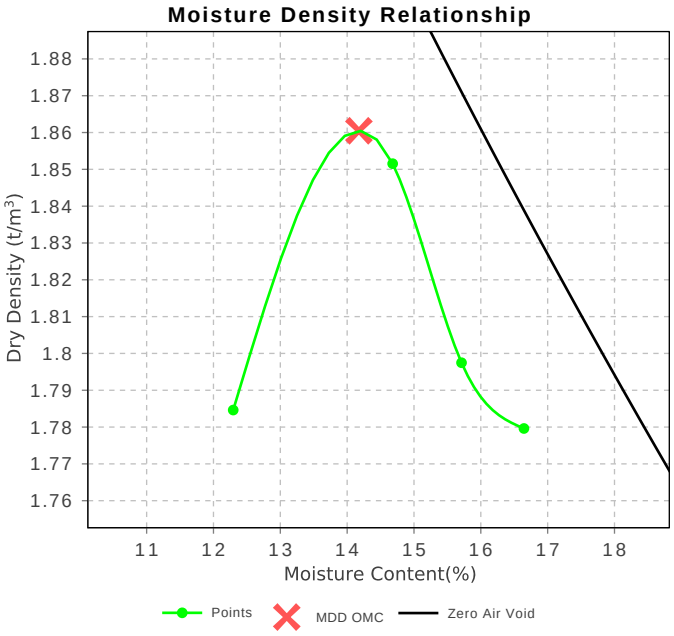
Dry Density - Moisture Relationship (AS 1289 5.1.1 & 2.1.1)		Min	Max
Mould Type	1 LITRE MOULD A		
Compaction	Standard		
Maximum Dry Density (t/m^3)	1.86		
Optimum Moisture Content (%)	14.0		
Oversize Sieve (mm)	19.0		
Oversize Material Wet (%)			
Method used to Determine Plasticity	Visual/Tactile		
Curing Hours (h)	24.0		

Moisture Content (AS 1289 2.1.1)	
Moisture Content (%)	

Atterberg Limit (AS1289 3.9.2 & 3.2.1 & 3.3.2)		Min	Max
Sample History	Oven Dried		
Preparation Method	Dry Sieve		
Retained 0.425 (%)			
Liquid Limit (%)	35		
Plastic Limit (%)	15		
Plasticity Index (%)	**20**		

Linear Shrinkage (AS1289 3.4.1)		Min	Max
Moisture Condition Determined By	AS 1289.3.9.2		
Linear Shrinkage (%)	**12.0**		
Cracking Crumbling Curling	Curling		

Emerson Class Number of a Soil (AS 1289 3.8.1)		Min	Max
Emerson Class	**3**		
Soil Description	Orange Brown Sandy Silty CLAY		
Nature of Water	Distilled		
Temperature of Water (^{o}C)	21.6		



Trilab
Soil Rock Calibration

Brisbane
346A Bilsen Road,
Geebung
QLD 4034
Ph: +61 7 3265 5656

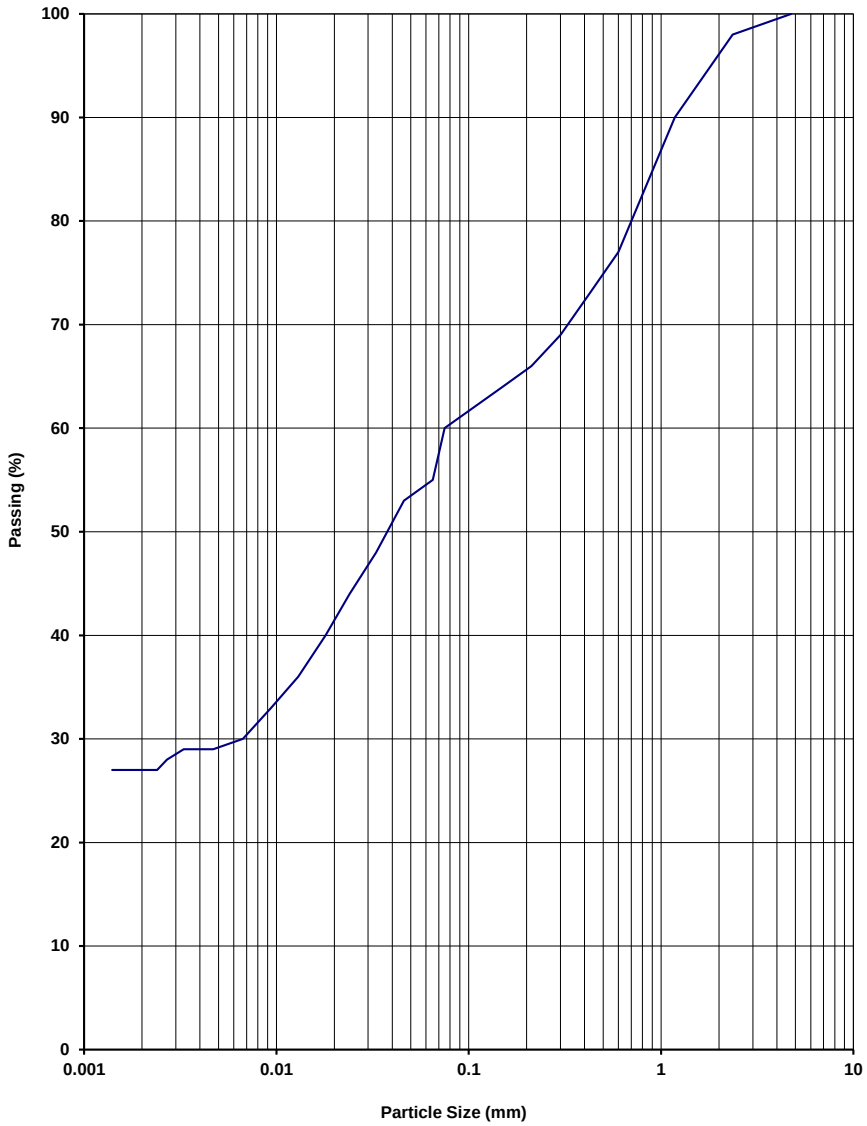
Perth
2 Kimmer Place,
Queens Park
WA 6107
Ph: +61 8 9258 8323

PARTICLE SIZE DISTRIBUTION TEST REPORT

Test Method: AS 1289 3.6.1, 3.6.3, 3.5.1 & 2.1.1

Client	Soiltech Testing Services Pty Ltd	**Report No.**	24090011-PSDH
		Workorder No.	9919/T/633
Address	194 Stephen Street Toowoomba QLD 4350	**Test Date**	16/9/2024
		Report Date	10/10/2024
Project	MS03424 & MS03324		
Client ID	MS03424	**Location** TP1	**Depth (m)** Not Supplied
Description	Disturbed		

Sieve Size (mm)	Passing %
150.0	
75.0	
63.0	
53.0	
37.5	
26.5	
19.0	
13.2	
9.5	
6.7	
4.75	100
2.36	98
1.18	90
0.600	77
0.425	73
0.300	69
0.212	66
0.150	64
0.075	60
0.065	55
0.046	53
0.033	48
0.024	44
0.018	40
0.013	36
0.0094	33
0.0067	30
0.0047	29
0.0039	29
0.0033	29
0.0027	28
0.0024	27
0.0014	27



NOTES/REMARKS: -

Moisture Content 14.9% -2.36mm Soil Particle Density(t/m^3) 2.64

Sample/s supplied by the client

Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory

*NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration, inspection, proficiency testing scheme providers and reference materials producers reports and certificates

Wade Els

Tested at Trilab Brisbane Laboratory

Laboratory No. 9926

Trilab
Soil Rock Calibration

Brisbane
346A Bilsen Road,
Geebung
QLD 4034
Ph: +61 7 3265 5656

Perth
2 Kimmer Place,
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WA 6107
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PERMEABILITY BY CONSTANT HEAD TEST REPORT

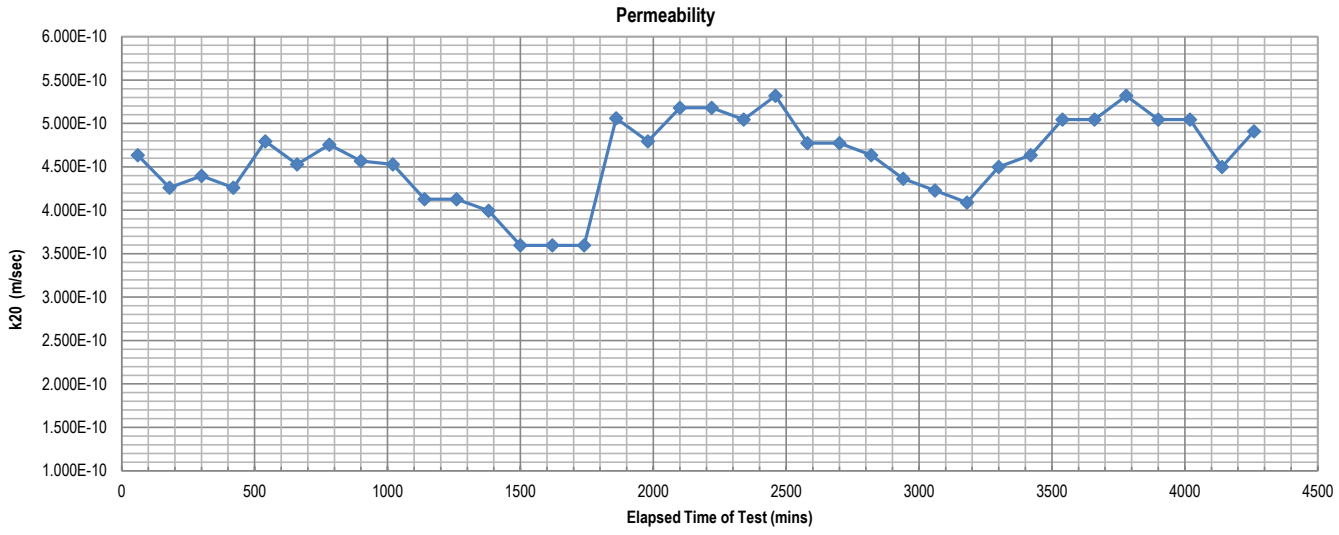
Test Method AS 1289 6.7.3, 5.1.1

Client	Soiltech Testing Services Pty Ltd	**Report No.**	24090012-TPER
		Workorder No.	9919/T/633
Address	194 Stephen Street Toowoomba QLD 4350	**Test Date**	9/09/2024
		Report Date	20/09/2024
Project	MS03424 & MS03324		
Client ID	MS03424 TP2	**Depth (m)**	Not Supplied
Description	Sandy CLAY - brown	**Sample Type**	Remoulded Soil Specimen.

RESULTS OF TESTING

Compaction Method	**AS1289.5.1.1 - Standard Compaction**		
Maximum Dry Density (t/m^3)	**1.86**	Confining Pressure (kPa)	**360**
Optimum Moisture Content (%)	**14.0**	Inlet Pressure/Outlet Pressure (kPa)	**320 / 300**
Placement Moisture Content (%)	**14.1**	Mean Effective Stress (kPa)	**50**
Moisture Ratio (%)	**100.9**	Water Type	**De-Ionized**
Placement Wet Density (t/m^3)	**2.08**	Percentage Material Retained/Sieve Size (mm)	**0 % / 6.7 mm**
Density Ratio (%)	**98.1**	Sample Height and Diameter (mm)	**63.8 / 62.9 mm**

PERMEABILITY $k_{(20)} =$ **4.9×10^{-10}** **(m/sec)**



Remarks: The above specimen was remoulded to a target of 98% of Standard Maximum Dry Density and at Optimum Moisture Content.

Sample/s supplied by client The compaction data was supplied by the client.

Accredited for compliance with ISO/IEC 17025 - Testing

*NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration, inspection, proficiency testing scheme providers and reference materials producers reports and certificates

Tested at Trilab Brisbane Laboratory

Approved Signatory

Wade Els

Wade Els

NATA WORLD RECOGNISED ACCREDITATION

Laboratory No. 9926

Appendix E– Beefbal

1 - Production

Market									
Standard description		User-defined	User-defined	User-defined	User-defined	Unallocated	Unallocated	Unallocated	Unallocated
User-defined description		Export Long Fed	Export Long Fed	Domestic Mid Fed	Domestic Mid Fed				
User defined data									
Entry live weight	kg live weight/head	325	325	300	300				
Average daily weight gain	kg/head/d	0.95	0.95	2.00	2.00				
Days on feed									
Starter	d	30	30	5	5				
Intermediate	d	0	0	0	0				
Grower	d	250	250	85	85				
Finisher	d	120	120	0	0				
Total feeding period	d	400	400	90	90				

Market description		Export Long Fed	Export Long Fed	Domestic Mid Fed	Domestic Mid Fed	Unallocated	Unallocated	Unallocated	Unallocated	Totals
Cattle numbers [1]										
Number (full capacity)	head	377	377	122	122	0	0			998
Standard Cattle Units	SCU (full capacity)	336	336	88	88	0	0	0	0	849
Proportion of total head	%	37.78%	37.78%	12%	12%	0%	0%	0%	0%	100%
Days on feed										
Starter	d	30	30	5	5	0	0	0	0	
Intermediate	d	0	0	0	0	0	0	0	0	
Grower	d	250	250	85	85	0	0	0	0	
Finisher	d	120	120	0	0	0	0	0	0	
Total feeding period	d	400	400	90	90	0	0	0	0	
Cattle numbers [1]										
Starter	head	28	28	7	7	0	0	0	0	70
Intermediate	head	0	0	0	0	0	0	0	0	0
Grower	head	236	236	115	115	0	0	0	0	702
Finisher	head	113	113	0	0	0	0	0	0	226
Total cattle numbers		377	377	122	122	0	0	0	0	998
Occupancy	%	95%	95%	95%	95%					95%
Mortality	(%in - %out)	0.25%	0.25%	0.25%	0.25%					0.25%
Standard Cattle Units [2]	SCU (occupied)	319	319	84	84	0	0	0	0	807
No of cattle in per year [2]	head/yr	327	327	470	470	0	0	0	0	1,594
No of cattle out per year [2]	head/yr	326	326	469	469	0	0	0	0	1,590
Deaths [2]	head/yr	1	1	1	1	0	0	0	0	4
Cattle performance										
Entry live weight	kg live weight/head	325	325	300	300	0	0	0	0	
Average daily weight gain	kg/head/d	0.95	0.95	2.00	2.00	0.00	0.00	0.00	0.00	
Exit live weight	kg live weight/head	705	705	480	480	0	0	0	0	
Average liveweight	kg live weight/head	515	515	390	390	0	0	0	0	
Average total live weight [2]	t	184	184	45	45	0	0	0	0	459
Daily Gain										
Starter	kg/head/d	0.50	0.50	0.50	0.50	0.00	0.00	0.00	0.00	
Intermediate	kg/head/d	0.70	0.70	0.70	0.70	0.00	0.00	0.00	0.00	
Grower	kg/head/d	0.99	0.99	2.09	2.09	0.00	0.00	0.00	0.00	
Finisher	kg/head/d	0.99	0.99	2.09	2.09	0.00	0.00	0.00	0.00	

[1] Based on cattle numbers at full capacity. These values have not accounted for the occupancy % value entered by the user.
[2] Based on cattle numbers which have been reduced according to the occupancy % value entered by the user above.

2 - Feed

Feed		Export Long Fed	Export Long Fed	Domestic Mid Fed	Domestic Mid Fed	Unallocated	Unallocated	Unallocated	Unallocated	Totals
Dry matter fed - per head										
Typical values (Davis et al., 2012)										
Starter	kg DM/head/d	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	
Intermediate	kg DM/head/d	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	
Grower	kg DM/head/d	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	
Finisher	kg DM/head/d	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	*N/A*	
Selected values										
Starter	kg DM/head/d	**7.00**	**7.00**	**7.00**	**7.00**	**0.00**	**0.00**	**0.00**	**0.00**	
Intermediate	kg DM/head/d	**7.00**	**7.00**	**7.00**	**7.00**	**0.00**	**0.00**	**0.00**	**0.00**	
Grower	kg DM/head/d	**8.50**	**8.50**	**10.88**	**10.88**					
Finisher	kg DM/head/d	**8.60**	**8.60**	**10.88**	**10.88**					
Dry mater feed consumption - total [1]										
Starter	kg DM/d	198	198	47	47	0	0	0	0	**491**
Intermediate	kg DM/d	0	0	0	0	0	0	0	0	**0**
Grower	kg DM/d	2,003	2,003	1,254	1,254	0	0	0	0	**6,513**
Finisher	kg DM/d	973	973	0	0	0	0	0	0	**1,945**
Total	kg DM/d	499	3,173	1,301	1,301	0	0	0	0	**8,949**
	t DM/yr	182	1,158	475	475	0	0	0	0	**2,290**
Amount Fed (as fed) - per head										
Starter	kg as-fed/head/d	9.65	9.65	9.65	9.65	0.00	0.00	0.00	0.00	
Intermediate	kg as-fed/head/d	9.65	9.65	9.65	9.65	0.00	0.00	0.00	0.00	
Grower	kg as-fed/head/d	11.41	11.41	14.61	14.61	0.00	0.00	0.00	0.00	
Finisher	kg as-fed/head/d	10.93	10.93	13.82	13.82	0.00	0.00	0.00	0.00	
Feed consumption (as fed) - total [1]										
Starter	kg as-fed/d	273	273	65	65	0	0	0	0	**677**
Intermediate	kg as-fed/d	0	0	0	0	0	0	0	0	**0**
Grower	kg as-fed/d	2,689	2,689	1,683	1,683	0	0	0	0	**8,744**
Finisher	kg as-fed/d	1,236	1,236	0	0	0	0	0	0	**2,471**
Total	kg as-fed/d	4,198	4,198	1,749	1,749	0	0	0	0	**11,892**
	t as-fed/yr	1,532	1,532	638	638	0	0	0	0	**4,341**

[1] Based on cattle numbers at full capacity. These values have

100%
0.25%

3 - Diet

Diet Ingredients (% fed weight)

	Starter	Intermediate	Grower								Finisher								Dry Matter	Ash	Dry Matter Digestability	Crude Protein	Phosphorus	Potassium
			Export Long Fed	Export Long Fed	Domestic Mid Fed	Domestic Mid Fed	Unallocated	Unallocated	Unallocated	Unallocated	Export Long Fed	Export Long Fed	User-defined	User-defined	Unallocated	Unallocated	Unallocated	Unallocated						
																			(%)	(%)		(%)	(%)	(%)
Major grains																								
Barley 10%	37.50	37.50	54.50	54.50	54.50	54.50					65.50	65.50	65.50	65.50					88.00	2.40	0.82	11.00	0.31	0.45
Maize 8%																			88.00	1.50	0.90	9.00	0.28	0.33
Sorghum 10%																			90.00	1.50	0.85	10.00	0.34	0.37
Oats 8%																			89.00	2.90	0.75	8.00	0.32	0.40
Triticalae 12%																			90.00	1.90	0.88	12.00	0.37	0.45
Wheat 11%																			89.00	1.60	0.89	11.00	0.36	0.40
Wheat 13%																			89.00	1.60	0.89	13.00	0.36	0.46
Wheat 16%																			89.00	1.60	0.89	16.00	0.36	0.46
Hominy meal																			89.00	3.00	0.89	10.00	0.45	0.65
Millrun																			88.00	4.80	0.75	17.20	1.02	1.28
Rice pollard																			90.00	8.50	0.75	13.00	1.70	1.30
Protein sources																								
Chick peas																			89.00	3.40	0.85	22.00	0.35	0.80
Copra																			92.00	7.40	0.65	23.00	0.66	1.60
Canola 36																			92.00	7.50	0.75	36.00	1.00	1.17
Cotton 38																			90.00	7.20	0.75	38.00	1.04	1.25
Lupins																			89.00	2.80	0.85	29.00	0.30	0.80
Malt comb.																			90.00	2.50	0.70		0.70	
Navy beans																			89.00	4.00	0.85	25.00	0.60	1.24
Palm KM																			90.00	6.00	0.65	16.00	0.60	0.50
Peanut meal																			92.40	6.00	0.80	45.00	0.60	1.00
Soymeal 45%																			89.00	6.30	0.80	45.00	0.65	1.90
Soymeal 48%																			88.00	6.00	0.80	48.00	0.67	2.01
Sunflower 30																			92.50	6.70	0.65	32.00	1.03	1.48
Sunflower 36																			93.00	7.10	0.65	36.00	1.03	1.48
Roughage / miscellaneous																								
Peanut hull																			90.00	4.20	0.60	7.00	0.07	0.95
Oat hulls																			92.40	6.60	0.40	4.50	0.15	0.59
Rice hulls																			92.00	20.60	0.40	3.10	0.07	0.65
Cotton hulls																			90.40	2.90	0.40	4.20	0.09	0.88
Whole cottonseed	8.00	8.00	10.00	10.00	10.00	10.00					12.00	12.00	12.00	12.00					92.00	7.50	0.75	36.00	1.00	1.00
Brewers grain dehy																			90.20	4.30	0.65	29.20	0.70	0.58
Brewers grain wet																			24.80	1.06	0.65	25.00	0.32	2.60
Citrus dehyd																			91.10	6.60	0.65	6.70	0.13	0.77
Bagasse																			91.00	5.50	0.20	1.50	0.29	0.50
Forage / straw																								
Alfalfa / lucerne hay																			89.00	8.60	0.62	18.00	0.33	2.43
Barley straw																			91.20	7.50	0.15	4.40	0.07	2.36
Wheat hay																			88.70	7.90	0.62	8.70	0.20	0.99
Wheat straw																			91.30	7.70	0.30	3.50	0.05	1.40
Oat straw																			92.20	7.80	0.30	4.40	0.06	2.53
Grass hay																			93.00	6.00	0.60	8.30	0.44	0.18
Straw ammoniated																			87.00	7.50	0.15	6.00	0.70	1.00
Straw soda																			86.00	7.50	0.15	3.20	0.10	0.90
Sorhum hay																			89.00	5.90	0.61	9.40	0.22	0.28
Alfalfa / lucerne silage																			44.00	9.50	0.67	19.00	0.32	2.85
Barley silage																			37.10	8.30	0.62	9.00	0.29	2.57
Corn silage	30.00	30.00	25.50	25.50	25.50	25.50					17.00	17.00	17.00	17.00					34.60	3.59	0.68	8.00	0.22	1.14
Pasture silage																			39.00	5.00	0.62	14.00	0.32	0.06
Wheat silage																			34.20	7.50	0.64	12.50	0.29	2.24
Sorghum silage																			30.00	5.90	0.63	9.50	0.22	0.28
Liquids																								
Recylcled oil																			99.50		0.99			
Molasses																			75.00	9.50	0.70	4.40	0.08	3.20
Sunflower oil																			99.50		0.99		0.31	0.40
Tallow																			99.50		0.99			
Other ingredients																								
Ag-Lime	1.10	1.10	1.20	1.20	1.20	1.20					1.50	1.50	1.50	1.50					90.00	100.00	0.70			
Bentonite																			90.00	100.00	0.00			0.11
Dicalphos																			96.00	94.00	0.80		18.00	0.07
KCL																			90.00	100.00	0.80			52.00
Kynaphos																			96.00	96.00	0.70		21.00	
Palphos																			99.00	96.00	0.80		17.30	
Pot Chl (Potash)																			90.00	100.00	0.90			52.00
Rock phosphate																			98.00	95.00	0.80		16.00	
Salt																			98.00	100.00	0.99			
Sodium bicarb.																			100.00		0.90			
Sulphate of amm.																			100.00	100.00	0.90	134.00		0.11
Sulphur (Ag)																			99.00	100.00	0.90			
Urea																			99.00		0.99	281.00		
Beef Premix																			95.00	90.00	0.80	7.50	0.36	0.42
Supp Fin 2.5% Dry																			91.70	61.00	0.80	7.00	0.21	0.30
Supp Start 4% Dry																			90.00	95.00	0.80			
Supp Fin 4% Dry																			92.10	32.60	0.80	80.60	0.82	0.48
Supp start 5% Wet																			70.00	70.00	0.80			
Supp Fin 6% Wet	2.40	2.40	2.80	2.80	2.80	2.80					4.00	4.00	4.00	4.00					70.00	70.00	0.80			
Additional ingredients																								
Oat Hay	21.00	21.00	6.00	6.00	6.00	6.00					0.00	0.00	0.00	0.00					91.00	7.00	0.61	9.40	0.22	1.82
																			0.00	0.00	0.00	0.00	0.00	0.00
Total (%)	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**100.00**	**0.00**	**0.00**	**0.00**	**0.00**	**100.00**	**100.00**	**100.00**	**100.00**	**0.00**	**0.00**	**0.00**	**0.00**						

5 - Water and salt

Feedlot locality		**Wellington Vale**
Mean feed dry matter intake (DMI)	kg DM/head/day	8.97
Drinking water electrical conductivity (EC)	dS/m (= mS/cm)	**0.500**
Drinking water total dissolved salts (TDS)	mg/L	320

Month	Mean max temp[4] (°C)	Mean min temp[4] (°C)	Mean water intake[3] (L/head/d)
Jan	26.8	14.2	35.9
Feb	26.3	14.2	35.6
Mar	24.5	12.2	34.2
Apr	21.4	8.0	32.5
May	17.5	4.3	31.6
Jun	14.5	1.5	31.2
Jul	14.1	0.4	31.1
Aug	15.4	1.3	31.2
Sep	18.5	4.0	31.6
Oct	21.5	7.7	32.5
Nov	23.9	10.3	33.5
Dec	26.0	12.7	34.9

Mean daily water intake:	L/head/d	33.0
Annual water intake [2]	ML/yr	11.412
Annual water intake [2]	ML/1000 SCU/yr	14.15
Annual drinking water salt intake [2]	t/yr	3.652
Mean daily drinking water salt intake	kg/head/d	0.011
	kg/d	10.00

[2] Based on cattle numbers which have been reduced according to the occupancy % value entered by the user on the '1 - Production' worksheet.

[3] Watts, P., Tucker R., and Casey, K. (1994). Water System Design. Section 4.6 in Designing Better Feedlots, Ed. P. Watts and R. Tucker; State of Queensland, Department of Primary Industries, Conference and workshop series QC94002.

[4] Mean monthly minimum and maximum temperatures may be obtained from the Bureau of Meteorology website:

http://www.bom.gov.au/climate/data/

7 - Manure production and decomposition

			Total manure	TS	FS (Ash)	VS	N	P	K	Salt
Fresh manure [2]										
Moisture content	% wb	**85%**								
Excreted manure	kg/d		12,518	1,878	716	1,162	199	30	80	8
	t/yr		4,569	685	261	424	73	11	29	3
Concentrations	% db			100%	38%	62%	10.59%	1.61%	4.27%	0.43%
Production per SCU	t/SCU/yr	350	5.665	0.850	0.324	0.526	0.090	0.014	0.036	0.004
		2.25								
Harvested manure [2]										
Moisture content	% wb	**40%**								
Pen losses	%	7			**10%**	**40%**	**75%**	**50%**	**60%**	**30%**
Harvested manure	kg/d	7	2,235	1,341	644	697	50	15	32	6
	t/yr	0	816	490	235	255	18	6	12	2
Concentrations	% db	86		100%	48%	52%	3.71%	1.12%	2.39%	0.43%
Production per SCU	t/SCU/yr		1.012	0.607	0.291	0.316	0.023	0.007	0.015	0.003
Stockpiled manure [2]										
Moisture content	% wb	**20%**								
Stockpile losses	%	499			0%	**5%**	**30%**	**0%**	**0%**	**0%**
Manure for land application	kg/d		1,633	1,306	644	662	35	15	32	6
	t/yr		596	477	235	242	13	6	12	2
Concentrations	% db			100%	49%	51%	2.66%	1.15%	2.46%	0.44%
Production per SCU	t/SCU/yr		0.739	0.591	0.291	0.300	0.016	0.007	0.015	0.003

[2] Based on cattle numbers which have been reduced according to the occupancy % value entered by the user on the '1 - Production' worksheet.

100%
0.25%

Appendix F– Water resources

Maximum Harvestable Right Dam Capacity

Information you provided

1. The approximate mid-point location of the landholding is:

- Latitude: **-29.477653**
- Longitude: **151.746238**

2. Total landholding area is **510.3 Hectares**

Result

The maximum harvestable right dam capacity for your landholding is **40.82** ML (megalitres).

Date

08/11/2024

Important information

Location of dams

The maximum harvestable right dam capacity calculator does not verify that the location of the proposed dam is lawful. It is up to the landholder to ensure the proposed dam site complies with the location requirements set out in the harvestable rights order.

Information on determining stream order and where dams can be built can be found in the Harvestable rights dams - where can they be built? fact sheet and in the department's website frequently asked questions.

Harvestable rights dams cannot be constructed on or within three kilometres upstream of a Ramsar wetland site, listed at the time of construction or first use of the dam. There are currently 12 Ramsar wetlands in NSW.

Overall dam capacity on a landholding

The calculator determines the combined maximum dam capacity for all potential harvestable rights dams on a landholding.

The calculator does not take into account the capacity of existing dams on your landholding. If you have existing harvestable rights dams on your landholding, you must take the capacity of these dams into account when constructing new dams or enlarging existing dams, up to the calculated maximum dam capacity for your landholding. See the department's frequently asked questions for further information.

Maximum dam capacity in the coastal-draining catchments

Please note that the harvestable rights limit for coastal-draining catchments was returned to 10% of rainfall runoff in September 2023 (from the previous 30% limit that commenced in May 2022).

The calculator has been updated to reflect this.

For more information on this change, visit the Department's website.

Default 1 megalitre dams on small landholdings

If a landholding resulted from a subdivision approved by a relevant planning authority (for example, local council) before 1 January 1999 and the maximum dam capacity for the landholding is less than 1 megalitre, the maximum dam capacity for that landholding is taken to be 1 megalitre.

No further harvestable right dams can be constructed on the landholding and any new dams above 1 megalitre must be licensed.

Appendix G – Waterfront etool results

Rod Davis

From: Google Forms <forms-receipts-noreply@google.com>
Sent: Sunday, 24 November 2024 2:54 PM
To: rod.davis@rdcengineers.com.au
Subject: Waterfront land e-tool

Thanks for filling in Waterfront land e-tool

Here's what was received.

Edit response

Waterfront land e-tool

Version 1 - 2020

Email *

rod.davis@rdcengineers.com.au

Is this the right e-tool for me?

This waterfront land e-tool has been developed to help controlled activity applicants and consultants determine if a controlled activity approval is required under the provisions of the Water Management Act 2000. The tool can be used to help identify:

- if there is waterfront land
- the location of top of bank of the waterfront land and
- if an exemption applies for works within certain mapped areas under clause 36 of Schedule 4 of the Regulation

The e-tool is recommended for use by people who are familiar with environmental assessment and suitably qualified consultants. Members of the general public who are planning works near waterfront land should seek professional advice.

The e-tool must be completed separately for each individual mapped or visible watercourse on, or near, your property. If you have multiple properties or multiple watercourses on or near your property, submit your response for the first assessment and then re-start the tool from the beginning to assess another watercourse or property. This will ensure each property and watercourse receives its own separate emailed result outcome that you can keep as a record.

Using the tool

Some of the questions in this e-tool can be answered using materials online. Depending on your circumstances, you may also need to the visit the site of the proposed work in person to gather supporting evidence.

There is a PDF version of the tool available that you can download and take into the field at:
https://water.nsw.gov.au/__data/assets/pdf_file/0009/367272/waterfront-land-tool.pdf

The e-tool must be completed separately for each individual mapped or visible watercourse on the property. Each watercourse assessed with the e-tool will then receive a separate emailed result outcome.

Stopping and returning

You can choose to exit the tool at certain questions where field work is recommended. You will be asked if you wish to exit, and, if you agree, be emailed a link that you can use to return to the tool later to complete the rest of the questions.

If you close the tool anywhere else - without completing it and clicking the 'Submit' button - your data will not be retained. Please ensure you only close the tool when prompted if you wish to retain your answers.

Supporting evidence

When you complete the tool, you will receive email confirmation containing your answers, which you must keep as a record of your decision-making. You must also keep all reference material and information used–including maps, photos and observations to answer the tool questions. You will be prompted throughout the tool about what information to keep.

NSW Department of Climate Change, Energy, the Environment and Water may request copies of the Waterfront land tool answers and supporting documents from landholders where works are carried out without a controlled activity approval under the Water Management Act 2000.

The Waterfront land e-tool will store your email address so you can be emailed a record of your answers on completion. It will also record your answers but it will not identify your location or any other personal details. If you do not wish to supply your email address, please use the hard copy version of the tool at:
https://water.nsw.gov.au/__data/assets/pdf_file/0009/367272/waterfront-land-tool.pdf

More information

- about this e-tool, contact NSW Department of Climate Change, Energy, the Environment and Water via email: waterlicensing.servicedesk@dpie.nsw.gov.au
- about controlled activity approvals, visit https://water.dpie.nsw.gov.au/licensing-and-trade/controlled-activity-approvals

Disclaimer

- This tool is intended for guidance purposes only and cannot be used as evidence of compliance with the Water Management Act 2000.
- Users of this tool will be responsible for making their own assessment of the material and should verify all relevant representations, statements and information with their own professional advisers.
- This tool only applies controlled activities on waterfront land—it does not apply to water access licences or water supply work and/or water use approvals.
- This is not an approval to undertake work on waterfront land and you will still need to obtain relevant approvals as required under the Water Management Act 2000 (WM Act).
- The use of this tool does not remove the obligation to obtain approval under any other relevant

legislation.

- Users should also refer to the disclaimer on the department's website at: https://www.industry.nsw.gov.au/disclaimer

Description or Reference

Please enter a description or reference number below for the property or watercourse you are going to assess. This will allow you to easily identify this assessment from any other assessments you undertake using the tool. *

Westholme Feedlot

Question 1 - Department of Planning and Environment—Water waterfront land maps

After answering the question, click next at the bottom of the screen.

Is your property located on a watercourse, lake or estuary within the area marked in orange in any of the Department of Planning and Environment—Water waterfront land maps below? *

- Yes, Botany Bay
- Yes, Brisbane Water
- Yes, Hunter River
- Yes, Lake Macquarie
- Yes, Lake Mulwala
- Yes, Port Hacking
- Yes, Port Jackson
- Yes, Port Stephens
- Yes, Tuggerah Lakes
- Yes, Wallis Lakes
- No, none of the above

Using the maps below

Using your browser zoom in to any of the maps below to help you identify the location of your property.

Alternatively you can access the maps at the below link:
https://www.dpie.nsw.gov.au/water/licensing-and-trade/controlled-activity-approvals/controlled-activity-exemptions

What supporting evidence do I need?

- Saved or printed screenshot of aerial photo of your property
- Saved or printed copy of any maps to identify property boundary
- Saved or printed screenshot of the location of your property on the waterfront land map

Botany Bay

Brisbane Water

Hunter River

Lake Macquarie

Lake Mulwala

Port Hacking

Port Jackson

Port Stephens

Tuggerah Lakes

Wallis Lakes

Question 2a - Hydro Line spatial data map

Open the link provided below for the Hydro Line spatial data map and enter your property address.

Is there a blue line on your property or within 40m of the proposed work? *

Yes

No

What supporting evidence do I need?

- Saved or printed screenshot of aerial photo of your property
- Saved or printed copy of any maps to identify property boundary
- Saved or printed screenshot of the location of your property on the Hydro Line spatial data map

The Hydroline spatial data is used to determine the Strahler stream order of a watercourse.
https://trade.maps.arcgis.com/apps/webappviewer/index.html?id=07b967fd0bdc4b0099fc5be45b6d1392

Collecting evidence in the field

For this part of the tool, you may need to go to your site to collect evidence and answers.

What to take into the field

The following equipment will be required to complete field work:

- Digital camera
- Note taking equipment - notebook or computer
- Measuring tape or equipment able to measure 50m
- Saved or printed screenshot of aerial photo of your property and the watercourse

If you can't do the field work right now, you can save your answers

To save your answers so far in the e-tool, select 'Yes, save my answers' below and click 'Submit' on the next page.

You will then be emailed a copy of the answers and a link you can use to return to the e-tool when in the field or after your field work is completed.

The link is at the top of the email 'Edit response'.

This is the only point in the tool where you can stop and return to your answers

If you close the tool anywhere else - other than the final 'Submit' page - the data you have entered so far will not be retained.

Can't take this tool into the field?

A PDF version is available at:
https://water.nsw.gov.au/__data/assets/pdf_file/0009/367272/waterfront-land-tool.pdf

Would you like to save your answers? *

Yes, save my answers so I can return here later

No, keep going, I'm ready to answer the field-based questions

Question 2b - Department of Planning and Environment—Water Map —Western land map local government area

Is your property within the shaded area of the Department of Planning and Environment—Water Map —Western land map local government area provided below? *

Yes

No

Using the map below

Using your browser to zoom in to the map and LGA list below to help you identify the location of your property

What supporting evidence do I need?

- Saved or printed screenshot of aerial photo of your property
- Saved or printed copy of any maps to identify property boundary
- Using the Department of Planning and Environment—Water Map—Western land map local government area, record the local government area your property is located within

Department of Planning and Environment—Water Map —Western land map local government area

Department of Planning and Environment—Water Map —Western land map local government area

Question 2c - Visible watercourse

Is there a watercourse visible on your property? *

Yes

No

What supporting evidence do I need?

- Current site photos looking up and downstream. Photos should be taken within one month of completing this tool and include a date stamp or metadata.
- Saved or printed screenshot of aerial photo of your property and the watercourse
- Written observations of the watercourse including bed, bank and erosion features and flow conditions

Question 2d - Lake or wetland

Is there a lake or wetland on your property or within 40m of the proposed work? You can see some examples of lakes and wetlands below to help you decide. *

Yes - a lake

Yes - a wetland

No

Using the photos below

Use your browser to zoom in to the photos below

What supporting evidence do I need?

- Saved or printed screenshot of aerial photo of your property and any lake or wetland
- Saved or printed copy of any maps to identify property boundary
- Current site photos of any lake or wetland. Photos should be taken within one month of completing this tool and include a date stamp or metadata and a short location description.
- Where a lake or wetland is present, saved or printed screenshot of the lake/wetland type from the Department of Planning and Environment—Water Lakes and wetlands examples document
- Written observations of any lake/wetland present

Lakes

Wetlands

Question 7 - Change in vegetation

Using the photos below, is there a change in vegetation on the property that indicates a wetland? *

Yes (the vegetation indicates a wetland)

No

Using the photos below

Use your browser to zoom in to the photos below.

What supporting evidence do I need?

- Current site photos of the possible wetland area or at the location in the area of proposed works. Photos should be taken within one month of completing this tool and include a date stamp or metadata and a short location description.
- Saved or printed screenshot of aerial photo of your property and the possible wetland area
- Written observations of the possible wetland area

Department of Planning and Environment—Water Guide—Wetlands change in vegetation

Department of Planning and Environment—Water Guide—Wetlands change in vegetation

Question 8 - Determining the high bank

Using the photos and diagrams below, locate the high bank of the watercourse type identified in Question 4b.

Are the proposed works within 40m of the high bank? *

Yes

No

After answering the question, click next at the bottom of the screen.

Using photos and diagrams below

Use your browser to zoom in to the photos and diagrams below.

What supporting evidence do I need?

- Record of the measurement from high bank to the nearest location of the proposed works
- Annotated aerial photo of the property showing:
  - location of the proposed works
  - location of the watercourse, lake or wetland, and
  - measured distance to the high bank.
- Current site photos looking up and downstream. Photos should be taken within one month of completing this tool and include a date stamp or metadata and a short location description.
- Saved or printed screenshot of the watercourse type from the Department of Planning and Environment—Water Guide— Determining the high bank of a watercourse
- Written observations of the watercourse including bed, bank and erosion features and flow conditions
- Saved or printed screenshot of aerial photo of your property and the watercourse

Type 1 - Confined Valley Headwater

Type 2 - Confined Valley Floodplain Pockets

Type 3a - Laterally Unconfined Continuous - Bank Confined

Type 3b - Laterally Unconfined Continuous - Low Sinuosity

Type 3c - Laterally Unconfined Continuous - Meandering

Type 4 - Laterally Unconfined Discontinuous

Type 5 - Partly Confined Valley

Lakes

Wetlands

Result 13 - Controlled activity approval not required - the proposed works are more than 40m from the high bank of a watercourse

Based on your answers, the result is:

CONTROLLED ACTIVITY APPROVAL NOT REQUIRED - THE PROPOSED WORKS ARE MORE THAN 40M FROM THE HIGH BANK OF A WATERCOURSE

Statements

When completing the e-tool you provided the following answers:

- One or more of the following features are on this property or a neighbouring property:
  - watercourse
  - lake
  - wetland
  - mapped Strahler 3rd order or greater hydro line as defined by the Hydro Line spatial data map
- The proposed works are not located within 40m of the high bank of the watercourse

Are ALL of the above statements correct? *

Yes

No (restart tool)

Record keeping and Disclaimer

Please ensure you keep the electronic and/or printed copies of all supporting evidence required for questions answered in this tool and the confirmation email you receive after clicking submit.

NOTE:

- The results given by this tool are generated using the answers you have provided. If any answers are incorrect or incomplete, the result produced may be incorrect.
- This tool is intended for guidance purposes only and cannot be used as evidence of compliance with the Water Management Act 2000.
- Users of this tool will be responsible for making their own assessment of the material and should verify all relevant representations, statements and information with their own professional advisers.
- This is not an approval to undertake work on waterfront land and you will still need to obtain relevant approvals as required under the Water Management Act 2000 (WM Act).
- The use of this tool does not remove the obligation to obtain approval under any other relevant legislation.
- Users should also refer to the disclaimer on the department's website at industry.nsw.gov.au/disclaimer.

If ANY of your assessments identify that a controlled activity approval is required for your proposed works, you must complete the following tasks:

- Confirm if an exemption applies to your site or proposed works by using the Department's Controlled activity exemption e-tool at: https://forms.office.com/pages/responsepage.aspx?id=IYjvljkqHEe4mmewgz3TuaJ8VvZiyYZKiR3x1NniFCZUQ0lWTUZRUVpWMFhHTlBEM05aNFVOVlFSOC4u or refer to exemption information here: https://www.dpie.nsw.gov.au/water/licensing-and-trade/controlled-activity-approvals/controlled-activity-exemptions
- For matters requiring a development application (DA) from Council, you should lodge your DA as Integrated Development.
- For matters NOT requiring a DA, please refer to the Department of Planning and Environment—Water website for instructions on how to apply for a Controlled Activity Approval: https://www.dpie.nsw.gov.au/water/licensing-and-trade/controlled-activity-approvals/how-to-apply

You MUST click Submit to be emailed a copy of your answers and your result.

Reminder: The e-tool must be completed separately for each individual mapped or visible watercourse on, or near, your property. If you have multiple properties or multiple watercourses on or near your property, submit your response for the first assessment and then re-start the tool from the beginning to assess another watercourse or property. This will ensure each property and watercourse receives its own separate emailed result outcome that you can keep as a record.

Feedback

Please let us know whether you found this tool helpful and what we could do to make it better. Your comments will help us to improve the tool further.

Thankyou for your feedback.

How helpful was this tool?

Very helpful

Additional feedback about this tool

If you have a question or require further information regarding your specific circumstances, please email waterlicensing.servicedesk@dpie.nsw.gov.au

If you wish to undertake another assessment, please click 'Submit' below and then select 'Submit another response'.

Appendix H – AHIMS Search results

AHIMS Web Services (AWS)
Search Result

Your Ref/PO Number : G4-116 Westholme FL

Client Service ID : 943062

RDC Engineers Pty Ltd
PO Box 1223
Toowoomba Queensland 4350
Attention: Rod Davis

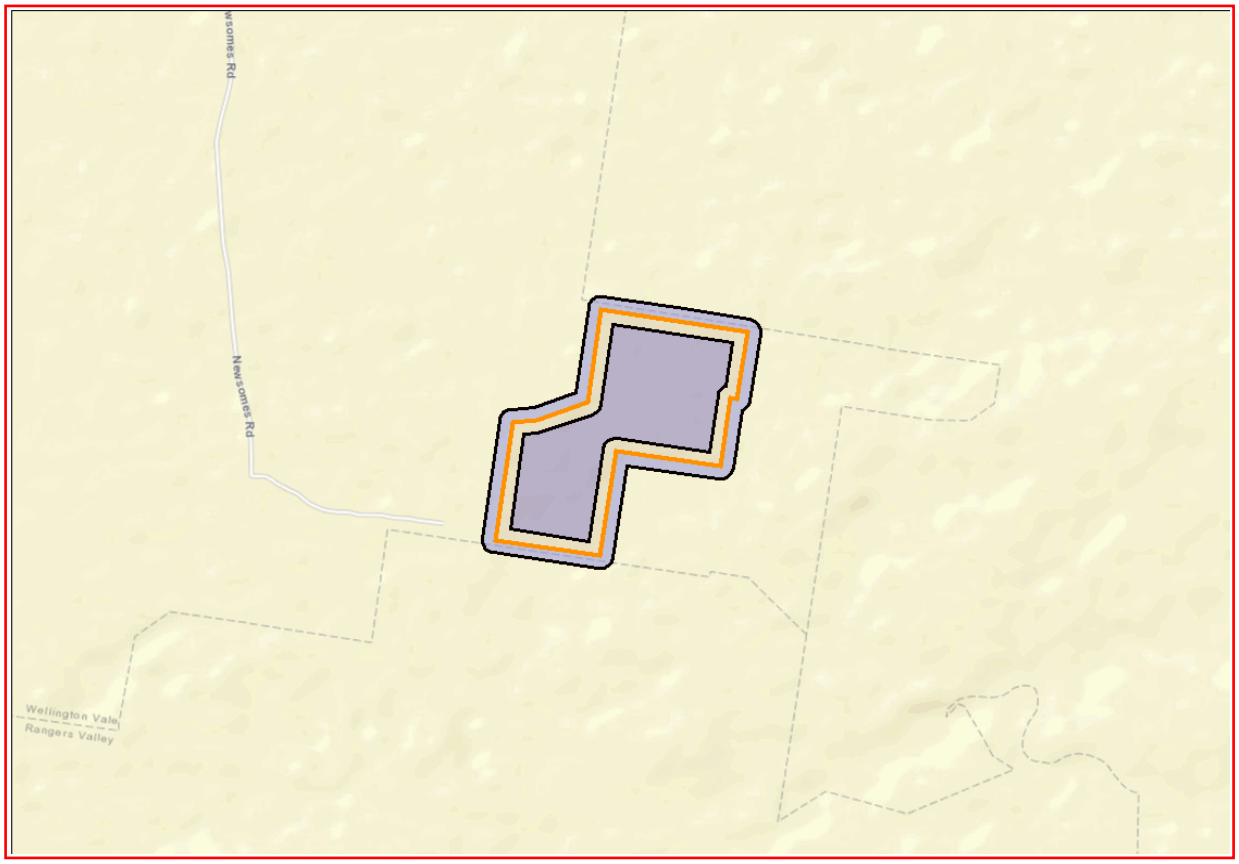
Email: rod.davis@rdcengineers.com.au

Date: 24 October 2024

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lot : 1, DP:DP612287, Section : - with a Buffer of 50 meters, conducted by Rod Davis on 24 October 2024.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of Heritage NSW AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

0	**Aboriginal sites are recorded in or near the above location.**
0	**Aboriginal places have been declared in or near the above location. ***

If your search shows Aboriginal sites or places what should you do?

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the NSW Government Gazette (https://www.legislation.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Heritage NSW upon request

Important information about your AHIMS search

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Heritage NSW and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date. Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.

Level 6, 10 Valentine Ave, Parramatta 2150
Locked Bag 5020 Parramatta NSW 2124
Tel: (02) 9585 6345

ABN 34 945 244 274
Email: ahims@environment.nsw.gov.au
Web: www.heritage.nsw.gov.au

AHIMS Web Services (AWS)
Search Result

Your Ref/PO Number : G4-116 Westholme FL

Client Service ID : 943064

RDC Engineers Pty Ltd
PO Box 1223
Toowoomba Queensland 4350
Attention: Rod Davis

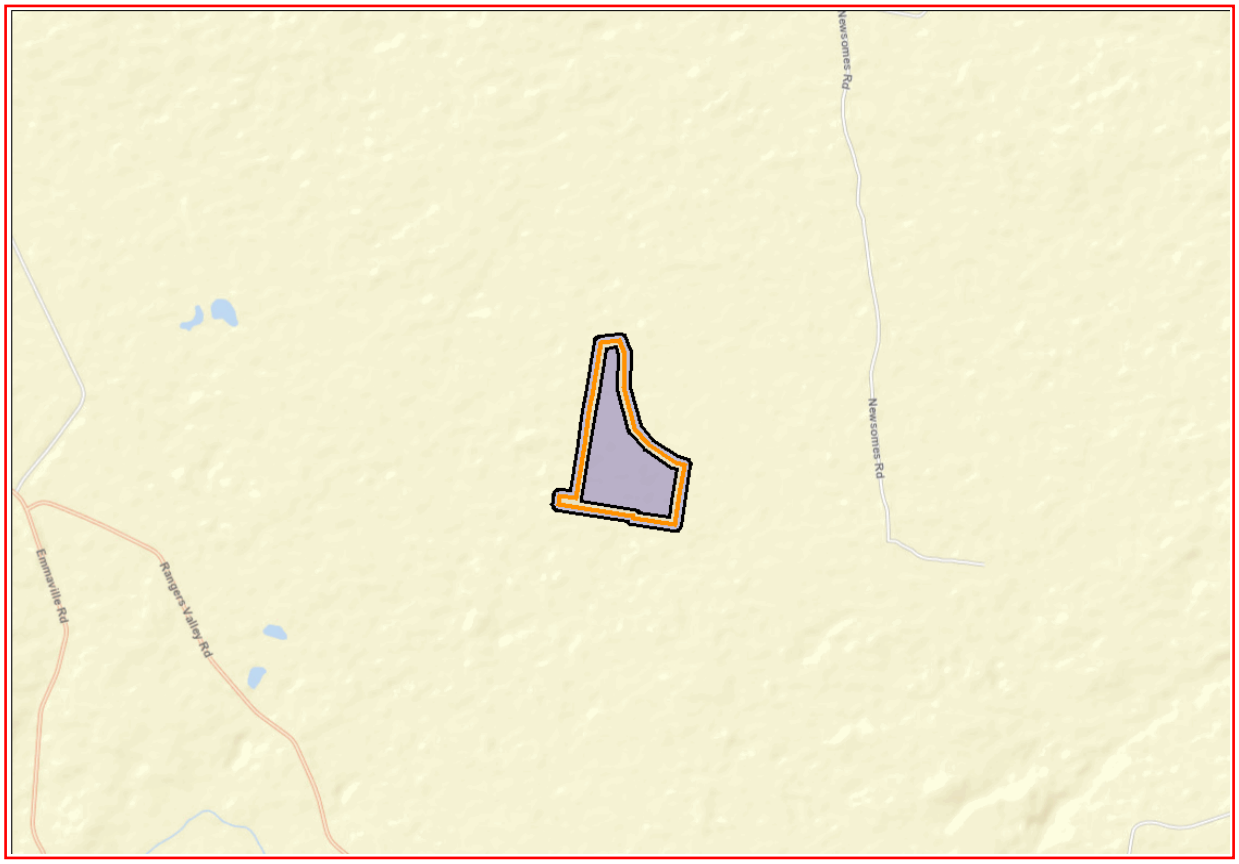
Email: rod.davis@rdcengineers.com.au

Date: 24 October 2024

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lot : 133, DP:DP753323, Section : - with a Buffer of 50 meters, conducted by Rod Davis on 24 October 2024.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



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0	**Aboriginal sites are recorded in or near the above location.**
0	**Aboriginal places have been declared in or near the above location. ***

If your search shows Aboriginal sites or places what should you do?

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- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the NSW Government Gazette (https://www.legislation.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Heritage NSW upon request

Important information about your AHIMS search

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Heritage NSW and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date. Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.

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Web: www.heritage.nsw.gov.au

AHIMS Web Services (AWS)
Search Result

Your Ref/PO Number : G4-116 Westholme FL

Client Service ID : 943066

RDC Engineers Pty Ltd
PO Box 1223
Toowoomba Queensland 4350
Attention: Rod Davis

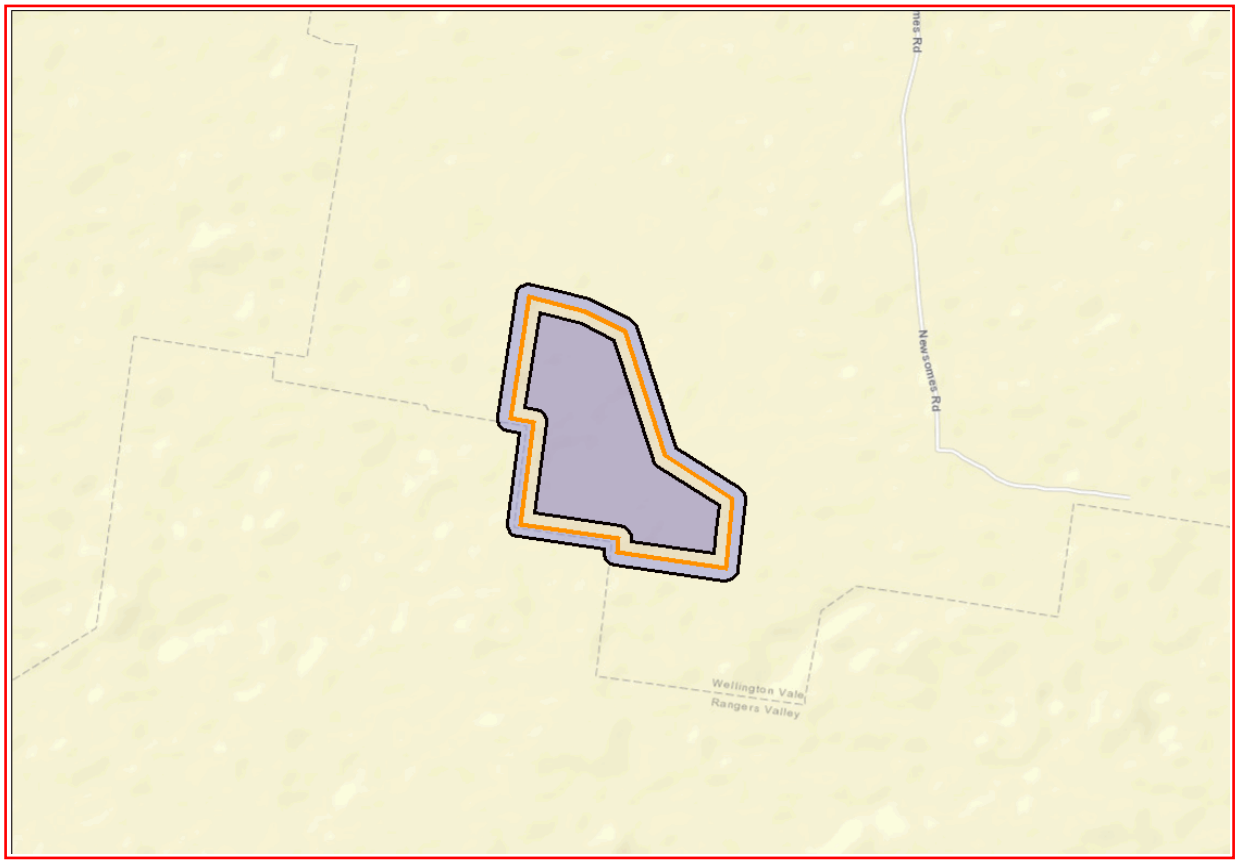
Email: rod.davis@rdcengineers.com.au

Date: 24 October 2024

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lot : 134, DP:DP753323, Section : - with a Buffer of 50 meters, conducted by Rod Davis on 24 October 2024.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of Heritage NSW AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

0	**Aboriginal sites are recorded in or near the above location.**
0	**Aboriginal places have been declared in or near the above location. ***

If your search shows Aboriginal sites or places what should you do?

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the NSW Government Gazette (https://www.legislation.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Heritage NSW upon request

Important information about your AHIMS search

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Heritage NSW and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date. Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
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Web: www.heritage.nsw.gov.au

AHIMS Web Services (AWS)
Search Result

Your Ref/PO Number : G4-116 Westholme FL

Client Service ID : 943067

RDC Engineers Pty Ltd
PO Box 1223
Toowoomba Queensland 4350
Attention: Rod Davis

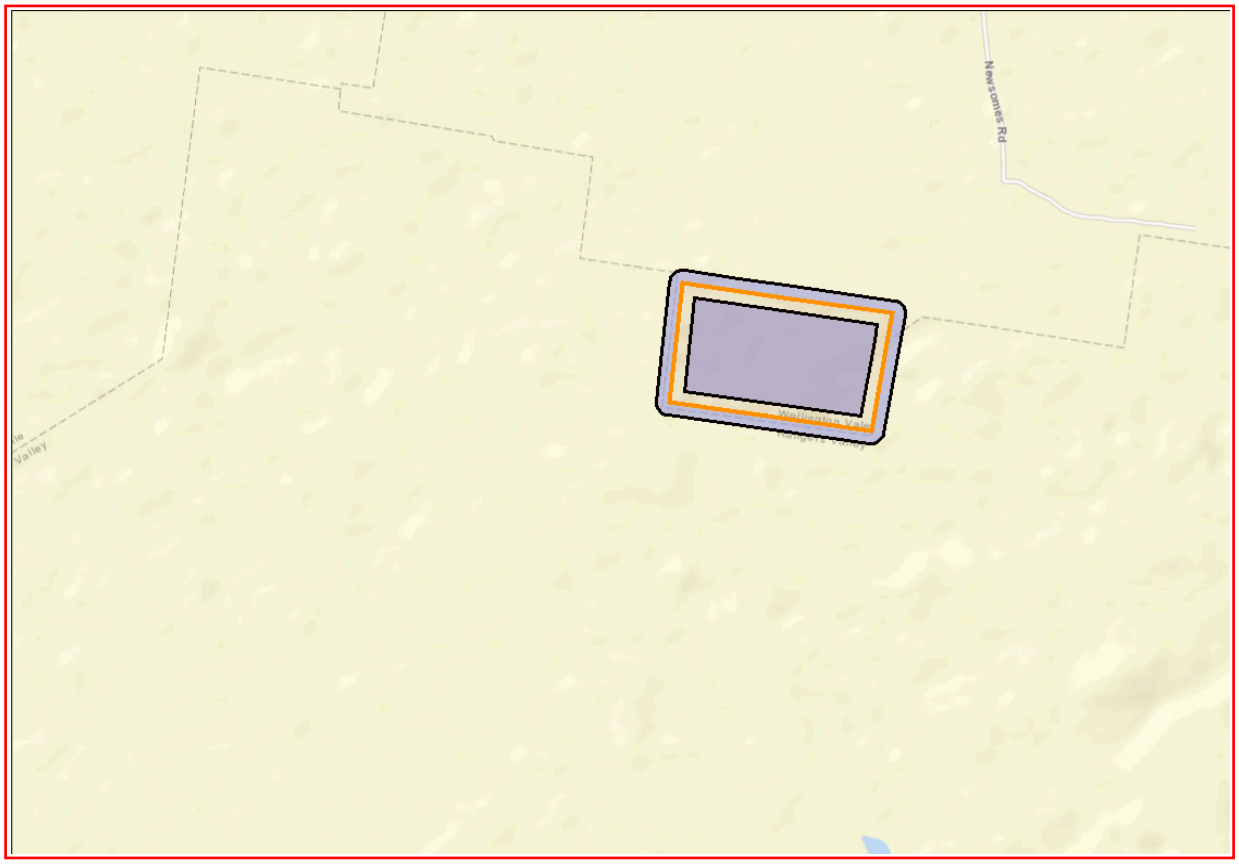
Email: rod.davis@rdcengineers.com.au

Date: 24 October 2024

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lot : 135, DP:DP753303, Section : - with a Buffer of 50 meters, conducted by Rod Davis on 24 October 2024.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of Heritage NSW AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

0	**Aboriginal sites are recorded in or near the above location.**
0	**Aboriginal places have been declared in or near the above location. ***

If your search shows Aboriginal sites or places what should you do?

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the NSW Government Gazette (https://www.legislation.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Heritage NSW upon request

Important information about your AHIMS search

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Heritage NSW and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date. Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.

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Web: www.heritage.nsw.gov.au

AHIMS Web Services (AWS)
Search Result

Your Ref/PO Number : G4-116 Westholme FL

Client Service ID : 943068

RDC Engineers Pty Ltd
PO Box 1223
Toowoomba Queensland 4350
Attention: Rod Davis

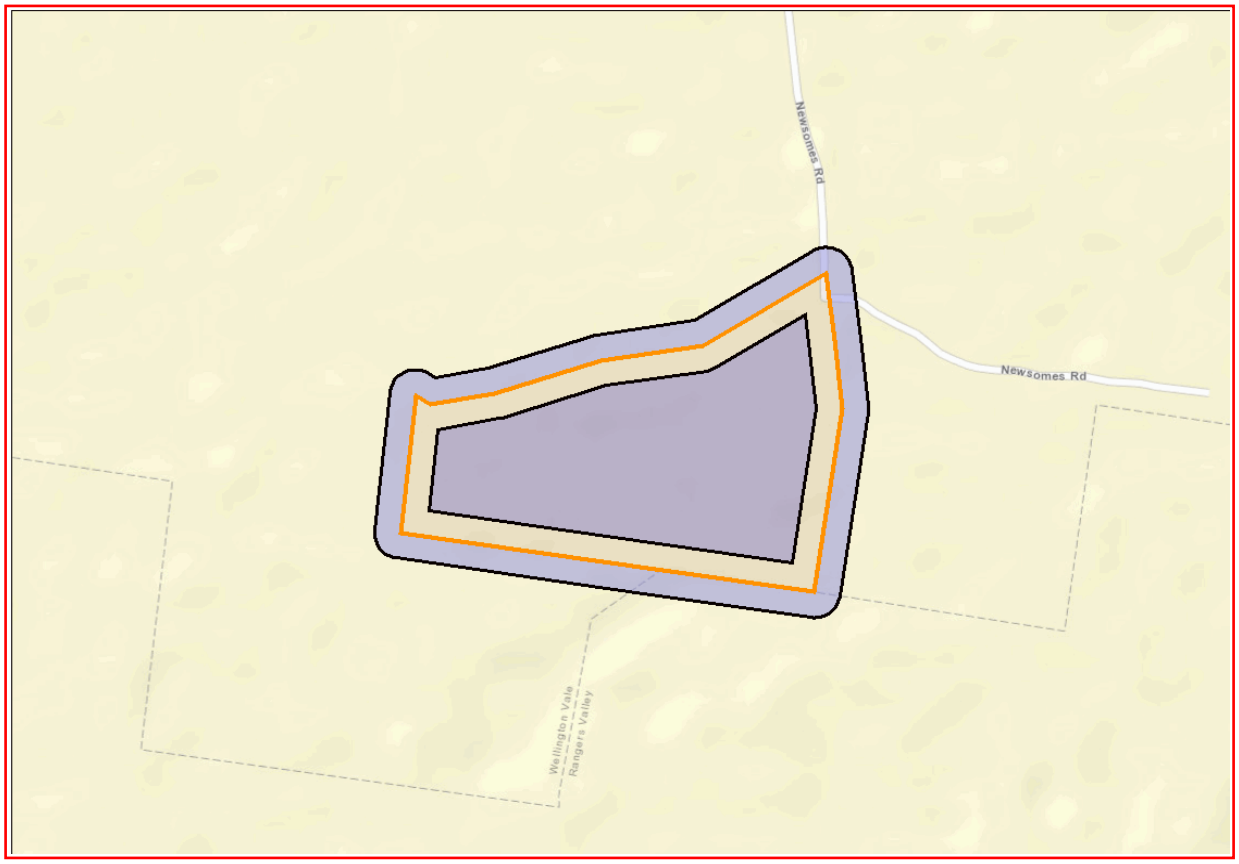
Email: rod.davis@rdcengineers.com.au

Date: 24 October 2024

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lot : 136, DP:DP753323, Section : - with a Buffer of 50 meters, conducted by Rod Davis on 24 October 2024.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of Heritage NSW AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

0	**Aboriginal sites are recorded in or near the above location.**
0	**Aboriginal places have been declared in or near the above location. ***

If your search shows Aboriginal sites or places what should you do?

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the NSW Government Gazette (https://www.legislation.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Heritage NSW upon request

Important information about your AHIMS search

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Heritage NSW and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date. Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
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Web: www.heritage.nsw.gov.au

AHIMS Web Services (AWS)
Search Result

Your Ref/PO Number : G4-116 Westholme FL

Client Service ID : 943069

RDC Engineers Pty Ltd
PO Box 1223
Toowoomba Queensland 4350
Attention: Rod Davis

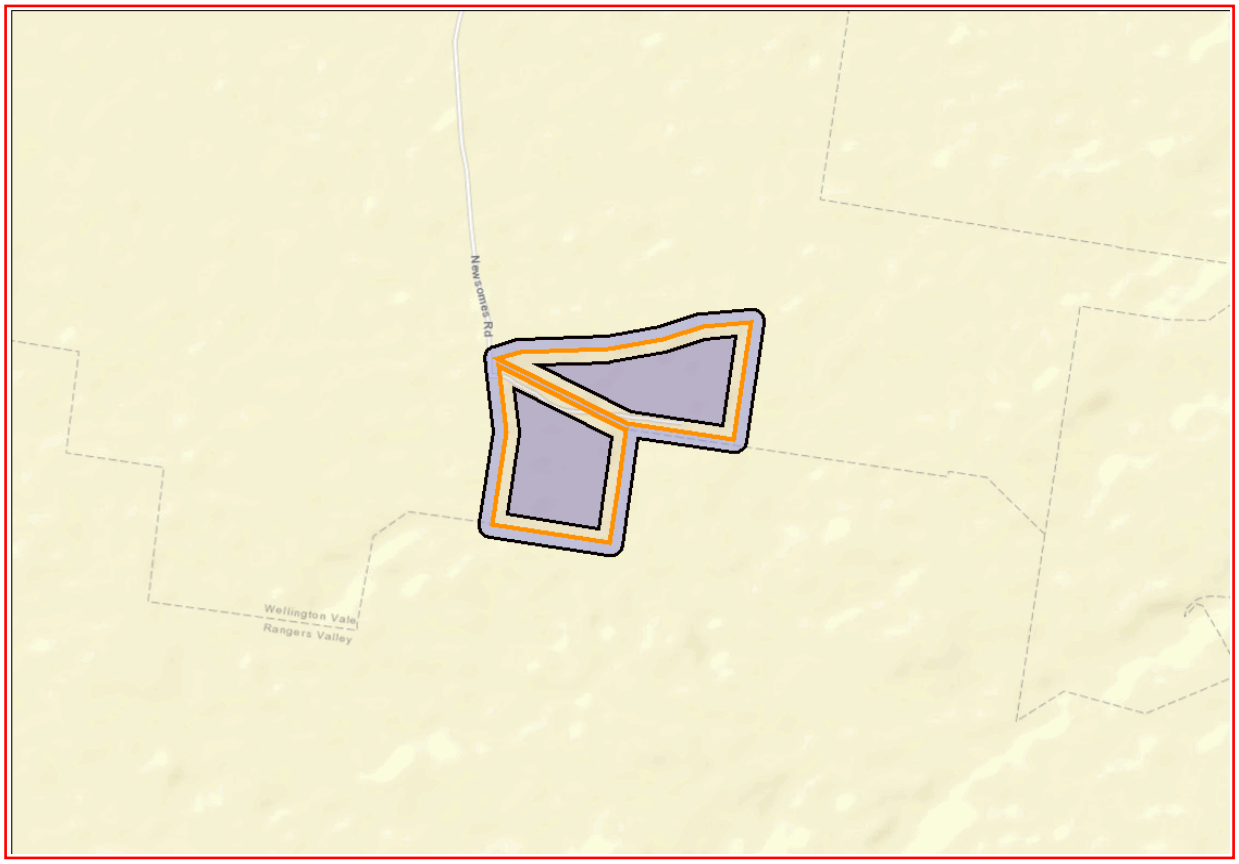
Email: rod.davis@rdcengineers.com.au

Date: 24 October 2024

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lot : 137, DP:DP753323, Section : - with a Buffer of 50 meters, conducted by Rod Davis on 24 October 2024.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



A search of Heritage NSW AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

0	**Aboriginal sites are recorded in or near the above location.**
0	**Aboriginal places have been declared in or near the above location. ***

If your search shows Aboriginal sites or places what should you do?

- You must do an extensive search if AHIMS has shown that there are Aboriginal sites or places recorded in the search area.
- If you are checking AHIMS as a part of your due diligence, refer to the next steps of the Due Diligence Code of practice.
- You can get further information about Aboriginal places by looking at the gazettal notice that declared it. Aboriginal places gazetted after 2001 are available on the NSW Government Gazette (https://www.legislation.nsw.gov.au/gazette) website. Gazettal notices published prior to 2001 can be obtained from Heritage NSW upon request

Important information about your AHIMS search

- The information derived from the AHIMS search is only to be used for the purpose for which it was requested. It is not be made available to the public.
- AHIMS records information about Aboriginal sites that have been provided to Heritage NSW and Aboriginal places that have been declared by the Minister;
- Information recorded on AHIMS may vary in its accuracy and may not be up to date. Location details are recorded as grid references and it is important to note that there may be errors or omissions in these recordings,
- Some parts of New South Wales have not been investigated in detail and there may be fewer records of Aboriginal sites in those areas. These areas may contain Aboriginal sites which are not recorded on AHIMS.
- Aboriginal objects are protected under the National Parks and Wildlife Act 1974 even if they are not recorded as a site on AHIMS.
- This search can form part of your due diligence and remains valid for 12 months.

Level 6, 10 Valentine Ave, Parramatta 2150
Locked Bag 5020 Parramatta NSW 2124
Tel: (02) 9585 6345

ABN 34 945 244 274
Email: ahims@environment.nsw.gov.au
Web: www.heritage.nsw.gov.au

AHIMS Web Services (AWS)
Search Result

Your Ref/PO Number : G4-116 Westholme FL

Client Service ID : 943071

RDC Engineers Pty Ltd
PO Box 1223
Toowoomba Queensland 4350
Attention: Rod Davis

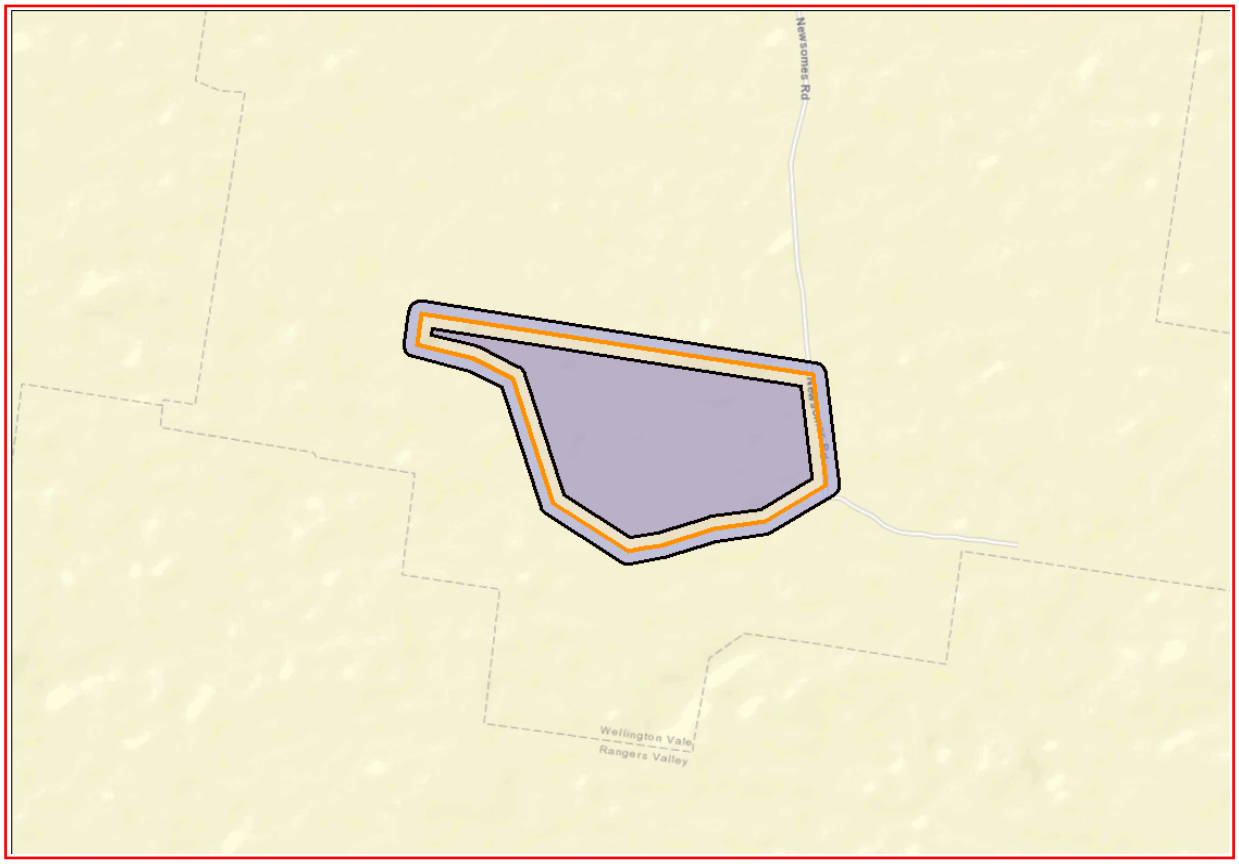
Email: rod.davis@rdcengineers.com.au

Date: 24 October 2024

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lot : 200, DP:DP753323, Section : - with a Buffer of 50 meters, conducted by Rod Davis on 24 October 2024.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



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AHIMS Web Services (AWS)
Search Result

Your Ref/PO Number : G4-116 Westholme FL

Client Service ID : 943073

RDC Engineers Pty Ltd
PO Box 1223
Toowoomba Queensland 4350
Attention: Rod Davis

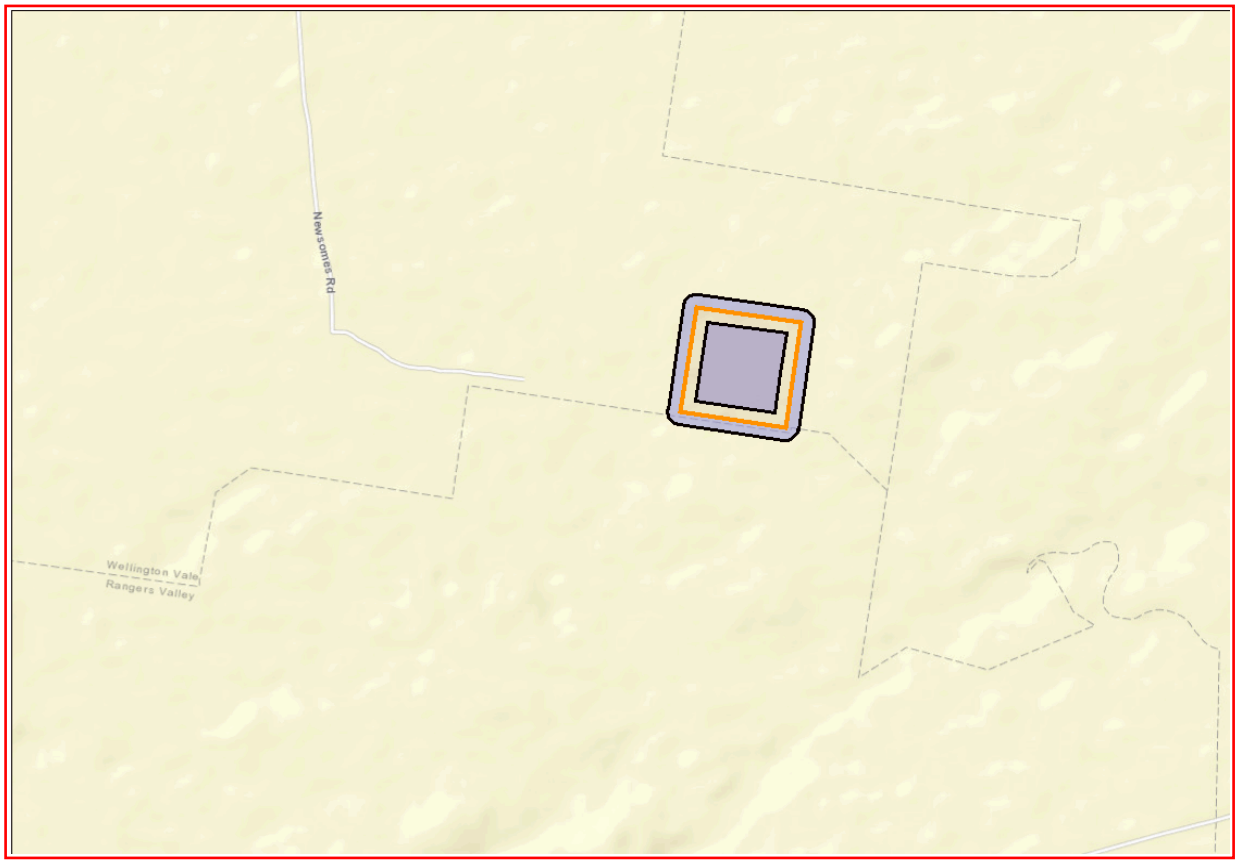
Email: rod.davis@rdcengineers.com.au

Date: 24 October 2024

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lot : 225, DP:DP753323, Section : - with a Buffer of 50 meters, conducted by Rod Davis on 24 October 2024.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



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Email: ahims@environment.nsw.gov.au
Web: www.heritage.nsw.gov.au

AHIMS Web Services (AWS)
Search Result

Your Ref/PO Number : G4-116 Westholme FL

Client Service ID : 943074

RDC Engineers Pty Ltd
PO Box 1223
Toowoomba Queensland 4350
Attention: Rod Davis

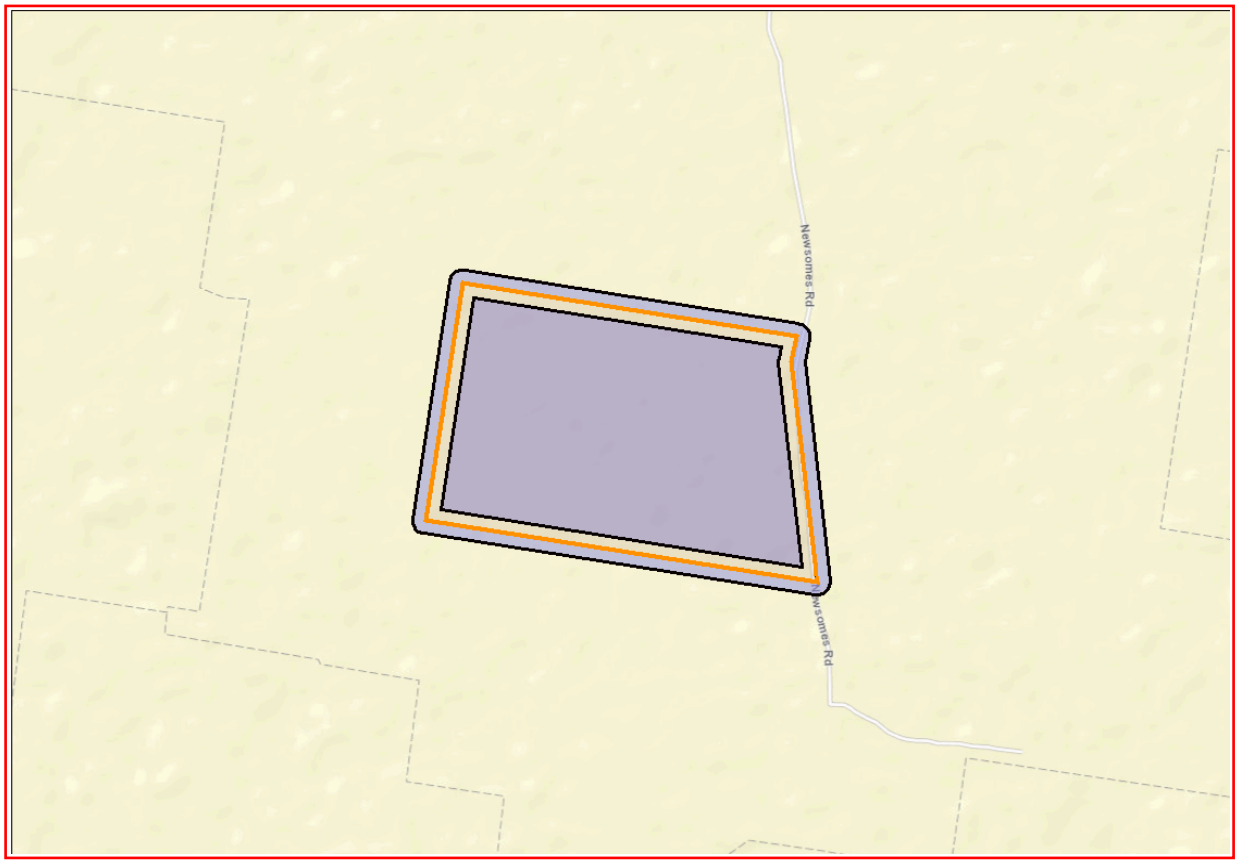
Email: rod.davis@rdcengineers.com.au

Date: 24 October 2024

Dear Sir or Madam:

AHIMS Web Service search for the following area at Lot : 236, DP:DP753323, Section : - with a Buffer of 50 meters, conducted by Rod Davis on 24 October 2024.

The context area of your search is shown in the map below. Please note that the map does not accurately display the exact boundaries of the search as defined in the paragraph above. The map is to be used for general reference purposes only.



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Appendix I – Biodiversity

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 24-Oct-2024

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	3
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	3
Listed Threatened Species:	51
Listed Migratory Species:	8

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	19
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	None
Regional Forest Agreements:	1
Nationally Important Wetlands:	None
EPBC Act Referrals:	3
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar Wetlands) [Resource Information]

Ramsar Site Name	Proximity	Buffer Status
Banrock station wetland complex	1100 - 1200km upstream from Ramsar site	In feature area
Riverland	1100 - 1200km upstream from Ramsar site	In feature area
The coorong, and lakes alexandrina and albert wetland	1300 - 1400km upstream from Ramsar site	In feature area

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text	Buffer Status
Natural grasslands on basalt and fine-textured alluvial plains of northern New South Wales and southern Queensland	Critically Endangered	Community may occur within area	In buffer area only
New England Peppermint (Eucalyptus nova-anglica) Grassy Woodlands	Critically Endangered	Community likely to occur within area	In feature area
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community likely to occur within area	In feature area

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Anthochaera phrygia			
Regent Honeyeater [82338]	Critically Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Aphelocephala leucopsis](#) Southern Whiteface [529]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Botaurus poiciloptilus](#) Australasian Bittern [1001]	Endangered	Species or species habitat may occur within area	In feature area
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
[Calyptorhynchus lathami lathami](#) South-eastern Glossy Black-Cockatoo [67036]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Climacteris picumnus victoriae](#) Brown Treecreeper (south-eastern) [67062]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Erythrotriorchis radiatus](#) Red Goshawk [942]	Endangered	Species or species habitat may occur within area	In feature area
[Falco hypoleucos](#) Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Gallinago hardwickii](#) Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Geophaps scripta scripta](#) Squatter Pigeon (southern) [64440]	Vulnerable	Species or species habitat may occur within area	In feature area
[Grantiella picta](#) Painted Honeyeater [470]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Melanodryas cucullata cucullata South-eastern Hooded Robin, Hooded Robin (south-eastern) [67093]	Endangered	Species or species habitat likely to occur within area	In feature area
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat may occur within area	In feature area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area	In feature area
Stagonopleura guttata Diamond Firetail [59398]	Vulnerable	Species or species habitat known to occur within area	In feature area
FISH			
Bidyanus bidyanus Silver Perch, Bidyan [76155]	Endangered	Species or species habitat may occur within area	In buffer area only
Maccullochella peelii Murray Cod [66633]	Vulnerable	Species or species habitat known to occur within area	In feature area
MAMMAL			
Chalinolobus dwyeri Large-eared Pied Bat, Large Pied Bat [183]	Endangered	Species or species habitat may occur within area	In feature area
Dasyurus maculatus maculatus (SE mainland population) Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat likely to occur within area	In feature area
Nyctophilus corbeni Corben's Long-eared Bat, South-eastern Long-eared Bat [83395]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Petaurus australis australis](#)			
Yellow-bellied Glider (south-eastern) [87600]	Vulnerable	Species or species habitat may occur within area	In feature area
[Petrogale penicillata](#)			
Brush-tailed Rock-wallaby [225]	Vulnerable	Species or species habitat may occur within area	In feature area
[Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)](#)			
Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Endangered	Species or species habitat known to occur within area	In feature area
[Pseudomys novaehollandiae](#)			
New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat may occur within area	In feature area
[Pteropus poliocephalus](#)			
Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour may occur within area	In feature area
PLANT			
[Acacia pubifolia](#)			
Velvet Wattle [19799]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Acacia pycnostachya](#)			
Bolivia Wattle [13415]	Vulnerable	Species or species habitat may occur within area	In buffer area only
[Acacia ruppii](#)			
Rupp's Wattle [7559]	Endangered	Species or species habitat may occur within area	In feature area
[Arthraxon hispidus](#)			
Hairy-joint Grass [9338]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Boronia granitica](#)			
Granite Boronia [18598]	Endangered	Species or species habitat may occur within area	In buffer area only
[Cadellia pentastylis](#)			
Ooline [9828]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Callistemon pungens [55581]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Dichanthium setosum bluegrass [14159]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Eucalyptus mckieana McKie's Stringybark [20199]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Eucalyptus nicholii Narrow-leaved Peppermint, Narrow-leaved Black Peppermint [20992]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Haloragis exalata subsp. velutina Tall Velvet Sea-berry [16839]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Homoranthus lunatus [55189]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Lepidium peregrinum Wandering Pepper-cress [14035]	Endangered	Species or species habitat may occur within area	In buffer area only
Picris evae Hawkweed [10839]	Vulnerable	Species or species habitat may occur within area	In feature area
Pimelea venosa [16385]	Endangered	Species or species habitat may occur within area	In feature area
Rutidosis heterogama Heath Wrinklewort [13132]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Vincetoxicum woollsii listed as Tylophora woollsii [40080]	Endangered	Species or species habitat may occur within area	In buffer area only
REPTILE			
Anomalopus mackayi Five-clawed Worm-skink, Long-legged Worm-skink [25934]	Vulnerable	Species or species habitat may occur within area	In feature area
Delma torquata Adorned Delma, Collared Delma [1656]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Myuchelys belli Western Sawshelled Turtle [86075]	Endangered	Species or species habitat known to occur within area	In feature area
Saltuarius wyberba Granite Leaf-tailed Gecko [64743]	Endangered	Species or species habitat may occur within area	In feature area
Uvidicolus sphyrurus Border Thick-tailed Gecko, Granite Belt Thick-tailed Gecko [84578]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Listed Migratory Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Migratory Terrestrial Species			
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area	In feature area
Migratory Wetlands Species			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Calidris acuminata](#)			
Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
[Calidris ferruginea](#)			
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
[Calidris melanotos](#)			
Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
[Gallinago hardwickii](#)			
Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Other Matters Protected by the EPBC Act

Listed Marine Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
[Actitis hypoleucos](#)			
Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
[Apus pacificus](#)			
Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
[Bubulcus ibis as Ardea ibis](#)			
Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
[Calidris acuminata](#)			
Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
[Calidris ferruginea](#)			
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Calidris melanotos](#) Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
[Chalcites osculans as Chrysococcyx osculans](#) Black-eared Cuckoo [83425]		Species or species habitat likely to occur within area overfly marine area	In feature area
[Gallinago hardwickii](#) Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat likely to occur within area overfly marine area	In feature area
[Haliaeetus leucogaster](#) White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area	In feature area
[Hirundapus caudacutus](#) White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
[Lathamus discolor](#) Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
[Merops ornatus](#) Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
[Monarcha melanopsis](#) Black-faced Monarch [609]		Species or species habitat may occur within area overfly marine area	In feature area
[Motacilla flava](#) Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Myiagra cyanoleuca			
Satin Flycatcher [612]		Species or species habitat known to occur within area overfly marine area	In feature area
Neophema chrysostoma			
Blue-winged Parrot [726]	Vulnerable	Species or species habitat may occur within area overfly marine area	In feature area
Pterodroma cervicalis			
White-necked Petrel [59642]		Species or species habitat may occur within area	In feature area
Rhipidura rufifrons			
Rufous Fantail [592]		Species or species habitat likely to occur within area overfly marine area	In feature area
Rostratula australis as Rostratula benghalensis (sensu lato)			
Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area

Extra Information

Regional Forest Agreements [Resource Information]

Note that all areas with completed RFAs have been included. Please see the associated resource information for specific caveats and use limitations associated with RFA boundary information.

RFA Name	State	Buffer Status
North East NSW RFA	New South Wales	In feature area

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Expansion of Rangers Valley beef cattle feedlot	2001/452	Not Controlled Action	Completed	In feature area
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
Not controlled action (particular manner)				
Aerial baiting for wild dog control	2006/2713	Not Controlled Action	Post-Approval	In feature area

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action (particular manner)				
		(Particular Manner)		

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data is available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance on the contents of this report.

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions when time permits.

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded breeding sites; and
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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Appendix J – Soil test results - Agronomic

SUMMARY REPORT

Bruce Newsome		**Service Provider:**	Wilshire & Co - Mingoola
Narrie Holdings		**Advisor/Contact:**	Simon Piccini
Deepwater		**Phone:**	0427 375312
2371		**Purchase Order:**	4-20495

Sample No		021930793	021930792	021930795	021930794
Paddock Name		Roundwood Contours	Roundwood Road	Silver Yards	OBX
Sample Name			Rep of All	Rep of All	Rep of All
Sample Depth (cm)		0 - 10	0 - 10	0 - 10	0 - 10
Sampling Date		16/10/2020	16/10/2020	16/10/2020	16/10/2020
Test Code		E32	E32	E32	E32
Sample Type		Soil	Soil	Soil	Soil
Analyte	**Unit**	**Result**	**Result**	**Result**	**Result**
Soil Colour		Brown	Brown	Brown	Grey
Soil Texture		Sandy Loam	Sandy Loam	Clay Loam	Clay Loam
pH (1:5 Water)		5.6	5.9	6.5	6.0
pH (1:5 CaCl2)		4.5	4.9	5.8	5.2
Electrical Conductivity (1:5 water)	dS/m	0.05	0.08	0.24	0.11
Electrical Conductivity (Sat. Ext.)	dS/m	0.5	0.8	1.9	0.9
Chloride	mg/kg	<10	<10	100	<10
Organic Carbon (W&B)	%	2.0	1.9	2.8	1.7
Organic Matter (W&B * 1.72)	%	3.5	3.3	4.8	3.0
Nitrate Nitrogen	mg/kg	1.9	5.7	22.0	27.0
Ammonium Nitrogen	mg/kg	5.3	7.5	5.7	6.6
Phosphorus (Colwell)	mg/kg	120	180	250	190
Phosphorus (BSES)	mg/kg	170	260	450	260
Phosphorus Buffer Index		46	42	78	58
Sulphur (MCP)	mg/kg	7	10	18	8
Cation Exch. Cap. (CEC)	cmol(+)/kg	4.8	6.9	11.2	7.6
Calcium (Amm-acet.)	cmol(+)/kg	3.1	4.6	7.2	4.9
Magnesium (Amm-acet.)	cmol(+)/kg	1.0	1.3	2.1	1.5
Sodium (Amm-acet.)	cmol(+)/kg	<0.02	0.09	0.19	0.02

SUMMARY REPORT

Bruce Newsome		**Service Provider:**	Wilshire & Co - Mingoola
Narrie Holdings		**Advisor/Contact:**	Simon Piccini
Deepwater		**Phone:**	0427 375312
2371		**Purchase Order:**	4-20495

Potassium (Amm-acet.)	cmol(+)/kg	0.56	0.94	1.70	1.10
Available Potassium	mg/kg	220	370	680	450
Aluminium (KCl)	cmol(+)/kg	0.1	<0.1	<0.1	<0.1
Aluminium % of Cations	%	2.5	<1.0	<1.0	<1.0
Calcium % of Cations	%	65.0	67.0	64.0	65.0
Magnesium % of Cations	%	21.0	18.0	18.0	20.0
Sodium % of Cations (ESP)	%	<1.00	1.30	1.70	0.31
Potassium % of Cations	%	12.00	14.00	15.00	15.00
Calcium/Magnesium Ratio		3.1	3.5	3.4	3.3
Silicon (BSES)	mg/kg	120.0	180.0	190.0	150.0

The results in this report pertain only to the sample submitted. Analyses performed on soil dried at 40°C and ground to 2mm or less, excluding moisture tests, or as otherwise indicated. Analyses performed on plant dried at 70°C and ground to 1mm or less, excluding moisture tests, or as otherwise indicated. Water analyses performed on an 'as received' basis. Analytical results reported by the laboratory as 'less than' the level of reporting, will be deemed by NA Pro as being equivalent to the level of reporting for both calculation and interpretive purposes. This document shall not be reproduced except in full.

Appendix K – Preliminary Risk Screening

Development Application and Statement of Environmental Effects

Proposed 999 head beef cattle feedlot

SEPP (Resilience and Hazards) 2021 Preliminary Risk Screening Assessment

"Westholme"
Newsomes Road
DEEPWATER NSW 2371

Narrie Holdings Pty Ltd as the trustee for Newsome Family Trust
"Sherwood"
166 Newsomes Road
DEEPWATER NSW 2371

[December 2024]

RDC ENGINEERS
AGRICULTURAL
ENVIRONMENTAL
PROJECT MANAGEMENT

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DOCUMENT INFORMATION RECORD

Project details

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Project:	Proposed 999 head beef cattle feedlot on "Westholme"
Project No:	G4-116

Document control

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File name:	G4-116 BRN Westholme FL PRS V1R2.docx		
Revision:	V1R2		
Author:	Rod Davis	**Position:**	Director
Signature:	R.J. Davis	**Date:**	06/12/2024
Reviewed by:	Rod Davis	**Position:**	Director
Signature:	R.J. Davis	**Date:**	06/12/2024
Approved by:	Rod Davis	**Position:**	Director
Signature:	R.J. Davis	**Date:**	06/12/2024

Revision history

Version	Issue date	Reason for issue	Author	Reviewed by	Approved by
V1R1	24/11/2024	Draft for client review	Rod Davis	Rod Davis	Rod Davis
V1R2	06/12/2024	Final for lodgement to GISC	Rod Davis	Rod Davis	Rod Davis

Distribution

Version	Recipient	Lodgement	Copies
V1R1	Narrie Holdings Pty Ltd as trustee for Newsome Family Trust	Electronic	-
V1R2	Narrie Holdings Pty Ltd as trustee for Newsome Family Trust / GISC	Electronic	-

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Executive Summary

The Newsome family own and operate a beef production enterprise at Wellington Vale in the central New England tablelands region of New South Wales

The supply chain model includes cattle breeding, backgrounding and farming operations. The breeding, backgrounding and farming operations are centred on an aggregation of adjoining properties "Sherwood", "Westholme", "Gum Creek", "Picks", "Roundwood", "Ewandon", "Valley View", "Woodlands", "Kenya", "Kooringa", "Giru", "Seven V" and "Strachan Vale" some 11 km by road west of the village of Deepwater and 19 km east of the village of Emmaville.

Dryland and irrigated cropping of winter cereals and forage is currently undertaken across the aggregation alongside the breeding and backgrounding of beef cattle. Some 3,000 breeder cows and progeny are run across the aggregation.

"Westholme" comprises some 368 ha (~911 acres) and currently a beef production and dryland cropping enterprise is undertaken on the property producing fodder such as oats for grazing and silage. Native vegetation remains as scattered paddock trees and open woodland on areas less suitable for beef cattle and cropping.

As part of a diversification strategy, Narrie Holdings Pty Ltd as trustee for the Newsome Family Trust wish to develop a beef cattle feedlot by gaining development approval for Intensive livestock agriculture to operate as a 999 head beef cattle feedlot on the property "Westholme".

"Westholme" is within the Glen Innes Severn Council local government area and relevant environmental planning instrument is the Glen Innes Severn Council Local Environmental Plan 2012 (GISLEP).

Under Schedule 3, Part 2 Designated development, item 27, Feedlots, of the Environmental Planning and Assessment Regulation 2021, as the capacity of the proposed development does not exceed 1000 head it is not a designated development. Consequently, the development application is required to be accompanied by Statement of Environmental Effects (SEE) and an Environmental Impact Statement (EIS) is not required.

Pursuant to State Environmental Planning Policy (Resilience and Hazards) 2021 it has been identified that consideration should be made as to whether the proposed development is considered a 'hazardous or potentially hazardous industry'.

A development is considered potentially hazardous and requires a Preliminary Hazard Analysis (PHA) if the storage or transport of dangerous goods exceeds screening thresholds specified in SEPP (Resilience and Hazards) 2021.

This report forms part of the SEE prepared to support the Development Application to the Glen Innes Severn Council for the proposed development. A preliminary risk screening method set out in *Hazardous and Offensive Development Application Guidelines, Applying SEPP 3*3 (Department of Planning, 2011) has been undertaken to assess the possible off-site effects or

consequences from hazardous materials present on site, taking into account locational characteristics.

Various hazardous materials, such as diesel fuel shall be stored on the proposed development site during operation. The preliminary risk screening assessment demonstrates that the quantity and distance from site boundaries is less than the screening threshold, and no further analysis is necessary. Hence, the proposed development is not a 'hazardous or potentially hazardous industry'.

1 Introduction

The Newsome family own and operate a beef production enterprise in the central New England tablelands region of New South Wales trading as Narrie Holdings Pty Ltd as trustee for the Newsome Family Trust.

The supply chain model includes cattle breeding, backgrounding and farming operations. The breeding, backgrounding and farming operations are centred on an aggregation of properties in the Wellington Vale region some 11 km by road west of the village of Deepwater and 19 km east of the village of Emmaville.

The aggregation at Wellington Vale includes several adjoining properties "Sherwood", "Westholme", "Gum Creek", "Picks", "Roundwood", "Ewandon", "Valley View", "Woodlands", "Kenya", "Kooringa", "Giru", "Seven V" and "Strachan Vale" comprising over 6,489 ha (~16,029 acres) and is located within the Glen Innes Severn Council area. Dryland and irrigated cropping of winter cereals and forage is currently undertaken across the aggregation alongside the breeding and backgrounding of beef cattle. Some 3,000 breeder cows and progeny are run across the aggregation.

"Westholme" comprises some 368 ha (~911 acres) and currently a beef production and dryland cropping enterprise is undertaken on the property producing fodder such as oats for grazing and silage. Native vegetation remains as scattered paddock trees and open woodland on areas less suitable for beef cattle and cropping.

The beef production enterprise has been developed based around breeding cattle for domestic markets and feeder cattle for the Rangers Valley feedlot. "Westholme" has built infrastructure such as machinery/storage sheds, silos, cattle yards , water storages etc to support the agricultural enterprises on the property. "Westholme" has no dwellings.

As part of a diversification strategy, Narrie Holdings Pty Ltd as trustee for the Newsome Family Trust wish to develop a beef cattle feedlot by gaining development approval for Intensive livestock agriculture to operate as a 999 head beef cattle feedlot on the property "Westholme".

"Westholme" is within the Glen Innes Severn Council local government area and relevant environmental planning instrument is the Glen Innes Severn Council Local Environmental Plan 2012 (GISLEP).

Under Schedule 3, Part 2 Designated development, item 27, Feedlots, of the Environmental Planning and Assessment Regulation 2021, as the capacity of the proposed development does not exceed 1000 head it is not a designated development. Consequently, the development application is required to be accompanied by Statement of Environmental Effects (SEE) and an Environmental Impact Statement (EIS) is not required.

This report forms part of the SEE prepared to support the Development Application to the Glen Innes Severn Council for the proposed development. It provides a preliminary risk screening assessment to ensure that Council has sufficient information to assess whether the development

is hazardous or offensive and to ensure that any measures proposed to be employed to reduce the impact of the development are taken into account.

2 Objectives

Narrie Holdings Pty Ltd as trustee for the Newsome Family Trust propose to develop a beef cattle feedlot with a capacity of 999 head on the property "Westholme" in Wellington Vale region on the New England Tablelands. A beef cattle feedlot is an intensive livestock production system in which beef cattle are finished on a grain-based ration in a confined land area with watering and feeding facilities.

The proposed development is categorised as Intensive livestock agriculture under the Glen Innes Severn Local Environment Plan 2012.

Under Schedule 3, Part 2 Designated development, item 27, Feedlots, of the Environmental Planning and Assessment Regulation 2021, as the capacity of the proposed development does not exceed 1000 head it is not a designated development. Consequently, the development application is required to be accompanied by Statement of Environmental Effects (SEE) and an Environmental Impact Statement (EIS) is not required.

Assessment of the impacts of the proposed development include consideration of State Environmental Planning Policies (SEPPs) which deal with matters of state or regional environmental planning significance. Various SEPPs are of relevance to the proposed development and are outlined in the EIS.

State Environmental Planning Policy (Resilience and Hazards) 2021 aims to amend the definitions of hazardous and offensive industries where used in environmental planning instruments and to ensure that the consent authority has sufficient information to assess whether the development is hazardous or offensive and to ensure that any measures proposed to be employed to reduce the impact of the development are taken into account.

It has been identified that consideration should be made as to whether the proposed development is considered a hazardous or potentially hazardous industry under State Environmental Planning Policy (Resilience and Hazards) 2021.

In accordance with the risk screening method provided by the Department of Planning (DoP) document "*Applying SEPP 33 Hazardous and Offensive Development Application Guidelines*" (Department of Planning, 2011), this report presents the details of the determination as to the classification of the proposed development under State Environmental Planning Policy (Resilience and Hazards) 2021.

Industries or projects determined to be hazardous or potentially hazardous would require the preparation of a Preliminary Hazard Analysis (PHA) in accordance with Clause 12 of SEPP 33. No further assessment under State Environmental Planning Policy (Resilience and Hazards) 2021 is required for projects not considered potentially hazardous following a State Environmental Planning Policy (Resilience and Hazards) 2021 Risk Assessment.

3 Proposed development

Narrie Holdings Pty Ltd as trustee for the Newsome Family Trust wish to develop on the subject land a beef cattle feedlot with a capacity of 999 head when fully developed.

The proposed development will allow flexibility of use with the ability to increase or decrease the number of animals within the development in line with market and economic factors.

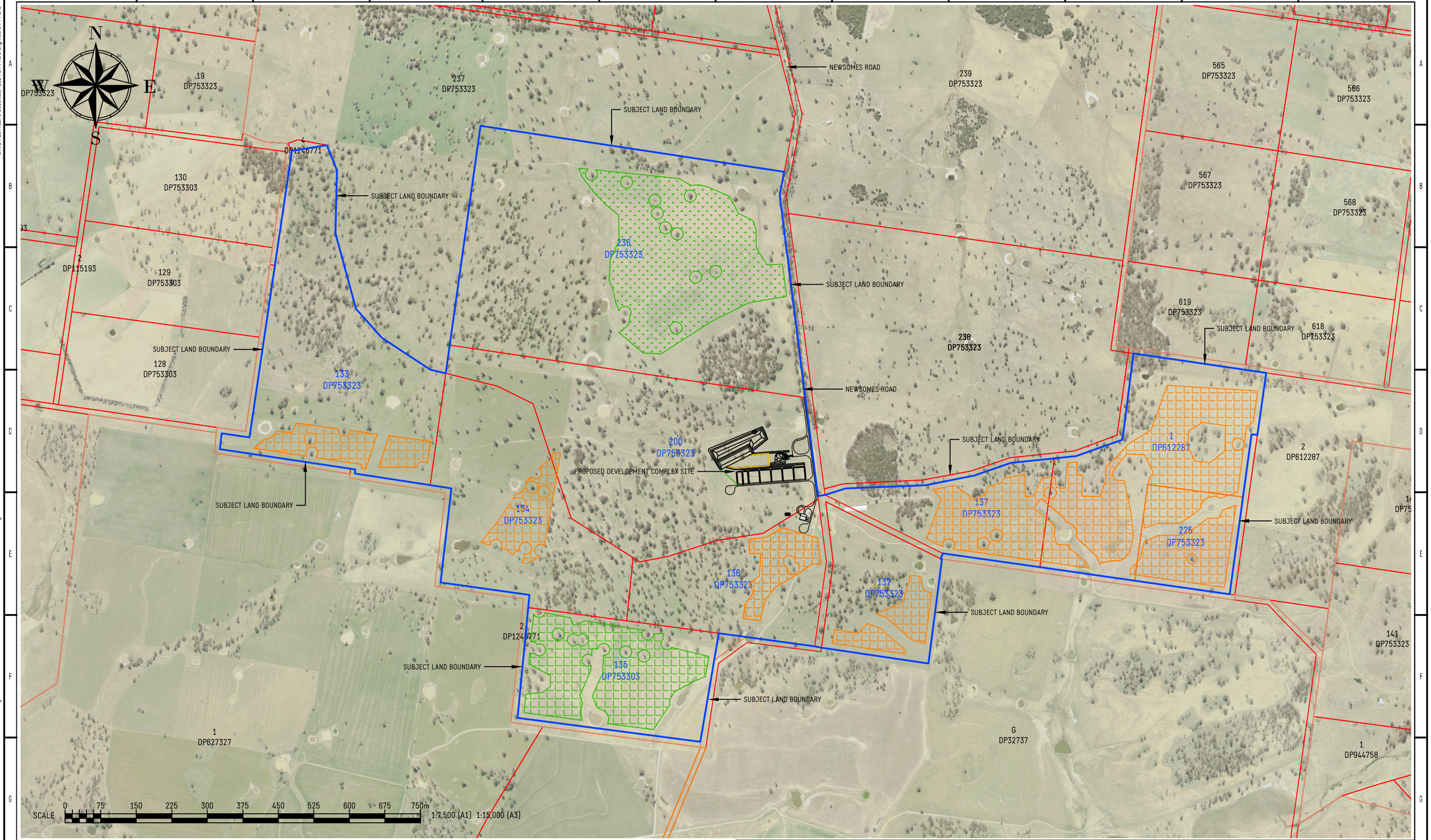
The proposed development complex would occupy a footprint of approximately 3.6 ha and includes the following components in a functional configuration:

- Water supply/storage and reticulation infrastructure – Water storage tanks and pipelines to supply clean water for livestock drinking water;
- Pens - Fenced areas for accommodating beef cattle (production pens);
- Commodity storage – Commodities such as hay and grain are stored onsite;
- Access and internal roads – All weather road access to the site is provided;
- Controlled drainage area – Rainfall runoff from areas such as production pens and livestock handling areas that has a high organic matter and therefore a high pollution potential is controlled within a system that collects and conveys this runoff to a sedimentation system and holding pond prior to environmentally sustainable utilisation;
- Drainage system - The controlled drainage area contains a system including, catch drains, sedimentation system and holding pond(s) for conveying stormwater, allow entrained sediment to 'settle out' and capture and storage of the stormwater from the controlled drainage areas until it can be sustainably utilised; and
- Solid waste and effluent management areas – Solids wastes such as manure and mortalities are temporarily stockpiled and processed within the solid waste stockpile and carcass composting area prior to removal off-site onto adjoining land for utilisation. Effluent is stored in a holding pond pending application to the effluent utilisation area.

The proposed development also includes an associated 140 ha of cropping land for effluent and solid waste utilisation. When available, effluent shall be applied to land via irrigation within a dedicated effluent utilisation area.

The layout of the proposed development is shown in Figure 1.

The proposed development shall be managed as a Class One feedlot. A Class One feedlot has highest standard of design, operation, maintenance, pad management and cleaning frequency and is defined in the National Guidelines for Beef Cattle Feedlots in Australia (MLA, 2012).



LEGEND

- SUBJECT LAND BOUNDARY
- LAND PARCEL BOUNDARY
- EFFLUENT UTILISATION AREA
- SOLID WASTE UTILISATION AREA

NOTES:

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REV.	DATE	REVISION DESCRIPTION	DRAWN	CHECK	APPROVED
A	24/11/24	DRAFT ISSUE TO CLIENT	RJD	RJD	RJD
B	06/12/24	FINAL ISSUE FOR LODGEMENT TO GLEN INNES SEVERN COUNCIL	RJD	RJD	RJD

SCALE	1:15,000 (A3)
DRAWN	RJD
DATE	06/12/2024
CHECKED	RJD
DATE	06/12/2024
APPROVED	RJD
DATE	06/12/2024

CLIENT: NARRIE HOLDINGS PTY LTD ATF NEWSOME FAMILY TRUST
PROJECT: PROPOSED 999 HEAD BEEF CATTLE FEEDLOT
TITLE: DEVELOPMENT APPLICATION FOR INTENSIVE LIVESTOCK AGRICULTURE
SEE APPENDIX K - PRELIMINARY RISK SCREENING
PROPOSED DEVELOPMENT - DEVELOPMENT LAYOUT

REPORT REFERENCE: FIGURE 1
SUPPLIED DRAWING NUMBER:
A3
DRAWING NUMBER: G4-116-250-01
REV.: B

4 Hazardous materials

Hazardous materials are defined within Department of Planning (2011) as substances falling within the classification of the Australian Code for Transportation of Dangerous Goods by Road and Rail (Dangerous Goods Code). Based on this definition and the classifications in Appendix 7 of Department of Planning (2011), the hazardous materials to be stored on the proposed development site, quantities and storage location and mode are summarised in Table 1 and Table 2 for the construction and operational phases of the proposed development respectively.

4.1 Construction

Table 1 shows that the only types of hazardous materials to be stored on site during the construction phase are diesel fuel and lubricating oils and greases.

Table 1 – Hazardous materials storage during construction phase

Hazardous material	Classification	Description	Storage quantity	Storage location	Storage mode
Diesel fuel	Class 3 C1	Combustible liquids: flashpoint above 61°C but not exceeding 150°C	5,000L (4.432t)*	Laydown	Trailer mounted tank
Lubricating oils and greases	Class 3 C2	Combustible liquids flashpoint above 150°C	60L (~0.055t)**	Laydown	Above-ground 205L drums

*Based on a specific gravity of 0.885 t/m^3 for diesel; **Based on a specific gravity of 0.910 t/m^3 for lubricating oils/greases.

4.2 Operation

Table 2 shows that the only types of hazardous materials to be stored on site during the operation phase are diesel fuel and lubricating oils and greases.

Table 2 – Hazardous materials storage during operation phase

Hazardous Material	Classification	Description	Storage quantity	Storage location	Storage mode
Diesel Fuel	Class 3 C1	Combustible liquids: flashpoint above 61°C but not exceeding 150°C	5,000L (4.43t)*	Development complex	Above-ground tank
Lubricating oils and greases	Class 3 C2	Combustible liquids flashpoint above 150°C	205L (~0.187t)**	Development complex	Above-ground portable 205L drums

*Based on a specific gravity of 0.885 t/m^3 for diesel; **Based on a specific gravity of 0.910 t/m^3 for lubricating oils/greases.

** Combustible Liquid Class C1, treated as Class 3 PG II for assessment purposes, as it is stored together with petrol (within the fuel tank of a truck).

4.3 Hazardous materials transport

Table 3 shows the average number of annual and weekly road movements of hazardous material to and from the proposed development, and the typical quantity in each load during operation. As outlined in section 4.1, there is no infrastructure to be constructed and therefore no construction phase.

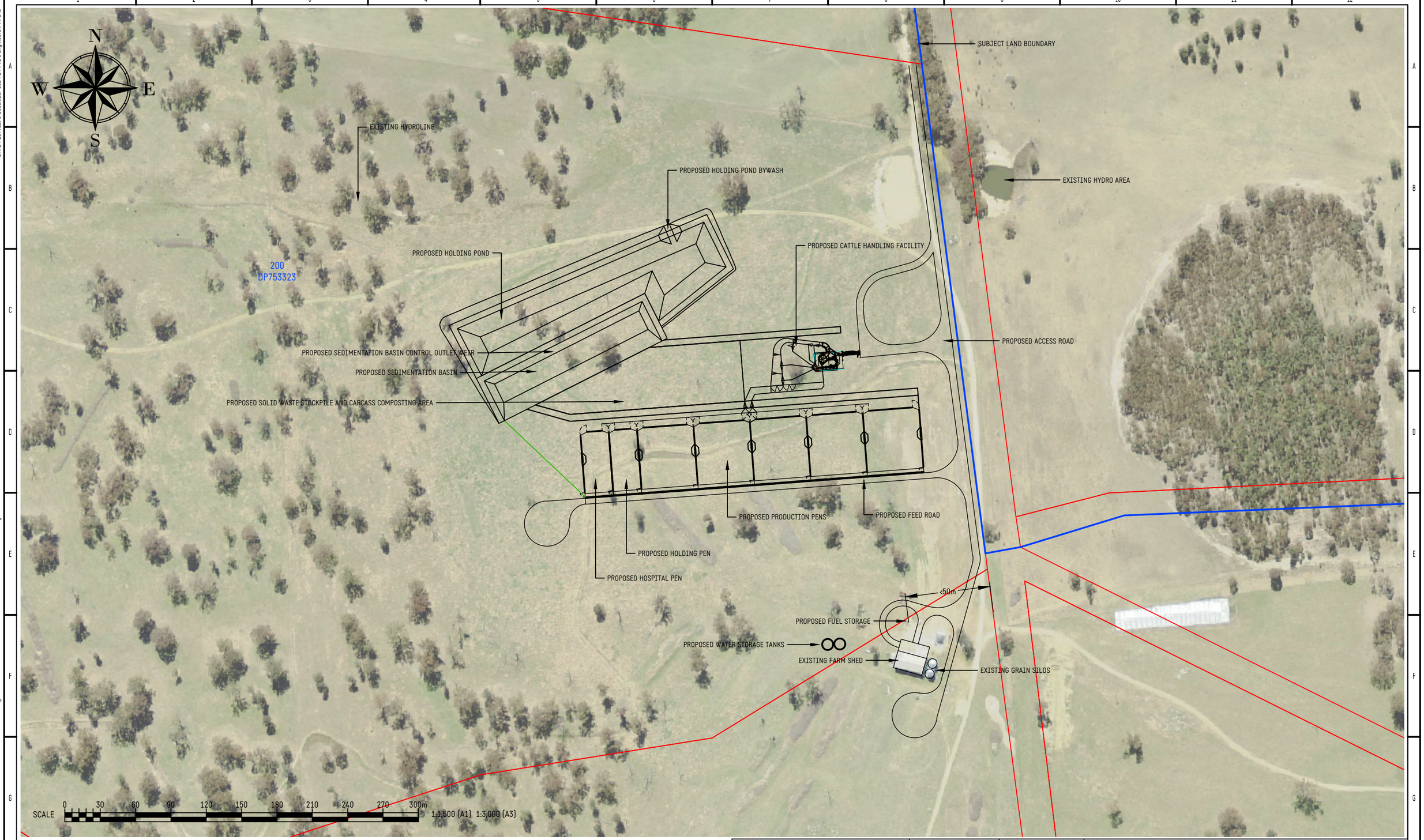
Table 3 – Hazardous materials transport during operation phase

Hazardous material	No of loads per annum	Load size	Vehicle type
Diesel fuel	26	5 kL	Medium rigid truck
Lubricating oils and greases	6	205kg	Medium rigid truck

The distance of the stored material to the closest site boundary for all the materials listed in Table 4 and Table 2 (dangerous goods classes 3) is provided in Table 4 and shown in Figure 2.

Table 4 – Separation distances to site boundary

Hazardous Material	Distance to site boundary m
Diesel fuel	>50
Lubricating oils and greases	>50



LEGEND

- SUBJECT LAND BOUNDARY
- LAND PARCEL BOUNDARY

NOTES:

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B	06/12/24	FINAL ISSUE FOR LODGEMENT TO GLEN INNES SEVERN COUNCIL	RJD	RJD	RJD

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CLIENT: NARRIE HOLDINGS PTY LTD ATF NEWSOME FAMILY TRUST
PROJECT: PROPOSED 999 HEAD BEEF CATTLE FEEDLOT
TITLE: DEVELOPMENT APPLICATION FOR INTENSIVE LIVESTOCK AGRICULTURE
SEE APPENDIX K - PRELIMINARY RISK SCREENING
PROPOSED DEVELOPMENT - SEPARATION DISTANCE TO SITE BOUNDARY

REPORT REFERENCE	SUPPLIED DRAWING NUMBER		DRAWING NUMBER	REV.
FIGURE 2		A3	G4-116-250-02	B

5 Risk screening assessment

5.1 Threshold assessment

The screening method set out in "*Applying SEPP 33 Hazardous and Offensive Development Application Guidelines"* (Department of Planning, 2011) provides the first step in the analysis. The screening method is based on broad estimates of the possible off-site effects or consequences from hazardous materials present on site, taking into account locational characteristics.

If the quantity/distance is less than the screening threshold, then no further analysis is necessary. The safety management regime in this case relies on observance of the requirements of engineering codes and standards. If the quantities/distances exceed the screening threshold, further analysis is necessary.

5.2 Storage screening

5.2.1.1 Storage volume

5.2.1.1.1 Class 3 Materials (above ground)

As the diesel fuel (combustible Liquid Class C1) may be stored with the petrol (contained in the fuel tank of the vehicle), it is treated as Class 3 PG II for assessment purposes.

The proposed development involves the storage of approximately 4.43 tonnes of diesel fuel stored above ground. From the Department of Planning (2011), there is not greater than 5 tonnes stored above ground. Consequently, the development is not potentially hazardous on the basis of that material, alone.

The proposed development does not involve the storage of petrol fuel. From the Department of Planning (2011), there is less than 5 tonnes stored above ground. Consequently, the development is not potentially hazardous on the basis of that material, alone.

The proposed development involves the storage of approximately 0.19 tonne of lubricating oils stored above ground. As the lubricating oils and greases (Class C2) are not stored adjacent to any other hazardous materials, Department of Planning (2011) does not require these to be considered further.

5.2.1.2 Setback distance to site boundary

5.2.1.2.1 Class 3 Materials (above ground)

The total storage capacity of Class 3 PGII materials is some 4.4 t during operation. The materials shall be stored in bunded vehicle mounted above-ground tanks in accordance with relevant guidelines and Australian Standards. As the materials are stored above-ground, there is no adjustment to the screening capacity.

Figure 3 shows the minimum storage distance for Class 3 PGII and Class 3 PGIII as per Department of Planning (2011)

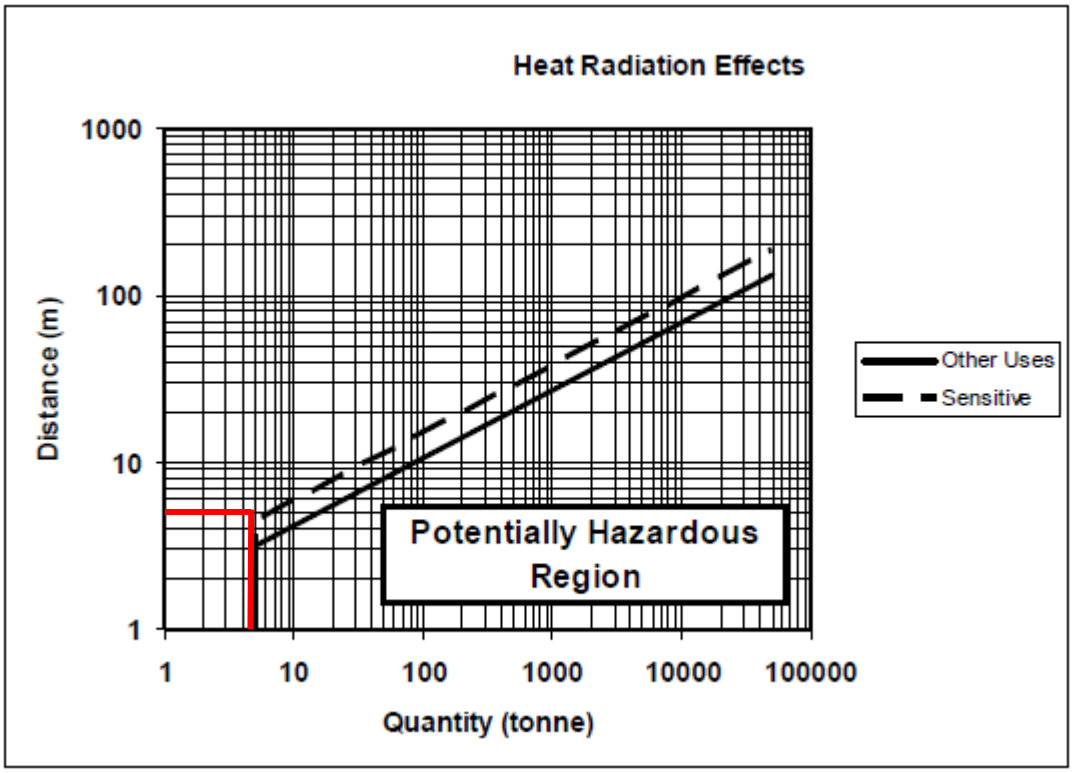

Figure 3 – Minimum storage distance Class 3 PGII and Class 3 PGIII flammable liquids (Department of Planning, 2011, Figure 9)

By utilising Figure 9 contained within "*Applying SEPP 33 Hazardous and Offensive Development Application Guidelines"* (Department of Planning, 2011) and measuring separation distances, it can be determined whether further analysis is required. For a screening quantity of 4.4 t, the minimum separation distance from site boundaries is about 5 m. Since there are no site boundaries within this separation distance as shown on Figure 2, the storage and dispensing of the fuel passes initial screening. Therefore, no further analysis is required.

5.2.2 Transport screening

Department of Planning (2011) methodology also requires assessment of the transporting/delivery frequencies, for the proposed development. As outlined in Table 3, it is envisaged that deliveries to the proposed development site, for Class 3 PG II substances will be about 6 per quarter, or 26 movements per year. According to the "Transportation Screening Thresholds", as shown in Table 5, up to 45 movements per week or 750 movements per year for Class 3 PG II substances are acceptable prior to becoming potentially hazardous. Since the expected number of deliveries is less than 750 per annum and less than 45 movements per week, expected deliveries transport threshold figures do not exceed the required amount.

Table 5 – Transport screening thresholds (Department of Planning, 2011, Table 2)

	Vehicle Movements		Minimum quantity* per load (tonne)	
	Cumulative	Peak		
Class	Annual *or*	Weekly	Bulk	Packages
1	see note	see note	see note	
2.1	>500	>30	2	5
2.3	>100	>6	1	2
3PGI	>500	>30	1	1
3PGII	>750	>45	3	10
3PGIII	>1000	>60	10	no limit
4.1	>200	>12	1	2
4.2	>100	>3	2	5
4.3	>200	>12	5	10
5	>500	>30	2	5
6.1	all	all	1	3
6.2	see note	see note	see note	
7	see note	see note	see note	
8	>500	>30	2	5
9	>1000	>60	no limit	

Note: *Where proposals include materials of class 1, 6.2 or 7, the Department of Planning should be contacted for advice. Classes used are those referred to in the Dangerous Goods Code and are explained in Appendix 7.*

** If quantities are below this level, the potential risk is unlikely to be significant unless the number of traffic movements is high.*

5.3 Conclusion

Based on the risk screening method outlined by the Department of Planning (2011), the storage of fuel (diesel) and transportation to and from the site does not constitute a hazardous industry or a potentially hazardous industry. Subsequently, no Preliminary Hazard Assessment is required.

6 Potentially Offensive Industry

The proposed development is beef cattle feedlot and is considered a 'potentially offensive industry' because in the absence of safeguards, the proposed development would emit a polluting discharge which would cause a significant level of offence.

Information on the quantity and nature of any discharges, and the significance of the offence likely to be caused by the development, having regard to the nature of the surrounding land use and the proposed controls has been provided in the SEE. The proposed development does not exceed the threshold of feeding more than 1,000 head of cattle under Schedule 1 of the POEO Act definition. Hence, pursuant to Section 48 of the POEO Act, an Environment Protection Licence (EPL) is not required.

As outlined in the SEE, adequate safeguards are proposed to ensure emissions from the proposed development can be controlled to a level at which they are not significant.

All receptors are outside of the separation distances required for the proposed development. Therefore, the proposed development meets the conservative separation distance requirements for sensitive receptors calculated in accordance with the S-factor method outlined in the National Guidelines for Beef Cattle Feedlots in Australia (3rd Edition) (MLA, 2012).

It is considered that as separation distances exceed the requirements under the National Guidelines for Beef Cattle Feedlots in Australia (3rd Edition) (MLA, 2012) that the proposed development is not an 'offensive industry'.

7 References

Department of Planning (NSW), 2011, Hazardous and Offensive Development Application Guidelines, Applying, SEPP 33, Department of Planning (NSW), Sydney, NSW.

Meat and Livestock Australia, 2012, National Guidelines for Beef Cattle Feedlots in Australia 3rd Edition, Meat & Livestock Australia, North Sydney, NSW.

Appendix L– Traffic Impact Assessment

Development Application and Statement of Environmental Effects

Proposed 999 head beef cattle feedlot

Traffic Impact Assessment

"Westholme"
Newsomes Road
DEEPWATER NSW 2371

Narrie Holdings Pty Ltd as the trustee for Newsome Family Trust
"Sherwood"
166 Newsomes Road
DEEPWATER NSW 2371

[December 2024]

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DOCUMENT INFORMATION RECORD

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Project No:	G4-116

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Executive summary

The Newsome family own and operate a beef production enterprise at Wellington Vale in the central New England tablelands region of New South Wales

The supply chain model includes cattle breeding, backgrounding and farming operations. The breeding, backgrounding and farming operations are centred on an aggregation of adjoining properties "Sherwood", "Westholme", "Gum Creek", "Picks", "Roundwood", "Ewandon", "Valley View", "Woodlands", "Kenya", "Kooringa", "Giru", "Seven V" and "Strachan Vale" some 11 km by road west of the village of Deepwater and 19 km east of the village of Emmaville.

Dryland and irrigated cropping of winter cereals and forage is currently undertaken across the aggregation alongside the breeding and backgrounding of beef cattle. Some 3,000 breeder cows and progeny are run across the aggregation.

"Westholme" comprises some 368 ha (~911 acres) and currently a beef production and dryland cropping enterprise is undertaken on the property producing fodder such as oats for grazing and silage. Native vegetation remains as scattered paddock trees and open woodland on areas less suitable for beef cattle and cropping.

As part of a diversification strategy, Narrie Holdings Pty Ltd as trustee for the Newsome Family Trust wish to develop a beef cattle feedlot by gaining development approval for Intensive livestock agriculture to operate as a 999 head beef cattle feedlot on the property "Westholme".

"Westholme" is within the Glen Innes Severn Council local government area and relevant environmental planning instrument is the Glen Innes Severn Council Local Environmental Plan 2012 (GISLEP).

Under Schedule 3, Part 2 Designated development, item 27, Feedlots, of the Environmental Planning and Assessment Regulation 2021, as the capacity of the proposed development does not exceed 1000 head it is not a designated development. Consequently, the development application is required to be accompanied by Statement of Environmental Effects (SEE) and an Environmental Impact Statement (EIS) is not required.

This Traffic Impact Assessment forms part of an Statement of Environmental Effects (SEE) prepared to support the Development Application to the Glen Innes Severn Council for the proposed development and assesses the impact and mitigation treatments (if any) required for the external road network.

The traffic impact assessment determined that no upgrades are recommended within the sealed sections of Newsomes Road, Wellington Vale Road and the New England Highway as these roads meet the minimum standard and existing road order classification commensurate with existing and proposed traffic volumes. The traffic impact assessment determined that Council should consider warning signage at the Newsomes Road/ Wellington Vale Road and Wellington Vale Road / New England Highway T-intersection.

No intersection upgrades to the local road network would be warranted due to the low additional volume of additional traffic generated by the proposed development and intersection geometry is able to accommodate the largest vehicle proposed to access the site.

The following mitigation measures are proposed or maintained:

- Access for light vehicles and heavy vehicles be maintained via the existing subject land entrance off Newsomes Road;
- Removal of roadside hazards (tree stumps) on Newsomes Road.

Warning signage on Newsomes Road and control signage at key intersections on the principal haulage route is also deficient. Consequently, it is recommended Council consider the installation of signage such as crest, curve and Give Way signage. The installation of "Advisory Speed Warning sign" to supplement the "Curve Warning Sign" should also be considered.

In conclusion, the proposed development will not adversely impact on the operational performance of the surrounding road network and the proposed road access arrangements are considered adequate and suitable for the proposed use.

1 Background

1.1 Introduction

The Newsome family own and operate a beef production enterprise in the central New England tablelands region of New South Wales trading as Narrie Holdings Pty Ltd as trustee for the Newsome Family Trust.

The supply chain model includes cattle breeding, backgrounding and farming operations. The breeding, backgrounding and farming operations are centred on an aggregation of properties in the Wellington Vale region some 11 km by road west of the village of Deepwater and 19 km east of the village of Emmaville.

The aggregation at Wellington Vale includes several adjoining properties "Sherwood", "Westholme", "Gum Creek", "Picks", "Roundwood", "Ewandon", "Valley View", "Woodlands", "Kenya", "Kooringa", "Giru", "Seven V" and "Strachan Vale" comprising over 6,489 ha (~16,029 acres) and is located within the Glen Innes Severn Council area. Dryland and irrigated cropping of winter cereals and forage is currently undertaken across the aggregation alongside the breeding and backgrounding of beef cattle. Some 3,000 breeder cows and progeny are run across the aggregation.

"Westholme" comprises some 368 ha (~911 acres) and currently a beef production and dryland cropping enterprise is undertaken on the property producing fodder such as oats for grazing and silage. Native vegetation remains as scattered paddock trees and open woodland on areas less suitable for beef cattle and cropping.

The beef production enterprise has been developed based around breeding cattle for domestic markets and feeder cattle for the Rangers Valley feedlot. "Westholme" has built infrastructure such as machinery/storage sheds, silos, cattle yards , water storages etc to support the agricultural enterprises on the property. "Westholme" has no dwellings.

As part of a diversification strategy, Narrie Holdings Pty Ltd as trustee for the Newsome Family Trust wish to develop a beef cattle feedlot by gaining development approval for Intensive livestock agriculture to operate as a 999 head beef cattle feedlot on the property "Westholme".

"Westholme" is within the Glen Innes Severn Council local government area and relevant environmental planning instrument is the Glen Innes Severn Council Local Environmental Plan 2012 (GISLEP).

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This Traffic Impact Assessment forms part of an Statement of Environmental Effects (SEE) prepared to support the Development Application to the Glen Innes Severn Council for the proposed development and assesses the impact and mitigation treatments (if any) required for the external road network.

1.1.1 Scope

The objective of this report is to identify the traffic and transport impacts associated with the proposed development of a 999 head beef cattle feedlot and the proposed on-site and off-site measures proposed to mitigate the impacts of the development on any road or rail related infrastructure. The report will form part of the SEE for the proposed development and provides the Glen Innes Severn Council the opportunity to adequately consider any traffic or transport related impacts.

1.1.2 References and guidelines

In preparing this report, references are made to the following traffic engineering and council sources:

- Austroads Guide to Traffic Management Part 3 Traffic Studies and Analysis (Austroads, 2017);
- Austroads Guide to Road Design Part 3: Geometric Design (Austroads, 2021);
- Austroads Guide to Road Design Part 4: Intersections and Crossings – General, edn 2.2 2023, AGRD04-23 (Austroads, 2023a);
- Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections, (Austroads, 2023b);
- Glen Innes Severn Local Environment Plan 2012 (Glen Innes Severn Council, 2012);
- Glen Innes Severn Council – Road classification;
- Austroads Guide to Traffic Management Part 6: Intersections, Interchanges and Crossings Management, (Austroads, 2020a);
- Austroads Guide to Traffic Management Part 12: Integrated Transport Assessments for Developments (Austroads, 2020b);
- Austroads Supplement for Guide to Traffic Management Roads and Maritime Services (Roads and Maritime Services, 2013); and
- Roads and Traffic Authority, 2002, Guide to Traffic Generating Developments, Version 2.2 (RTA, 2002).

This report has been prepared by Rod Davis (FIEAust, CPEng, RPEQ#20256, CPESC).

2 Site and locality

2.1 Subject land

The subject land on which the proposed development is to be located forms part of the property known as "Westholme" and part of the property "Sherwood". "Westholme" and "Sherwood" are located on Newsomes Road at Wellington Vale, approximately 15 km by road west southwest of Deepwater and 23 km by road east southeast of Emmaville.

The subject land has primary frontage to the formed section of Newsomes Road (unsealed) of approximately 1.0 km in length. Newsomes Road intersects with Wellington Vale Road some 5 km north of the site access for the proposed development.

Figure 1 is a locality plan highlighting the subject land to roads and the nearby villages of Emmaville and Deepwater.

2.1.1 Real property description

The subject land comprises of nine (9) cadastral portions. The description of the subject land is provided in Table 1. The total area of the subject land is about 510.3 ha (~1,260 acres). The subject land is in the Glen Innes Severn Council.

Figure 2 is a cadastral plan highlighting the cadastral parcels that comprise the subject land.

Table 1 – Subject land – Real Property Description

Property name	Lot no.	Plan no.	Parish	County	Easements	Area Ha
"Westholme"	1	DP612287	Wellington Vale	Gough	-	49.0
"Westholme"	133	DP753323	Wellington Vale	Gough	-	64.4
"Westholme"	134	DP753323	Wellington Vale	Gough	-	51.8
"Westholme"	135	DP753303	Wellington Vale	Gough	-	37.0
"Westholme"	136	DP753323	Wellington Vale	Gough	-	32.9
"Westholme"	137	DP753323	Wellington Vale	Gough	-	48.9
"Westholme"	200	DP753323	Wellington Vale	Gough	-	79.9
"Westholme"	225	DP753323	Wellington Vale	Gough	-	16.7
"Sherwood"	236	DP753323	Wellington Vale	Gough	-	129.8
Total						510.3

2.1.1.1 Limitations/Interests/Encumbrances

The subject land does not contain any easements.

2.1.1.2 Crown land

The subject land does not contain Crown land such as Crown reserve, Crown waterway, Crown lease, Crown road, for example.

2.1.1.3 Road reserve

The subject land does contain a road reserve under the *Roads Act 1993* as shown in Figure 2.

Newsomes Road bisects the subject from north to south. Newsomes Road is unformed for the segment which bisects the subject land. A road reserve also extends from Newsomes Road east bisecting the subject land.

2.1.1.4 Travelling Stock Reserve

There are no Travelling Stock Reserves (TSR) declared on or adjoining the subject land or along or adjoining Newsomes Road on parcels of Crown land reserved under the Crown Land Management Act 2016. There are Class 2 TSR adjoining Wellington Vale Road between Deepwater and Emmaville.

2.1.1.5 Tenure

The subject land is owned by Bruce Roderick Newsome in freehold land tenure.

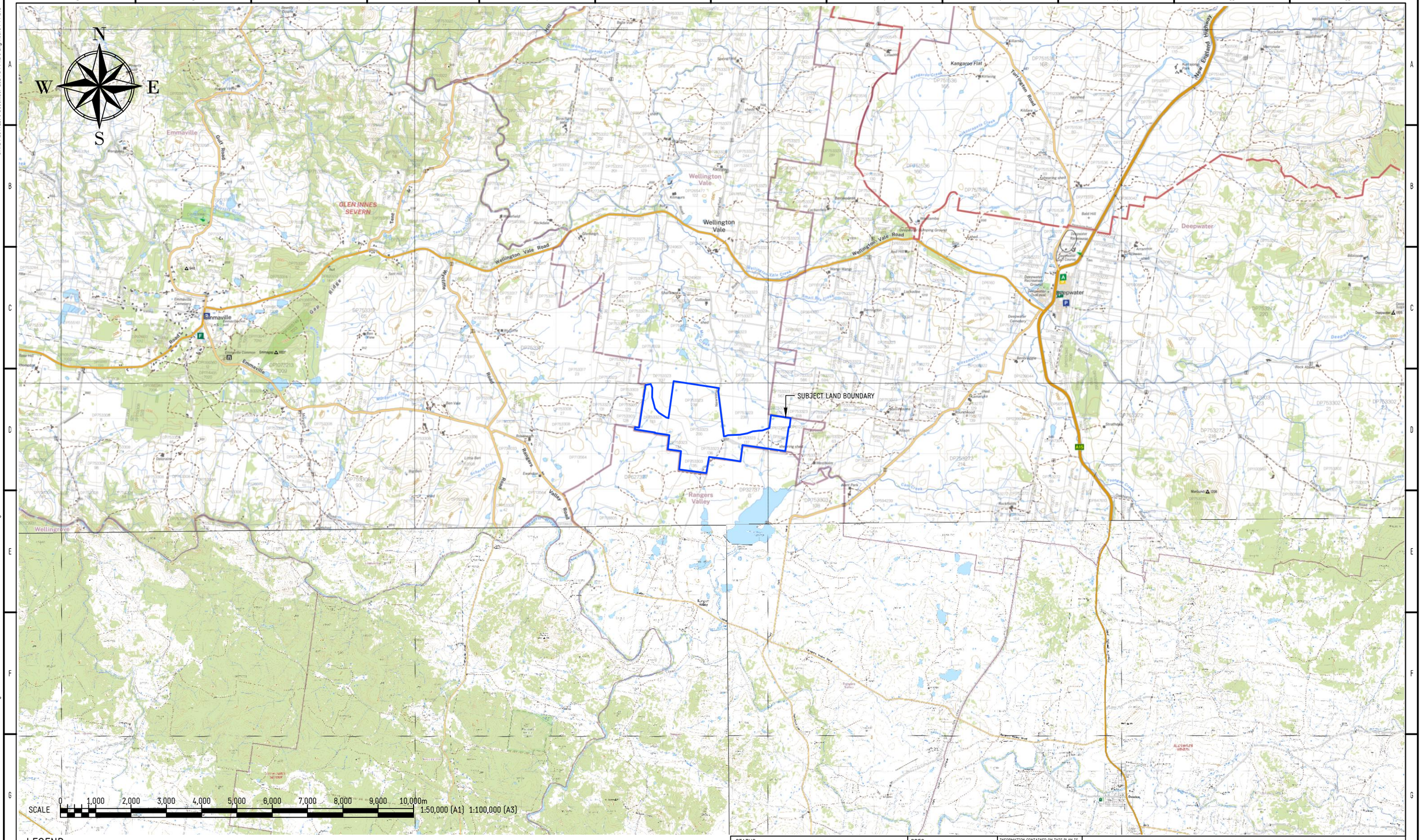
2.1.1.6 Landuse and zoning

The proposed development site falls within the RU1 Primary Production zone of the G*len Innes Severn Local Environment Plan 2012* (Glen Innes Severn Council, 2024). The anticipated traffic growth rate of the surrounding area is considered to be relatively low.

2.1.1.7 Road network

The subject land is accessed directly from Newsomes Road. The Glen Innes Severn Council is the roads authority for Newsomes Road.

The proposed development is accessed via the existing subject land entrance off Newsomes Road. All light (staff and support services) and heavy vehicles (livestock and commodity delivery) enter the proposed development complex site via the Newsomes Road entrance.



LEGEND

- SUBJECT LAND BOUNDARY
- LAND PARCEL BOUNDARY

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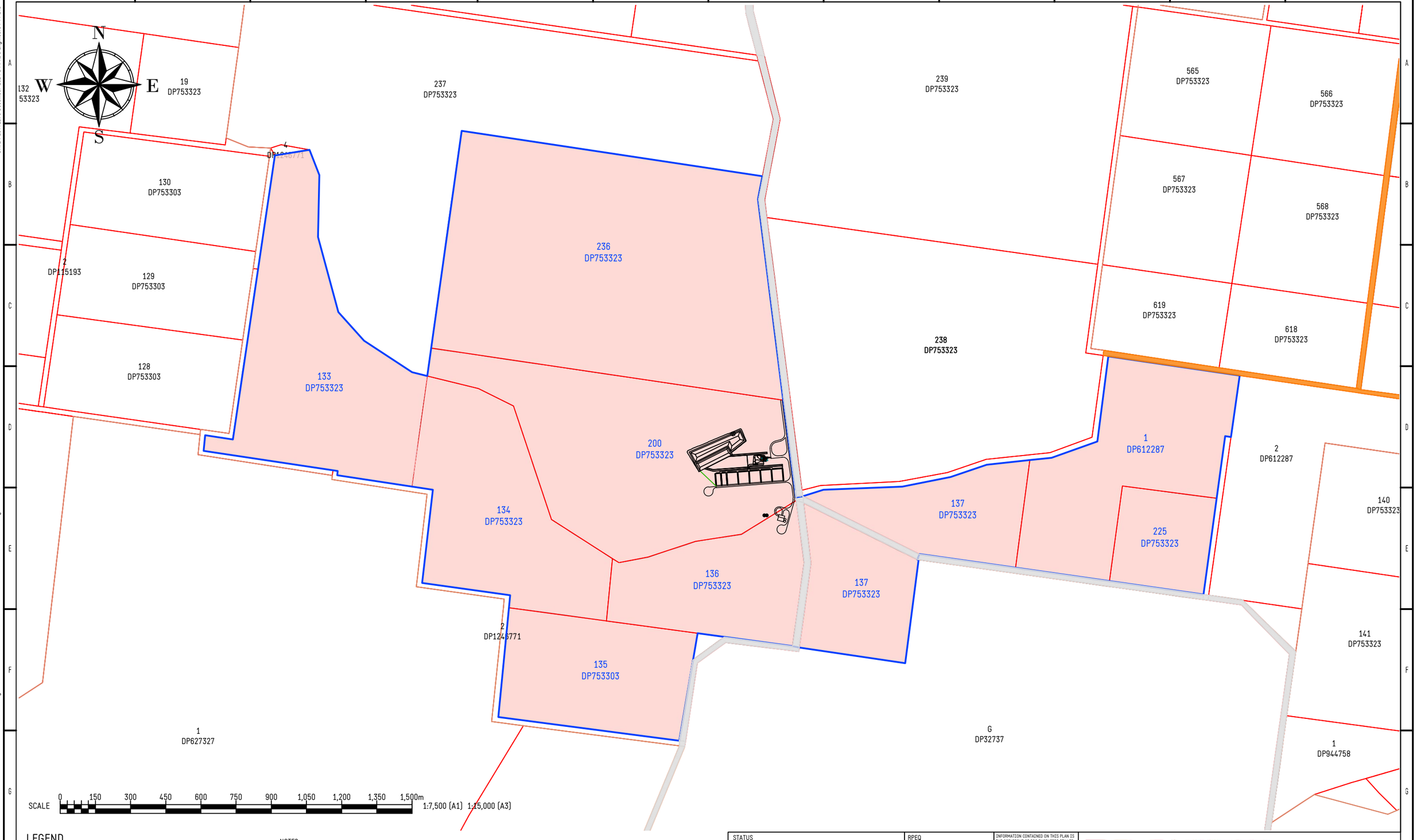
TITLE: DEVELOPMENT APPLICATION FOR INTENSIVE LIVESTOCK AGRICULTURE
SEE APPENDIX L - TRAFFIC IMPACT ASSESSMENT
SUBJECT LAND - LOCALITY PLAN

REPORT REFERENCE	SUPPLIED DRAWING NUMBER		DRAWING NUMBER	REV.
FIGURE 1		A3	G4-116-500-01	B



LEGEND

- SUBJECT LAND BOUNDARY
- LAND PARCEL BOUNDARY
- SUBJECT LAND AREA
- ROAD RESERVE
- EASEMENT
- CROWN LAND

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SEE APPENDIX L - TRAFFIC IMPACT ASSESSMENT
SUBJECT LAND - CADASTRAL PLAN

REPORT REFERENCE: FIGURE 2
SUPPLIED DRAWING NUMBER:
A3
DRAWING NUMBER: G4-116-500-02
REV.: B

3 Proposed development

3.1 Overview

Narrie Holdings Pty Ltd as trustee for the Newsome Family Trust wish to develop on the subject land a beef cattle feedlot with a capacity of 999 head when fully developed.

The proposed development will allow flexibility of use with the ability to increase or decrease the number of animals within the development in line with market and economic factors.

The proposed development complex would occupy a footprint of approximately 3.6 ha and includes the following components in a functional configuration:

- Water supply/storage and reticulation infrastructure – Water storage tanks and pipelines to supply clean water for livestock drinking water;
- Pens - Fenced areas for accommodating beef cattle (production pens);
- Commodity storage – Commodities such as hay and grain are stored onsite;
- Access and internal roads – All weather road access to the site is provided;
- Controlled drainage area – Rainfall runoff from areas such as production pens and livestock handling areas that has a high organic matter and therefore a high pollution potential is controlled within a system that collects and conveys this runoff to a sedimentation system and holding pond prior to environmentally sustainable utilisation;
- Drainage system - The controlled drainage area contains a system including, catch drains, sedimentation system and holding pond(s) for conveying stormwater, allow entrained sediment to 'settle out' and capture and storage of the stormwater from the controlled drainage areas until it can be sustainably utilised; and
- Solid waste and effluent management areas – Solids wastes such as manure and mortalities are temporarily stockpiled and processed within the solid waste stockpile and carcass composting area prior to removal off-site onto adjoining land for utilisation. Effluent is stored in a holding pond pending application to the effluent utilisation area.

The proposed development also includes an associated 140 ha of cropping land for effluent and solid waste utilisation. When available, effluent shall be applied to land via irrigation within a dedicated effluent utilisation area.

3.2 Access

Access to the proposed development complex on the subject land is directly off Newsomes Road a local controlled road.

The proposed development shall continue to utilise the entrance that is currently used to access the subject land off Newsomes Road as shown in Figure 3. The existing entrance can accommodate the number and type of vehicles servicing the proposed development and therefore does not need to be upgraded. An internal road connects the subject land entrance to the proposed development site.

The subject land entrance is effectively a continuation of Newsomes Road. Newsomes Road is formed and gravelled to the subject land boundary. A purpose built all weather internal road has been constructed to connect the Council maintained section of Newsomes Road to the existing subject land infrastructure. No new entrance off Newsomes Road shall be constructed.

All livestock and commodity delivery vehicles associated with the proposed development can enter and exit the development complex in a forward direction.

The sight distances for traffic approaching the entrance along Newsomes Road are very good, as Newsomes Road is straight and level and drivers can clearly see for at least 350 m both north and south of the entrance.

3.3 Parking

The proposed development is located on a large parcel of land within the Rural zone and located at the end of a No Through Road.

The proposed development has been provided with adequate on-site vehicle parking for the expected demand generated by the operational staff and support services.

The nature of the development and rural character of the site is such that the provision of a formal car parking area is unnecessary.

A vehicle parking area is located at the south-eastern corner of the proposed development complex site adjacent to the grain storage and processing facility, with at least 5 parking spaces provided for operational staff.

3.4 Staging

The proposed development is not proposed to be staged.

3.5 Construction

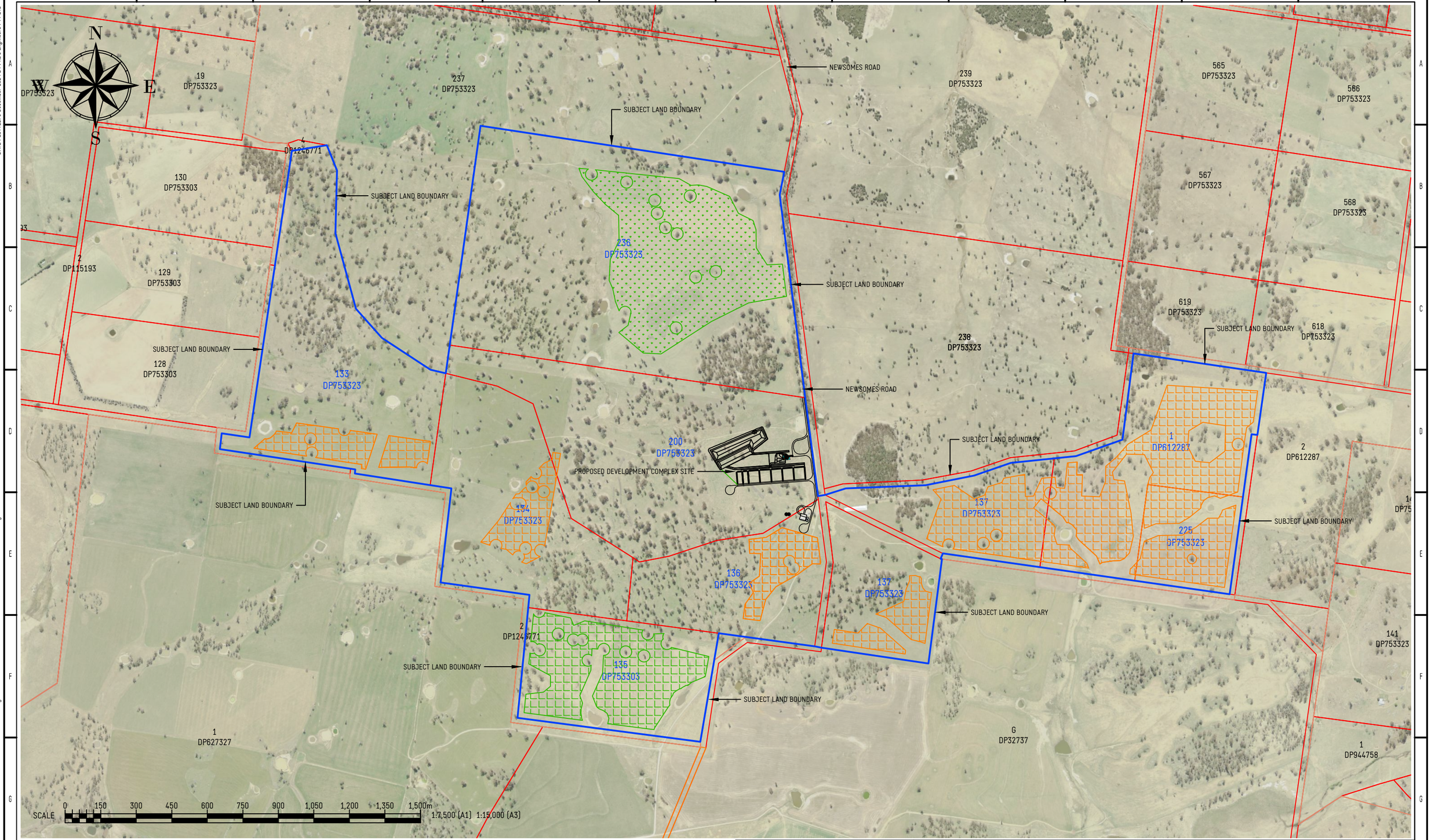
Infrastructure shall be developed as part of the proposed development and therefore bulk earthworks, pen infrastructure (fencing, feed bunks) and feed roads shall be constructed.

The applicant has several items of plant that will be used for construction. These include bobcat, bulldozer, medium rigid truck that will be used in the construction.

All heavy vehicles associated with the construction of the proposed development travelling from the west would be routed along Wellington Vale Road from Emmaville to Newsomes. All heavy vehicles associated with the construction of the proposed development travelling from the north, south and east would be routed from Deepwater along Wellington Vale Road to Newsomes Road. Typically, a low-loader type vehicle would deliver the construction equipment to the site as required and backload with equipment that has completed operations and is to be demobilised from the site. Delivery of items of construction equipment would be staggered throughout the construction period in line with sequencing of activities.

3.6 Decommissioning

There is no proposed operational lifespan of the existing development. The existing development shall continue to operate based on demand for lot-fed beef and economic viability. Consequently, the development complex site and all above ground infrastructure is not proposed to be decommissioned within a predetermined period.



LEGEND

- SUBJECT LAND BOUNDARY
- LAND PARCEL BOUNDARY
- EFFLUENT UTILISATION AREA
- SOLID WASTE UTILISATION AREA

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REV.	DATE	REVISION DESCRIPTION	DRAWN	CHECK	APPROVED
A	24/11/24	DRAFT ISSUE TO CLIENT	RJD	RJD	RJD
B	06/12/24	FINAL ISSUE FOR LODGEMENT TO GLEN INNES SEVERN COUNCIL	RJD	RJD	RJD

SCALE	1:15,000 (A3)
DRAWN	RJD
DATE	06/12/2024
CHECKED	RJD
DATE	06/12/2024
APPROVED	RJD
DATE	06/12/2024

CLIENT: NARRIE HOLDINGS PTY LTD ATF NEWSOME FAMILY TRUST
PROJECT: PROPOSED 999 HEAD BEEF CATTLE FEEDLOT
TITLE: DEVELOPMENT APPLICATION FOR INTENSIVE LIVESTOCK AGRICULTURE
SEE APPENDIX L - TRAFFIC IMPACT ASSESSMENT
PROPOSED DEVELOPMENT - DEVELOPMENT LAYOUT

REPORT REFERENCE: FIGURE 3
SUPPLIED DRAWING NUMBER:
A3
DRAWING NUMBER: G4-116-500-03
REV.: B

DATE PLOTTED: 5 December 2024, BY : RDC Engineers PTY LTD
FILE PATH: C:\RDC Engineers\RDCE - Projects\G4-116 Newsome 999 head Feedlot\05 - ACAD MasterPlan\05.1 Drawings - CURRENT FILE NAME: G4-116 BRN MASTERPLAN-00-20240828 v8.dwg

4 Traffic Impact Assessment

4.1 Existing road network

This section describes the existing road network including traffic conditions, volumes, intersection performance, road accesses, relevant intersection type and operation, as well as public and active transport provisions.

The locality of the proposed development is shown in Figure 1 and Figure 2.

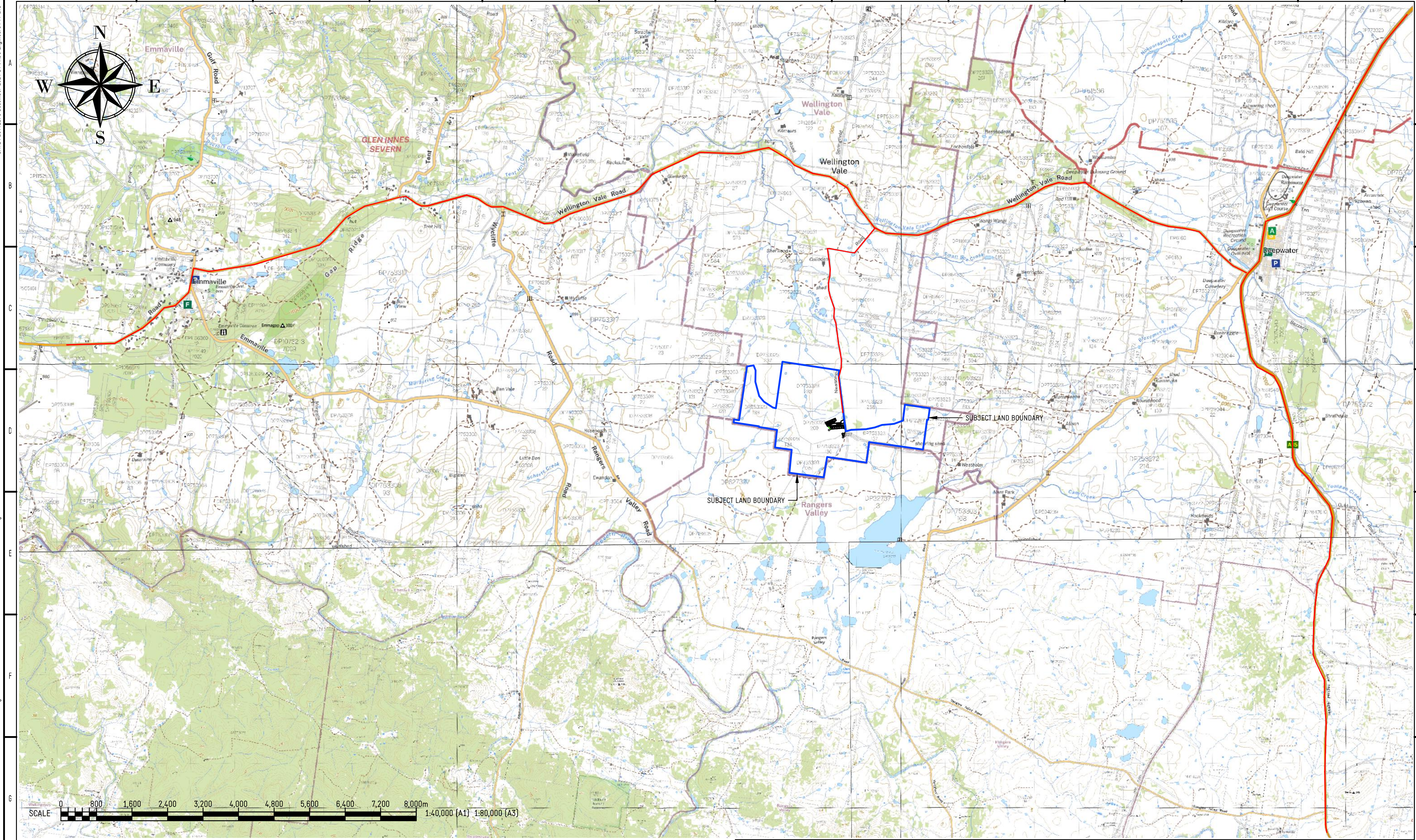
The principal haulage route to the proposed development by light and heavy vehicles is via Wellington Vale Road to Newsomes Road.

Local access to the proposed development from the west (Emmaville) is provided via Wellington Vale Road to Newsomes Road. From the east (Deepwater), access is provided via the New England Highway, to Wellington Vale Road to Newsomes Road.

Local roads such as Wycliffe Road, Rangers Valley Road, Nant Park Road are used periodically by heavy vehicles to deliver commodities to the existing development from local properties. This use would continue with the proposed development.

The existing road network surrounding the subject land is shown in Figure 4 and includes the roads outlined in the following sections. The haulage routes are shown on Figure 4.

DATE PLOTTED: 5 December 2024 BY : RDC Engineers PTY LTD



LEGEND

- SUBJECT LAND BOUNDARY
- LAND PARCEL BOUNDARY
- HAULAGE ROUTES

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DATE	06/12/2024

CLIENT: NARRIE HOLDINGS PTY LTD ATF NEWSOME FAMILY TRUST

PROJECT: PROPOSED 999 HEAD BEEF CATTLE FEEDLOT

TITLE: DEVELOPMENT APPLICATION FOR INTENSIVE LIVESTOCK AGRICULTURE
SEE APPENDIX L - TRAFFIC IMPACT ASSESSMENT
PROPOSED DEVELOPMENT - HAULAGE ROUTES

REPORT REFERENCE	SUPPLIED DRAWING NUMBER		DRAWING NUMBER	REV.
FIGURE 4		A3	G4-116-00-04	B

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4.1.1 Local roads

All livestock and commodity delivery vehicles shall enter/exit the proposed development complex site via the existing subject land entrance off Newsomes Road. All heavy vehicles enter the site from the north.

Local roads such as Nant Park Road, Springfield Road, Strachan Road, Rayners Road, Wycliffe Road, Tent Hill Road, Emmaville Road for example will not be used by development generated traffic in particular heavy vehicles.

On this basis, the existing local road network that may be impacted by the proposed development is limited to Newsomes Road. Wellington Vale Road west to Emmaville and east to Deepwater.

4.1.1.1 Newsomes Road

Newsomes Road is a local road. The Glen Innes Severn Council are the roads authority for Newsomes Road in accordance with Section 7 of the Roads Act 1993.

Newsomes Road is a No Through Road and unsealed road. It is classified as a Hierarchy Level 7 - Local Access Type C (unsealed) in the GISC asset system as outlined in correspondence from GISC presented in Appendix A.

Newsomes Road is single-lane, two-way undivided local road about 5.1 km long. Newsomes Road provides connection from Wellington Vale Road (CH0 km) to rural properties such as “Sherwood”, “Culloden”, ”Wellington Vale” and “Westholme”. All of these properties are owned by only two owners being the applicant and the owner of Wellington Vale. Newsomes Road is not a designated school bus route and provides seasonal commercial access to these properties predominantly associated with beef cattle production.

Newsomes Road is formed, gravelled and unsealed for its entire length from Wellington Vale Road (CH 0 km) to the property “Westholme” (CH 5.1 km). Newsomes Road terminates at the property “Westholme” (CH 5.1 km). Newsomes Road generally runs in a southerly direction from Wellington Road with two almost 90 degree horizontal curves along its length. Newsomes Road has no posted speed limit.

Newsomes Road is generally 4-4.3 m pavement on a 6 m formation as shown in Photograph 1 to Photograph 8. Newsomes Road has REGP on culverts only and as it is unsealed has no line markings (centreline or edge lines).

There is a gradual decline in pavement condition from CH 0 km to CH 5.1 km as shown in Photograph 1 to Photograph 8.

The principal haulage route is along Newsomes Road from the development site entrance north to the intersection with Wellington Vale Road. There is no other local road access to the proposed development.

However, Newsomes Road is not load limited, so has as-of-right access for General Access Vehicles (GAV) which includes trucks and semi-trailer up to 19 m in length. Vehicle combinations larger than this are classed as Restricted Access Vehicles (RAVs) and must be provided approval through a notice or permit before they can travel on Newsomes Road.

Newsomes Road is not located in an approved 4.6 m high vehicle route area. The Heavy Vehicle National Law provides that livestock carriers are class 2 vehicles if the vehicle's height exceeds 4.3 metres but does not exceed 4.6 metres (National Class 2 Heavy Vehicle 4.6m High Livestock Carrier Authorisation Notice 2024 (No.1)). That means that these heavy vehicles are restricted access vehicles.

Tube count data is not available for Newsomes Road. However, the estimated AADT for a Local Access Type C under the GISC asset system is less than 20 vehicles per day. The majority of vehicles currently using Newsomes Road would be associated with agricultural operations on surrounding properties.

Road width design standards for low volume (generally rural) roads are defined by the Austroads Guide to Road Design (Austroads 2021a) and are based on daily traffic volumes. Austroads (Austroads, 2021a) nominates one 3.7 m traffic lane on 8.7 m carriageway for roads servicing 1-150vpd with more than 15% heavy vehicles. Single lane sealed, however unsealed dual lane is also generally acceptable. No upgrades are recommended under existing or proposed traffic conditions within the unsealed section based on the gravel pavement width of 4 m. The formation width does not meet Austroads requirements for shoulder and carriageway width. There are several sections were widening of the road is warranted from a safety perspective.

Photograph 1 – Newsomes Road – Formation CH0.1 m

Photograph 2 – Newsomes Road – Formation CH0.5 km

Photograph 3 – Newsomes Road – Formation CH1.0 km

Photograph 4 – Newsomes Road – Formation CH1.25 km

Photograph 5 – Newsomes Road – Formation CH2.0 km

Photograph 6 – Newsomes Road – Formation CH3.0 km

Photograph 7 – Newsomes Road – Formation CH4.0 km

Photograph 8 – Newsomes Road – Formation CH5.1 km ("Westholme")

4.1.2 Regional roads

Wellington Vale Road (Road Number 0000136) is a classified (Regional) road. The Glen Innes Severn Council is the roads authority for Wellington Vale Road in accordance with Section 7 of the Roads Act 1993. However, as Wellington Vale Road is a Regional Road, Council is eligible to receive financial assistance from the State Government to support maintenance and repairs.

Wellington Vale Road is designated as a Level 1 arterial road under the Glen Innes Severn Council road hierarchy classification as outlined in correspondence from Glen Innes Severn Council presented in Appendix A.

Wellington Vale Road is a two-lane, two-way undivided local road about 5.9 km long. Wellington Vale Road provides connection from the New England Highway (CH0 km) at Deepwater to Irby Street (CH26.0 km) at Emmaville. Wellington Vale Road is sealed for its entire length. Newsomes Road intersects with Wellington Vale Road at CH9.3 km. Wellington Vale Road transitions into Irby Street at Emmaville and runs generally in a westerly direction from the New England Highway. Wellington Vale Road has a posted speed limit of 100 km/hr.

Wellington Vale Road is generally 5.5-6.5 m pavement on a 7-8.5 m formation as shown in Photograph 9 to Photograph 19. Wellington Vale Road has no line markings (centreline or edge lines) other than at the intersection with the New England Highway.

Wellington Vale Road has several waterway crossings comprising culvert or bridge structures at Bloxomes Creek, Small Box Creek, Wellington Vale Creek, Watsons Creek and Tent Hill Creek.

The pavement is in very good condition along the majority of Wellington Vale Road as shown in Photograph 9 to Photograph 19. There is a segment of the road (Segments 50-60) between CH 7 km and CH 12.5 km which is scheduled for betterment works. There are several single RCP culvert crossings were the pavement is prone to failure as well as wetter low lying areas such as where Wellington Vale Creek comes close to the road.

Development traffic comprising predominantly heavy vehicles is expected to travel to/from the proposed development along Wellington Vale Road from the intersection with the New England Highway to Newsomes Road. The principal haulage route is along Wellington Vale Road from the intersection with the New England Highway to Newsomes Road.

Wellington Vale Road in an approved 4.6 m high vehicle route area and B-Double route for B double trucks up to 26m in length and is registered on the NHVR network map.

The most recent traffic count data for Wellington Vale Road was recorded in November 2020. An AADT of 76.2 vpd with 28.6% heavy vehicles was recorded.

Road width design standards for low volume (generally rural) roads are defined by the Austroads Guide to Road Design (Austroads 2021a) and are based on daily traffic volumes. Austroads (Austroads, 2021a) nominates one 3.7 m traffic lane on 8.7 m carriageway for roads servicing 1-150vpd with more than 15% heavy vehicles. No upgrades are recommended under existing or proposed traffic conditions within the sealed section based on the pavement width of 5.5 m and formation width of 8-8.5m. The formation width does not quite meet Austroads requirements for shoulder and carriageway width, however up to the second bridge crossing of Wellington Vale Creek.

Photograph 9 – Wellington Vale Road – Formation CH0 km (New England Highway intersection)

Photograph 10 – Wellington Vale Road – Formation CH1.75 km

Photograph 11 – Wellington Vale Road – Formation CH3.25 km

Photograph 12 – Wellington Vale Road – Formation CH5.0 km

Photograph 13 – Wellington Vale Road – Formation CH8.5 km

Photograph 14 – Wellington Vale Road – Formation CH9.3 km (Newsomes Road)

Photograph 15 – Wellington Vale Road – Formation CH12.5 km

Photograph 16 – Wellington Vale Road – Formation CH15 km

Photograph 17 – Wellington Vale Road – Formation CH19 km

Photograph 18 – Wellington Vale Road – Formation CH22 km

Photograph 19 – Wellington Vale Road – Formation CH27 km

4.1.3 State Road

4.1.3.1 New England Highway

The New England Highway (Road Number 0000009) is a classified (State) road. The TfNSW is the roads authority for the New England Highway in accordance with Section 7 of the Roads Act 1993.

The New England Highway designated Route A3 is a 883 km highway which runs from Hexham at Newcastle (NSW) to Yarraman (Queensland).

The New England Highway traverses the Hunter Valley, New England and Darling Downs regions following the course of the Great Dividing Range. The New England Highway links the Queensland townships of Yarraman to Toowoomba, Warwick, Stanthorpe and Wallangarra. From Wallangarra the highway links the New South Wales townships of Tenterfield, Glen Innes, Armidale, Tamworth, Scone, Muswellbrook, Singleton, Maitland until it reaches Hexham. The southern termination of the highway is at the junction with the Pacific Highway at Hexham.

The New England Highway has the following characteristics between Deepwater and Glen Innes:

- two-lane, two-way undivided road with a posted speed limit of 100 km/hr;
- sealed, generally approximately 9 m wide, with 3.5 m wide lanes and 0.7-1.0 m wide sealed shoulders, centre line marking and edge line marking;
- The road is currently in good condition, with no significant signs of pavement breakup within the vicinity of the Wellington Vale Road intersection due to heavy vehicle turning movements.

The New England Highway is generally 9.1 m pavement seal width with two 3.5m lane width on a 12 m formation. However there is widening at the Wellington Road intersection to 15 m as shown in Photograph 20. Photograph 20 to Photograph 22 illustrate the New England Highway at the Wellington Vale intersection. The New England Highway has centreline and edge line marking.

The New England Highway is an approved 4.6 m high vehicle route and approved route for vehicles up to a 25/26m B-double.

Traffic count data is available for the New England Highway at Station Id T0259 250m North of the Severn River Road, Dundee 2370) for 2021. The AADT recorded was 1,527 vpd with ~449 vpd (~29.4%) being heavy vehicles (Class 3 to 10) during this period. The traffic count data for the New England Highway at this station is provided in Appendix B.

Photograph 20 – New England Highway / Wellington Vale Road intersection

Photograph 21 – New England Highway – Wellington Vale Road intersection (Looking north)

Photograph 22 – New England Highway – Typical formation

4.1.4 Crash History

4.1.4.1 Crash history

A review of the crash data for the past five (5) years for the road network around the proposed development site has been undertaken and is summarised in Table 2. Table 2 shows there has been 3 reported road traffic crashes on the Wellington Vale Road along the segment reviewed. There have been two reported road traffic crashes on the New England Highway between Deepwater and Dundee in the 5 year reporting period up to 2024.

Table 2 – Road Network – Crash history (2019-2024)

Shire	Location	Year (Crash ID)	RUM – code and (description)	Casualty
GISC	Wellington Vale Road*	2020 (1222578)	51 (Out of control otake)	Minor/other injury
GISC	Wellington Vale Road**	2022 (1309778)	70 (Off road to left)	Moderate injury
GISC	Wellington Vale Road***	2022 (13293472)	20 (Head on)	Minor / Other injury
GISC	New England Hwy	2021 (1256518)	87 Off left/left bend =>object	Non casualty (towaway)
GISC	New England Hwy	2019 (1216173)	67 (Struck animal)	Non casualty (towaway)

*200 m east of Rayners Road.
**550 m west Newsomes Road.
***Intersection with Tip Road

4.1.5 Key intersections

There are several intersections within the local and state road network. These include T-intersections from Newsomes Road to Wellington Vale Road and Wellington Vale Road onto the New England Highway as discussed in previous sections.

From a traffic route perspective the key intersections have been determined as the Riverina Highway / Wellington Vale Road and Wellington Vale Road / Newsomes Road T-intersections. These intersections have been assessed in section 4.4.3.

4.1.6 Public transport

The proposed development is not expected to have any significant impact on public transport infrastructure. There are no public passenger bus services along Newsomes Road and Wellington Vale Road. There is a passenger bus service operating twice daily between Deepwater and Glen Innes operated by NSWTrainLink.

A school bus service operates on the New England Highway and Wellington Road. The school bus operating on Wellington Road caters for both primary and high school. Transport for NSW operates a bus from Deepwater to Glen Innes High School, Glen Innes 3 times a day.

4.2 Existing rail network

The closest rail network is the disused Main North Line (also known as the Great Northern Railway at Deepwater. The former Main North Line railway line commenced as a branch off the Main Suburban line at Strathfield in Sydney and extended north to Wangaratta. Since 1988 the line north of Armidale was progressively withdrawn with all services ceasing in 2004. The line is no longer is existence and infrastructure has been removed.

Consequently, the proposed development shall not have any adverse impacts on the rail network.

4.3 Traffic generation and distribution

To establish the impact of the development on the adjacent road network and assess the need for improvements to accommodate traffic generated by the proposed development, traffic generation and trip distribution have been determined.

4.3.1 Generation

4.3.1.1 Existing operations

The subject land is currently used for extensive beef cattle production and dryland cropping.

The type and configuration of vehicles currently servicing the existing agricultural operations on the subject land comprise light and heavy vehicles as outlined in Table 3. Newsomes Road is not approved as a B-double route.

Table 3 – Subject land – Existing agricultural operations – Vehicle configuration

Light vehicles	The light vehicle movements are comprised of employees and support services. Support services include livestock buyers, veterinarians etc. Light vehicles typically comprise 4WD vehicles (e.g. landcruiser)
Heavy vehicles	The heavy vehicle movements are comprised of cattle movements as well as movements of feed supplements such as proteins (cottonseed), roughage, and supplements and ancillary uses such as fuel delivery. Rigid trucks and semi-trailers access the subject land.

The vehicle movements generated by existing agricultural operations have not been considered in the assessment as these will continue alongside the proposed development.

4.3.1.2 Construction

The proposed development site would be accessed from the proposed development entrance off Newsomes Road.

All heavy vehicles associated with the construction of the proposed development would be routed along the New England Highway onto Wellington Vale Road to Newsomes Road. Typically, a low-loader type vehicle would deliver the construction equipment to the site as required and backload with equipment that has completed operations and is to be demobilised from the site. Delivery of items of construction equipment would be staggered throughout the construction period in line with sequencing of activities.

Estimated traffic movements associated with the construction are summarised in Table 4. This is a guide only and may be subject to change.

The applicant has several items of construction equipment including a front-end loader, scraper, skid steer loader and water truck that would be used in the construction works.

The construction period is expected to be 12 weeks. As shown in Table 4 the number of vehicle movements as a AADT is expected to be about 1 vehicle movement per day.

Table 4 – Proposed development – Construction phase – Expected traffic movements

Activity	Vehicle Type	No of Units	Movements		
			per stage	per day	per week
Earthworks / Road construction / Drainage / infrastructure	Front End Loader (SDLG956)*	1	-	-	-
	Scraper (CAT 623)*	1	-	-	-
	Excavator (Hitachi 25t)	1	-	-	-
	Water truck (8,000L)	1	-	-	-
	Roller – (12t) flat drum / sheeps foot	1	2	-	-
	Grader	1	2	-	-
	Skid Steer loader (CASE 270)*	1	-	-	-
	Fuel supply – Medium rigid	1	-	-	2
	Service vehicle	1	2	-	-
	Material supply (semi-trailer) (Steel, pre-cast concrete)	-	-	-	2
Workforce	Light Vehicles (Landcruiser/Hilux)	3	-	6	30
Total	12 weeks construction		412 vp stage		

*Equipment on-site.

4.3.1.3 Operation

The type and configuration of vehicles accessing the proposed development shall be identical to the type and configuration accessing the existing agricultural operations and comprise light and heavy vehicles as outlined in Table 5.

Table 5 – Proposed development – Vehicle configuration

Light vehicles	The light vehicle movements are comprised of employees, support services and other visitors to the proposed development. There is no dwelling on the subject land. It is estimated that some 2 full time equivalent employees will be required when the development is fully developed to 999 head. There will be staff on-site 7 days a week, with less staff on the weekends. Typically hours of work vary, with staff working between 6:30am to 6:00pm in the summer and 7:00am and 5:00pm in the winter.
Light vehicles	Support services: These include livestock buyers, veterinarians, nutritionists etc. These are estimated to be 2 light vehicle per week on average.
Heavy vehicles	The heavy vehicle movements are comprised of cattle movements, as well as movements for grain, protein, roughage, liquids and supplements. Solid waste in the form of manure will stay on-site. The heavy vehicle traffic generation was based on vehicles in semi-trailer as-of-right access.

The estimated staffing levels for the proposed development are provided in Table 6. Not all staff work every day of the year, thus the yearly volume for staff living off-site is less than 365 multiplied by two movements per staff per day.

Table 6 – Proposed development – Estimated staffing levels

Development capacity	No of staff during weekdays	No of staff living on-site	No of staff on weekend
Head	FTE	FTE	FTE
999	2	0	1

The proposed development shall operate 12 hours per day between 6.00 am and 6.00 pm, 7 days per week including public holidays. Operating hours will be applied with any noise limitations and requirements taken into consideration. Staff shall be on-site 24 hours a day, 7 days a week.
Typically, cattle shall be inducted between 7:00 am and 5:00 pm on weekdays. As far as practical, cattle are transported out of the development to slaughter five days per week between 6:00 am and 3:00 pm on Monday to Friday inclusive.

Periodically, heavy vehicle movements do occur outside of normal operating hours (e.g. in summer), as it is desirable to transport cattle either at night or in the early hours of the morning for animal welfare reasons.

The traffic generation is summarised in Table 7 and Table 8 for the proposed development when fully developed to 999 head.

Table 8 includes all inbound and outbound loaded and unloaded vehicles. A vehicle entering and exiting the development site is two movements. The heavy vehicle movements have been modelled on semi-trailers as-of-right access.

The peak vehicle movements presented in Table 7 are based on 3 times average weekly movements spread across five days. The volumes are triple the average to represent a reasonable amount of peaking throughout the year.

The principal haulage route is currently not approved as a designated B-double route for the entire route.

As shown in Table 7, the AADT for the proposed development is estimated to be in the order of 5.0 vpd with 0.7 vpd heavy vehicles when operating at a capacity of 999 head.

Table 7 – Proposed development – Estimated AADT

Development capacity	AADT		Peak daily		Peak hourly	
	Total	Heavy vehicles	Total	Heavy vehicles	Total	Heavy vehicles
Head	vpd	vpd	vpd	vpd	vph	vph
999	~5.0	~0.7	~21.0	~3.0	~4.2	~0.6

*Note these data do not include traffic the existing agricultural operations on the development traffic

As shown in Table 7, the peak daily and peak hourly movements for the proposed development is estimated to be up to 21 vpd with 3 vpd heavy vehicles and 5 vpd with 0.7 vpd heavy vehicles when operating at a capacity of 999 head respectively.

Table 8 – Proposed development –Estimated traffic generation (999 head)

Development capacity Activity	Vehicle Type & (Configuration)	Head GVM t	Capacity	999 Movements per day	999 Movements per week	999 Movements per year
Incoming cattle	Semi-trailer (2 deck)	42.5	62-67 head	0	0	0
Outgoing cattle	Semi-trailer (2 deck)	42.5	29 – 44 head	0.23	1.64	85
Grain	Semi-trailer	42.5	23.4 t	0.36	2.50	130
Protein	Semi-trailer	42.5	23.4 t	0.08	0.57	30
Roughages*	Semi-trailer	42.5	23.4 t	0.00	0.00	0
Supplements (Dry)	Semi-trailer	42.5	23.4 t	0.00	0.00	0
Outgoing solid waste**	Semi-trailer	42.5	23.4 t	0.04	0.28	15
Employees#	Light vehicles	42.5	23.4 t	0.00	0.00	0
Support services	Light vehicles	<4.5	-	4.13	29.00	1508
Total	Total heavy vehicles	<4.5	-	0.14	1.00	52
Total	Total light and heavy vehicles			0.71	4.99	260

* All roughages (silage) produced on subject land and does not use local road network.
** On-farm trucks do not use local road network – internal roads on subject land only.
# Staff reside on adjoining land and predominantly use Newsomes Road from CH1.66 km to CH5.1 km.

4.3.2 Traffic growth rates

Traffic growth applied to the background traffic volumes represents the increase in traffic associated with the surrounding area.

Baseline daily traffic volumes for the affected state controlled road (New England Highway) have primarily been determined from published RMS daily traffic surveys, for the years between 2021 and 2020. NSW RMS have not carried out counts at this location since 2021. To establish a baseline for year 2024, the 2021 average annual daily traffic volume was compared to the 2020 year. There has been a decline in AADT since 2017. Consequently, an annual linear growth factor of 0% has been applied for each year up to 2024.

4.3.3 Haulage routes

The proposed development shall continue to utilise exactly the same haulage route as the vehicles servicing the existing agricultural enterprise on the subject land. The principal haulage route to the proposed development shall be:

- Route A - from the east (New England Highway) to the proposed development via Wellington Vale Road and Newsomes Road. Route A is used by heavy vehicles transporting agricultural enterprise inputs (seed, fertiliser etc) onto the subject land and agricultural production outputs (cattle) off the subject land. The New England Highway is a State (Road Number: 0000009). Wellington Vale Road is a sealed Regional Road (Road Number 0000136) under the control of Glen Innes Severn Council and is approved for 26 m B-double vehicles under the NSW Livestock Loading Scheme. This route is frequently used by semi-trailer vehicles to transport livestock from the subject land.

- Route B - from the west (Emmaville) to the proposed development via Wellington Vale Road and Newsomes Road. Route B is used by heavy vehicles transporting agricultural enterprise inputs (feed grain etc) onto the subject land. Wellington Vale Road is a sealed Regional Road (Road Number 0000136) under the control of Glen Innes Severn Council and is approved for 26 m B-double vehicles under the NSW Livestock Loading Scheme. This route is frequently used by semi-trailer vehicles to transport feed grain to the subject land.

4.3.4 Distribution

Figure 5 shows the local, regional and state controlled road network potentially impacted by the traffic generated by the proposed development.

Newsomes Road shall be the local road used by heavy vehicles to gain access to the proposed development complex site. There is no other road that provides vehicular access.

All of the employees shall reside on adjoining properties owned by the applicant (e.g. “Sherwood”).

Table 9 to Table 10 show the estimated distribution of heavy vehicle traffic to and from the proposed development site with reference to Figure 5.

The haulage route for incoming grains shall be from the Inverell / North Star Region via the New England Highway to Wellington Vale Road to Newsomes Road or Emmaville via Wellington Vale Road to Newsomes Road.

All cattle shall be bred on the subject land or adjoining land and walked into the proposed development.

The haulage route for outgoing livestock vehicles will be Newsomes Road to Wellington Vale Road to the New England Highway then north to Tenterfield to processing facilities located at Casino (NSW) or Warwick (QLD) or south to processing facilities at Tamworth (NSW) or Scone (NSW).

The haulage route for incoming supplements shall be from Warwick (QLD) via the New England Highway to Wellington Vale Road to Newsomes Road.

The haulage route for incoming proteins (whole cottonseed) shall be from Moree via the Gwydir Highway to Glen Innes to Deepwater on the New England Highway to Wellington Vale Road to Newsomes Road.

Table 9 – Proposed development – Traffic generation distribution – Newsomes Road (Loaded vehicles)

	Newsomes Road	
	To north Wellington Vale Road	From north Wellington Vale Road
	%	%
Cattle		
Incoming	**0**	**0**
Outgoing	**100**	**0**
Commodities		
Grains	**0**	**100**
Proteins	**0**	**100**
Roughages	**0**	**0**
Supplements	**0**	**100**

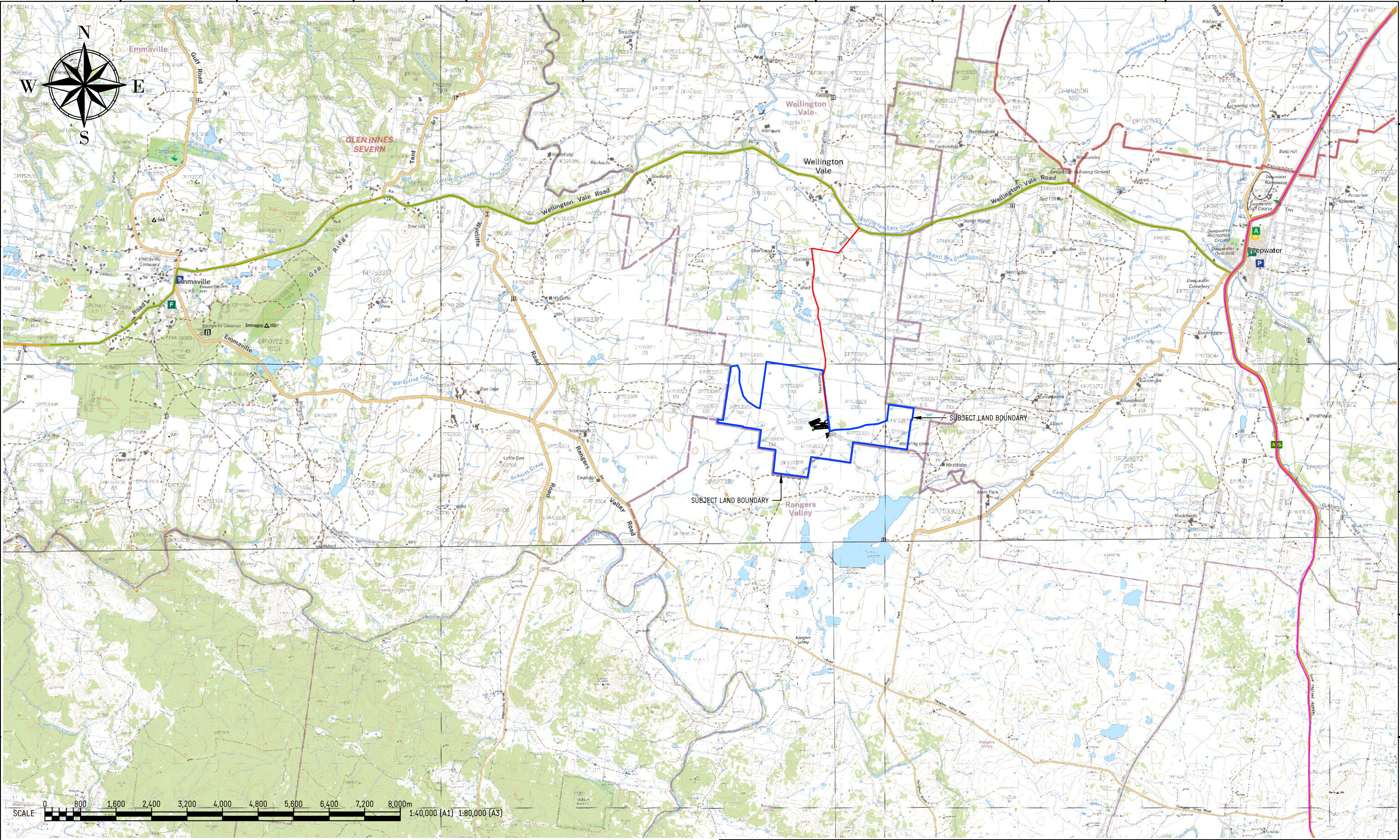
Table 10 – Proposed development – Traffic generation distribution – Wellington Vale Road (Loaded vehicles)

	Wellington Vale Road			
	To west (Emmaville) %	From west (Emmaville) %	To east (Deepwater) %	From east (Deepwater) %
Cattle				
Incoming	**0**	**0**	**0**	**0**
Outgoing	**0**	**0**	**100**	**0**
Commodities				
Grains	**0**	**25**	**0**	**75**
Proteins	**0**	**0**	**0**	**100**
Roughages	**0**	**0**	**0**	**0**
Supplements	**0**	**0**	**0**	**100**

Table 11 – Proposed development – Traffic generation distribution – New England Highway (Loaded vehicles)

	New England Highway			
	From north (Deepwater) %	To north (Deepwater) %	From south (Glen Innes) %	To south (Glen Innes) %
Cattle				
Incoming	**0**	**0**	**0**	**0**
Outgoing	**0**	**75**	**0**	**25**
Commodities				
Grains	**0**	**0**	**75**	**0**
Proteins	**0**	**0**	**100**	**0**
Roughages	**0**	**0**	**0**	**0**
Supplements	**100**	**0**	**0**	**0**

DATE PLOTTED: 5 December 2024 BY : RDC Engineers PTY LTD



LEGEND

- SUBJECT LAND BOUNDARY
- LAND PARCEL BOUNDARY
- LOCAL ROAD - NEWSOMES ROAD
- REGIONAL ROAD - WELLINGTON VALE ROAD
- STATE ROAD - NEW ENGLAND HIGHWAY

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STATUS

FOR APPROVAL
NOT TO BE USED FOR CONSTRUCTION PURPOSES

RPEQ

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REV.	DATE	REVISION DESCRIPTION	DRAWN	CHECK	APPROVED
A	24/11/24	DRAFT ISSUE TO CLIENT	RJD	RJD	RJD
B	06/12/24	FINAL ISSUE FOR LODGEMENT TO GLEN INNES SEVERN COUNCIL	RJD	RJD	RJD

SCALE	1:80,000 (A3)
DRAWN	RJD
DATE	06/12/2024
CHECKED	RJD
DATE	06/12/2024
APPROVED	RJD
DATE	06/12/2024

CLIENT: NARRIE HOLDINGS PTY LTD ATF NEWSOME FAMILY TRUST

PROJECT: PROPOSED 999 HEAD BEEF CATTLE FEEDLOT

TITLE: DEVELOPMENT APPLICATION FOR INTENSIVE LIVESTOCK AGRICULTURE
SEE APPENDIX L - TRAFFIC IMPACT ASSESSMENT
PROPOSED DEVELOPMENT - ROAD NETWORK AND SEGMENTS

REPORT REFERENCE	SUPPLIED DRAWING NUMBER		DRAWING NUMBER	REV.
FIGURE 5		A3	G4-116-500-05	B

FILE PATH: C:\RDC Engineers\RDCE - Projects\G4-116 Newsome 999 head Feedlot\05 - ACAD MasterPlan\05.1 Drawings - CURRENT FILE NAME: G4-116 BRN MASTERPLAN-00-20240625 vB.dwg

Table 12 – Proposed Development – Traffic generation on local road network (All vehicles)

Road	Classification	Development trips			
		AADT		Peak hour	
		Total Vehicles	Heavy Vehicles	Total Vehicles	Heavy Vehicles
Newsomes Road*	Unsealed – Low volume (<20 vpd)	~0.85	~0.7	~0.7	~0.6

*Full length of Newsomes Road.

Table 13 – Proposed development – Traffic generation on regional road network

Road	Classification	Development trips			
		AADT		Peak hour	
		Total Vehicles	Heavy Vehicles	Total Vehicles	Heavy Vehicles
Wellington Vale Road – West of Newsomes Road	Level 1 arterial road	~0.1	~0.1	~0.1	~0.1
Wellington Vale Road – East of Newsomes Road	Level 1 arterial road	~0.8	~0.6	~0.6	~0.5

Table 14 – Proposed development – Traffic generation on state road network

Road	Classification	Development trips			
		AADT		Peak hour	
		Total Vehicles	Heavy Vehicles	Total Vehicles	Heavy Vehicles
New England Highway (North)	State road	~0.1	~0.1	~0.1	~0.1
New England Highway (South)	State road	~0.6	~0.5	~0.5	~0.4

4.4 Traffic impacts

The traffic impact analysis is focused on the impacts of the traffic generated by proposed development on two key intersections close to the development site access. The impacts of the proposed development on public transport, active transport, parking and traffic safety have also been assessed.

4.4.1 Assessment scenarios

It is standard practice when analysing future year traffic operations to adopt a ten-year design horizon from the year of full operation. The proposed development shall be developed in one stage.

Traffic conditions have been assessed for operation at the expected year of opening of the first stage (2025) through to 10 years to 2035, which represents the 10-year design horizon. Traffic associated with construction activities of the proposed development have not been assessed as they are about 1 vehicle movement per day or 1 vehicle in and out every two days.

All heavy vehicles associated with the construction of the proposed development would be routed west along Wellington Vale Road from the New England Highway at Deepwater. Typically, a low-loader type vehicle would deliver the construction equipment to the site as required and backload with equipment that has completed operations and is to be demobilised from the site. Delivery of items of construction equipment would be staggered throughout the construction period in line with sequencing of activities.

4.4.2 Road network performance

The traffic generation and distribution from the site has been assessed and the impacts of the proposed development on the local, regional and state controlled road network, namely the Newsomes Road / Wellington Vale Road Intersection and the Wellington Vale Road / New England Highway Intersection have been reviewed.

The impact on performance of the existing road network by the proposed development has been assessed in terms of the Levels of Service (LOS) of the roads and key intersections.

4.4.2.1 LOS criteria

The LOS criteria for roads have been based on peak hour flows per direction for rural roads as defined in RTA's Guide to Traffic Generating Developments (RTA, 2002) and detailed in Table 15 for a design speed of 100 km/hr and heavy vehicle percentage of 15.

Table 15 – RTA (2002) – Peak hour flow on two-lane rural roads

Terrain	Level of service (LOS)	Percent of heavy vehicles 15	Performance standard
Flat	B	530	
	C	870	Weekday peak hour flows
	D	1,410	Recreational peak hours (weekends)
	E	2,290	

The performance standards recommended by RTA (2002), reflect the fact that recreational peak hour periods (weekend peaks, or peaks associated with particular tourist or recreational activity), occur less frequently than weekday commuter peak hour periods.

4.4.2.2 Newsomes Road

The traffic generation and distribution from the site has been assessed and the impacts of the proposed development on the local controlled road network, namely Newsomes Road have been reviewed.

Traffic count data is not available for existing traffic on Newsomes Road. The peak hour flow capacity has been assumed to be in the order of 11% of AADT. With a capacity of up to 20 vpd, the peak hour flow is in the order of 2.2 vehicles per hour (vph) as a worst case scenario. The development generated traffic would increase the peak hour two-way traffic volume on Newsomes Road by about 0.85 vph.

This is well below the performance standard of LOS C recommended by RTA (2002).

The rural nature of the area and the seasonality of the rural / agricultural uses may result in a degree of unevenness in the traffic distribution across the year due to cattle and sheep production and winter and summer planting and harvesting periods, however.

4.4.2.3 Wellington Vale Road

The peak hour flow capacity has been assumed to be in the order of 11% of AADT. With a recorded AADT of 147.3 vpd, in 2018, the peak hour flow is in the order of 16.5 vph. The development generated traffic would increase the peak hour two-way traffic volume on Wellington Vale Road by about 0.1 vph to the west and about 0.65 vph to the east.

This is well below the performance standard of LOS C recommended by RTA (2002).

The rural nature of the area and the seasonality of the rural / agricultural uses may result in a degree of unevenness in the traffic distribution across the year due to cattle and sheep production and winter and summer planting and harvesting periods, however.

4.4.2.4 New England Highway

The traffic generation and distribution from the site has been assessed and the impacts of the proposed development on the state controlled road network, namely the New England Highway have been reviewed.

The annual average daily traffic volume (AADT) for 2022 for the New England Highway has been obtained from TfNSW and indicates traffic flows of 1,482 vehicles per day in the vicinity of Dundee (1,175 light vehicles; 307 heavy vehicles). The average hourly traffic data for the New England Highway (Station Id DNDSTC) in 2021 were not adjusted as a 0% linear growth rate for each year to arrive at the 2024 hourly data was assumed. Table 16 presents the measured 2021 volumes for all vehicles and heavy vehicles. Table 16 shows that the peak hourly flow northbound (70 vph) occurs between 11 am and 12 am and the peak hourly flow (69 vph) southbound occurs between 2pm and 4pm.

Table 16 – Traffic generation – Hourly traffic volumes 2021 (Station ID DNDSTC)

	7 Day Average			
	2021 Northbound All Vehicles	2021 Northbound Heavy Vehicles	2021 Southbound All Vehicles	2021 Westbound Heavy Vehicles
	vph	vph	vph	vph
Midnight – 1am	6	4	6	5
1am – 2am	5	4	5	5
2am – 3am	5	4	5	4
3am – 4am	5	4	4	4
4am – 5am	7	4	6	4
5am – 6am	12	6	9	5
6am – 7am	21	9	20	7
7am – 8am	34	12	35	10
8am – 9am	49	14	56	16
9am – 10am	59	**15**	61	16
10am – 11am	66	**15**	62	15
11am – 12 noon	**70**	**15**	62	15
12 noon – 1pm	68	14	64	16
1pm – 2pm	66	14	66	17
2pm – 3pm	63	14	**69**	18
3pm – 4pm	60	13	69	19
4pm – 5pm	55	10	61	**20**
5pm – 6pm	46	10	50	17
6pm – 7pm	31	9	33	13
7pm – 8pm	21	9	23	11
8pm – 9pm	15	7	17	9
9pm – 10pm	14	7	14	9
10pm – 11pm	9	6	7	5
11pm - Midnight	7	5	6	4
Total	794	224	817	268

At the New England Highway / Wellington Vale Road intersection the proposed development generates an additional ~0.6 vehicle movements per hour [light vehicles (0.1) + heavy vehicles (0.5)] based on the additional development traffic using the intersection. The New England Highway would continue to operate at a LOS A as defined in RTA (2002).

4.4.3 Assessed intersections

4.4.3.1 Newsomes Road / Wellington Vale Road intersection

Newsomes Road forms a T-intersection with Wellington Vale Road with Newsomes Road the terminating leg. The Newsomes Road / Wellington Vale Road intersection is an uncontrolled T-intersection and is shown in Photograph 23. The intersection has the following properties:

- No give way signage on the Newsomes Road approach as shown on Photograph 23;

- The intersection has no posted speed limit on Newsomes Road approach;
- The intersection has adequate visibility (>300 m) to the west to meet Austroads requirements for a 100 km/h design speed as shown in Photograph 24. However, there is a self-seeded juvenile Lombardy Poplar (deciduous) tree on the left bank of Wellington Vale Creek within the road reserve which when leaved obstructs the sight distance. It is recommended that this tree is removed to improve site distance.
- The intersection has adequate visibility (~225 m) to the east to meet Austroads requirements for a 100 km/h design speed as shown in Photograph 24. However, there is an avenue of mature Lombardy Poplar (deciduous) tree with juveniles on the northern side of the road which when leaved obstruct the sight distance. It is recommended that the juvenile trees are removed to improve site distance.
- There is a simple right turn treatment (SR) westbound off Newsomes Road and simple left turn treatment (SL) southbound off Newsomes Road; and
- Photograph 26 and Photograph 27 show that the throat of T-intersection has signs of pavement breakup on the edge of the pavement due to right out vehicle turning movements and potholing.

Photograph 23 – Newsomes Road / Wellington Vale Road Intersection (Looking north)

Photograph 24 – Newsomes Road / Wellington Vale Road Intersection (Looking west)

Photograph 25 – Newsomes Road / Wellington Vale Road Intersection (Looking east)

Photograph 26 – Newsomes Road / Wellington Vale Road Intersection (Throat wear right out)

Photograph 27 – Newsomes Road / Wellington Vale Road Intersection (Throat wear left out)

Figure 6 – Newsomes Road / Wellington Vale Road Intersection – Aerial image (QLD Globe)

4.4.3.1.1 Geometric layout

As the largest design vehicle that shall access the proposed development is a semi-trailer which has as-of-right access, a swept path analysis of the Newsomes Road / Wellington Vale Road intersection is not deemed warranted.

4.4.3.2 Wellington Vale Road / New England Highway intersection

The Wellington Vale Road / New England Highway intersection is a uncontrolled T-intersection with Wellington Vale Road the terminating leg as shown in Photograph 28. The intersection has the following properties:

- No Give way or Stop signage on the Wellington Vale Road approach;
- No advanced warning signage on the Wellington Vale Road approach;
- The intersection has no posted speed limit;
- There is a basic left turn treatment (BAL) northbound on the New England Highway and basic right turn treatment (BAR) southbound onto the Riverina Highway.
- Photograph 29 and Photograph 30 show that the Wellington Vale Road / New England Highway T-intersection has no signs of pavement breakup in the throat of the intersection due to vehicle turning movements.

Photograph 28 – Wellington Vale Road / New England Highway Intersection (Looking east)

Photograph 28, Photograph 29 and Photograph 30 show that the Wellington Vale Road / new England Highway 'T' intersection is in good condition with no signs of pavement breakup in the throat of the intersection due to heavy vehicle turning movements. However, there is edge wear and drop off on the left turn in and a large pothole on the left turn out of Wellington Vale Road.

Photograph 29 – Wellington Vale Road / New England Highway (Looking south)

Photograph 30 – Wellington Vale Road / New England Highway Intersection (Looking north)

Figure 7 illustrates an aerial view of the Wellington Vale Road / New England Highway T intersection.

Figure 7 – Wellington Vale Road / New England Highway Intersection – Aerial image (QLD Globe)

4.4.3.2.1 Geometric layout

As the largest design vehicle that shall access the proposed development is a semi-trailer which has as-of-right access, a swept path analysis of the Wellington Vale Road / New England Highway Road intersection is not deemed warranted.

4.4.4 Rail safety

As there are no railway lines in the local region and on the principal haulage route evaluation of the safety performance of railway crossings warrants no further assessment.

4.4.5 Road safety

There is likely to be no significant impacts on road safety as the proposed development does not make any changes to the local roads, access is from a local road and traffic volumes are not significant. The analysis for the crash data during the past five years shows that the crash rates at the local intersections are very low.

4.4.5.1 Warrants

4.4.5.1.1 Newsomes Road / Wellington Vale Road

With reference to section 4.4.2.2 and 4.4.2.3 and Photograph 9, evaluation of the safety performance of the Newsomes Road / Wellington Vale Road intersection is not deemed warranted as the hourly volumes on the major road (Wellington Vale Road [~2.2vph]) and minor road (Wellington Vale Road [~16vph]) are low.

Considering the low hourly volumes on Wellington Vale Road the existing simple left turn treatment (SL) and simple right turn (SR) are acceptable treatments for the relevant traffic volumes from a safety perspective. No upgrades are recommended to the existing intersection from a safety perspective.

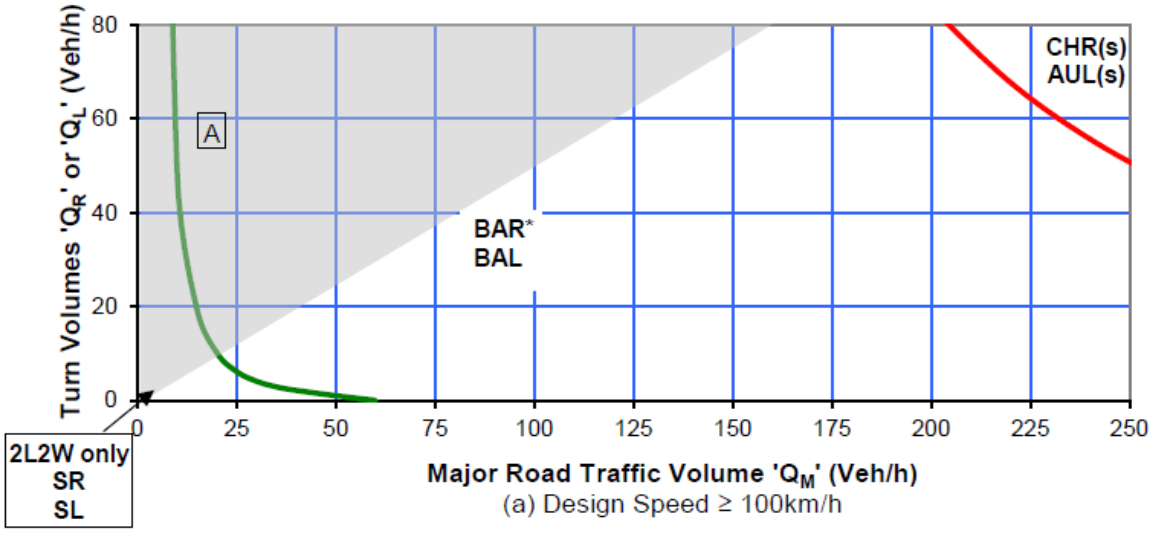

Figure 8 – Warrants for turn treatments on major roads at unsignalised intersections (Austroads, 2017)

4.4.5.1.2 Wellington Vale Road / New England Highway

With reference to section 4.4.2.3 and 4.4.2.4 and Figure 9, evaluation of the safety performance of the Wellington Vale Road / New England Highway intersection is not deemed warranted as the existing turning treatments include a BAL and AUR and the hourly peak turning volumes on the major road (New England Highway) (200 vph) and minor road (Wellington Vale) (>20vph) would not trigger an upgrade to a CHR/AUL treatment.

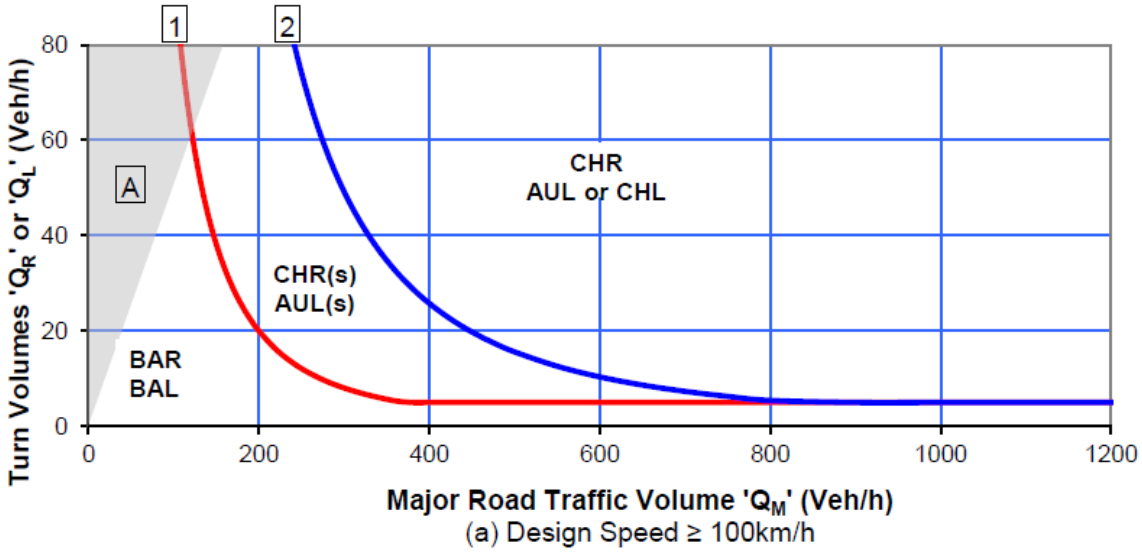

Figure 9 – Warrants for turn treatments on high speed rural roads at unsignalised intersections (Austroads, 2020a)

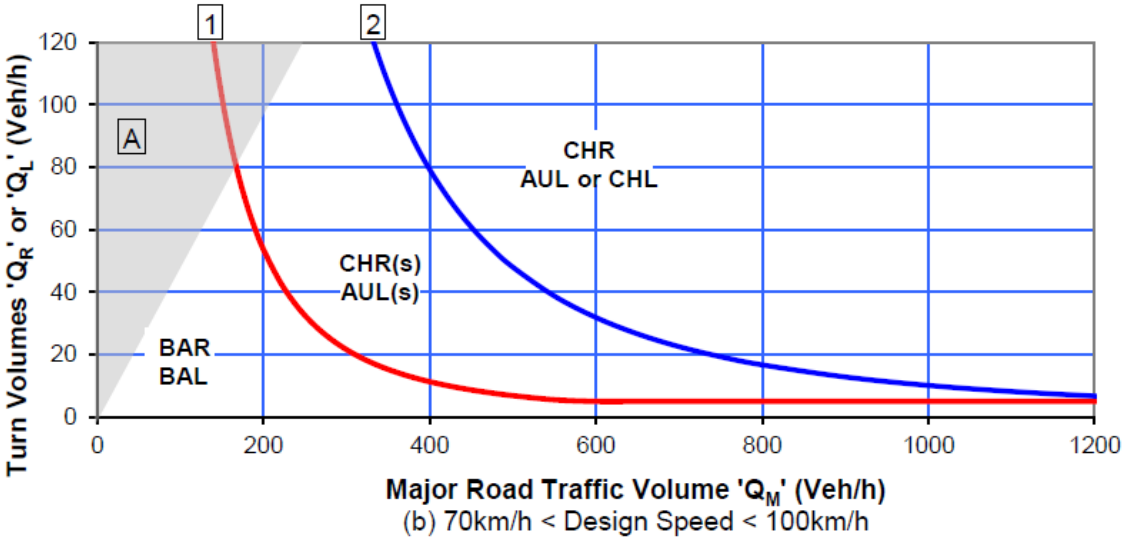

Figure 10 – Warrants for turn treatments on lower speed rural roads at unsignalised intersections (Austroads, 2020a)

4.4.5.2 Signage

To further improve road safety, additional safety measures are proposed due to the additional volume of heavy vehicles imposed on the local road network. These include:

- It is recommended that advanced warning signage as shown in Figure 11 be implemented at chainages along Newsomes Road in accordance with AS1742.2 Clause 4.4.7.3 and 4.5.4.1 to warn motorists and improve road safety. It is recommended Council undertake as these are warranted under background traffic conditions.

CH0.75km CH1.0 km CH1.3km

Figure 11 – Warning signs (AS1742.2 Section 2)

- Consider the installation of Give Way signage as shown in Figure 11 at the Newsomes Road / Wellington Vale Road and Wellington Vale Road / New England Highway) unsignalised t-intersection in accordance with AS1742.2 Clause 2.5.1 for safety reasons as the continuing road (Wellington Vale Road and New England Highway) are rural and arterial roads respectively. It is recommended Council undertake as these are warranted under background traffic conditions.

Figure 12 – Unsignalised intersection – Control signage (AS1742.2 Section 2)

4.4.5.3 Roadside hazards

There are several locations along Newsomes Road with hazards including tree stumps that are located within close proximity to the road formation. These could pose a safety hazard should an errant vehicle leve the road. For example at about CH1.0km there is a crest with a tree stump on the northern side of the road formation as shown in Photograph 34 and Photograph 32 (Stump obsecured behind REGP). It is recommended that this tree stump is removed. Anthoer example is shown in Photograph 33 at about CH4.25 km.

Photograph 31 – Newsomes Road – Roadside Hazard CH1.0km (Looking west)

Photograph 32 – Newsomes Road – Roadside Hazard CH1.0 km (Looking east)

Photograph 33 – Newsomes Road – Roadside Hazard CH1.0 km (Looking south)

4.4.5.4 Traffic Management Plan

A traffic management plan is not deemed warranted as there is only two potential haulage routes.

4.4.6 Access arrangements

4.4.6.1 Location

Access to the proposed development complex site shall be from the existing subject land entrance off the formed section of Newsomes Road. There is only one formal entrance point to the proposed development complex off the formed section of Newsomes Road as shown in Figure 3. Newsomes Road is a No Through Road.

The existing subject land entrance is located at the end of the formed section of Newsomes Road. An informal property access track which is an extension of Newsomes Road continues generally within the road reserve to the existing built infrastructure on the subject land. The property access track is not maintained by Council. All livestock and commodity delivery vehicles associated with the proposed development other than those originating from the subject land or adjoining land to the west shall to enter the site via this route. The proposed development entrances shall be upgraded to provide an efficient, functional and safe access to the proposed development site for the type of traffic generated by the proposed development. The largest heavy vehicle configuration proposed to access the site is a semi-trailer. This access shall also be used by light vehicles such as staff and service vehicles.

The existing subject land entrance is shown on Figure 3. The existing entrance is located on a straight flat section of Newsomes Road and is not located on a bend with a radius of less than 450 m. A 3.4 m cattle grid is located at the entrance.

The existing entrance may be upgraded including widening of the grid to improve drainage are maintain all-weather access.

There is area and width (8 m) within the subject land to allow for a northbound vehicle to prop and allow a southbound vehicle to enter the site.

Further, the entrance off Newsomes Road is not located within 15 m of a signalised road intersection, 10 m from an un-signalised road intersection, within 2 m of any adjoining property access or within 1 m of any street signage, power pole, street light or other council infrastructure.

Photograph 34 – Proposed development complex site – Existing entrance (looking south)

Photograph 35 – Proposed development complex site – Existing entrance (looking north)

4.4.6.2 Safety assessment

As the proposed development entrance is essentially a continuation of Newsomes Road a road access safety assessment in accordance with clause 3.4 of Austroads Guide to Road Design Part4A: Unsignalised and Signalised Intersections August 2017 (Austroads, 2017), with consideration of the proposed entrance as an intersection has not been undertaken.

4.4.6.2.1 Queue assessment

As shown on Figure 3, there is sufficient queuing distance for northbound vehicles on the subject land prior to the exit.

4.4.7 Parking

4.4.7.1 Parking arrangements

The requirements for on-site vehicle parking for an Intensive Livestock agriculture are not specified in Table 7.1 Off-Street Parking Rates in the Glen Innes Severn Development Control Plan 2014.

The required number of parking spaces (or facilities for service vehicles) will be based on the following objectives:

- Ensure that adequate parking is provided on site for visitors and staff.
- Ensure that car parking facilities do not detract from the amenity of the area.
- Ensure that adequate provision is made for safe and convenient loading and unloading on site.
- Promote road safety by limiting new access points onto local roads.

To ensure the provision for parking adequately services the proposed development, the parking demand has been estimated at 3 staff members plus the provision of parking for support services and the loading and unloading of goods including livestock and commodities within the site. A conservative assumption has been adopted as each staff member will require an individual parking space plus two spaces in total for visitors and support service vehicles.

The proposed development has a large site area which is sufficient to provide for at least 5 informal carparking areas located across the development complex site. Further, the site area provides sufficient area for light and heavy vehicles up to a B-double to manoeuvre and turn around on-site and enter / exit the proposed development site in a forward direction.

4.4.7.2 Adequacy of car parking

Figure 3 indicates several informal gravel car parking areas of which dimensions are able to accommodate a total of over 5 staff parking spaces, plus heavy vehicle spaces. Due to the nature of the proposed development and its location in a rural area this provision is considered to be appropriate in accordance with the requirements of staff and the expected delivery of commodities and livestock.

Provision of parking for persons with disability and general access shall be made in accordance with the requirements of Australian Standards AS1428 – Design for access and mobility and AS2890.6 – Parking facilities as far as they are relevant to the proposed development.

There is no requirement to have a formal pedestrian connection to buildings from parking areas.

There is no requirement for allocation of specific service areas for waste collection, deliveries and loading and unloading of other goods.

4.4.8 Public transport

Due to the rural location of the subject land there is no scheduled public transport operations such as passenger bus or train services along local road haulage routes comprising Wellington Vale Road and Newsomes Road. There are passenger bus services operating on Wellington Vale Road between Emmaville and Deepwater. This service operates twice per day, once in the morning departing Deepwater at about 8:00 am and in the afternoon departing Emmaville at 3:30 pm outside of the typical commodity transport times.

There is a school bus operating on the New England Highway between Tenterfield and Glen Innes high school. Livestock and commodity movements are scheduled to occur around the bus school times as far as practical.

Wellington Vale Road and Newsomes Road are not proposed as a future public transport route. Due to the nature of the proposed development provision for public transport infrastructure is not deemed warranted.

Consequently, the proposed development shall have no impact on public transport services.

4.4.9 Cyclists and pedestrians

Due to the rural location of the subject land there are no pedestrian paths, bicycle lanes or bicycle awareness zones provided on Wellington Vale Road, Newsomes Road or the New England Highway for the segment reviewed.

Due to the nature of the proposed development provision for pedestrian paths or bicycle infrastructure is not deemed warranted.

Consequently, the proposed development shall have no impact on cyclist or pedestrian infrastructure.

4.4.10 Conclusion

The impact of traffic generated by the proposed development on the external transport network has been assessed. Consideration has been given to operational performance, road safety and access arrangements.

The assessment was carried out of the trips likely to be generated by the proposed development and the estimated distribution of trips on the existing road network. The impact of the proposed development on the road network has been analysed using procedures set out in Austroads guidelines.

Results of the assessment indicate that the road network continues to operate with capacity as the additional traffic generated is low (~1 vpd) and the additional traffic on the local, regional and state road network is within the standard of the existing road design. Consequently, the impact of development traffic on the operational performance of the road network is not significant.

No intersection upgrades to the local or state controlled road network would be warranted due to the low additional peak hour volume of development traffic.

The following mitigation measures are proposed or maintained:

- Access for light vehicles and heavy vehicles be maintained via the existing subject land entrance off Newsomes Road.
- Removal of hazards within close proximity to the formation on Newsomes Road such as tree stumps.
- Implementation of several permanent road warning signs on Newsomes Road (for example curve signs (CH0.75km; CH1.3 km), crest (CH1 km) in accordance with AS1742.2 to advise motorists of hazards and obstacles. The installation of "Advisory Speed Warning sign" to supplement the "Curve Warning Sign" should also be considered.

In conclusion, the proposed development will not adversely impact on the operational performance of the surrounding road network and the proposed road access arrangements are considered adequate and suitable for the proposed use and estimated traffic generated.

5 References

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Austroads 2023b, Guide to traffic management: part 4A: Unsignalised and Signalised Intersections, AGTM04A-17, Austroads, Sydney, NSW. https://austroads.com.au/publications/road-design/agrd04

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Roads and Maritime Services, 2013, Austroads Supplement for Guide to Traffic Management Roads and Maritime Services, Sydney NSW.

Roads and Traffic Authority, 2011, RTA Supplement to the Austroads Guide to Road Transport Planning, Roads and Traffic Authority, Sydney NSW.

Appendix A – GISC Road Classification

Rod Davis

From: Andrew Neil <aneil@gisc.nsw.gov.au>
Sent: Thursday, 21 November 2024 9:58 AM
To: Rod Davis
Subject: Re: Westholme Feedlot - 999 head - Traffic Assessment

Hi Rod,

Wellington Vale Rd is Level 1 arterial road in the hierarchy. It is classified as a regional road.

Cheers

Andrew

Get Outlook for iOS

Andrew Neil
Manager of Growth and Development
Place and Growth
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From: Rod Davis <rod.davis@rdcengineers.com.au>
Sent: Thursday, November 21, 2024 9:39:48 AM
To: Andrew Neil <aneil@gisc.nsw.gov.au>
Subject: RE: Westholme Feedlot - 999 head - Traffic Assessment

Hello Andrew,

Could you please ask Tony K what Hierarchy Level Wellington Vale Road is in Council's asset system.

Regards,

Rod Davis
Director
—
0427629203
rod.davis@rdcengineers.com.au

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From: Andrew Neil <aneil@gisc.nsw.gov.au>
Sent: Wednesday, 20 November 2024 9:11 AM
To: Rod Davis <rod.davis@rdcengineers.com.au>
Subject: FW: Westholme Feedlot - 999 head - Traffic Assessment

GLEN INNES SEVERN COUNCIL

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From: Anthony Kamphorst <akamphorst@gisc.nsw.gov.au>
Sent: Wednesday, 13 November 2024 11:16 AM
To: Andrew Neil <aneil@gisc.nsw.gov.au>
Cc: Daniel Alford <dalford@gisc.nsw.gov.au>
Subject: RE: Westholme Feedlot - 999 head - Traffic Assessment

Hi Andrew,

Please see below responses to the questions regarding Newsomes Road.

a. The classification of Newsomes Road;
   Newsomes Road is a local unsealed road. It is classified as a Hierarchy Level 7 - Local Access Type C (unsealed) in our asset system.
b. Current standard / vpd;
   Newsomes Road is a single lane unsealed gravel road with a width of 4m, it currently has a condition score of 5 (very poor) which means it the gravel loss has reached a point where the asset requires gravel re-sheeting. There have been no traffic counts on Newsomes Road, however the estimated AADT for a Local Access Type C is less than 20 vehicles per day.
c. Any tube count data for Wellington Vale Road and or Newsomes Road ;
   As mentioned above, we do not have traffic counts for Newsomes Road, other than the estimate of <20 VPD. We have the below traffic data for Wellington vale Road.

Location	Rural/Urban	Sealed / Unsealed	Total Count	AADT	% Commerical	S
Wellingrove Rd	R	Sealed	1224	76.2	28.6	9
Wellingrove Rd	R	Sealed	804	61.8	24.6	19
Wellington Vale Rd	R	Sealed	1204	147.3	27.3	8
Wellington Vale Rd	R	Sealed	1319	146.0	9.8	28
Wellington Vale Rd	R	Sealed	919	116.3	6.2	25

d. The largest truck size able to legally access Newsomes Road. (B-Double etc) / Wellington Vale Road.

Wellington Vale Road is an approved B-Double route for B double trucks up to 26m in length. This is registered on the NHVR network map.

Newsome's Road is not load limited, so has as-of-right access for General Access Vehicles (GAV) which includes trucks and truck and trailer combinations up to 19 metres in length. Vehicle combinations larger than this are classed as Restricted Access Vehicles (RAVs) and must be provided approval through a notice or permit before they can travel on Newsomes Road. This is applied through the NHVR system and comes to Council for approval.

Thanks,

Tony

GLEN INNES SEVERN COUNCIL

Anthony Kamphorst
Manager of Infrastructure Delivery
Infrastructure Services
GLEN INNES SEVERN COUNCIL

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From: Andrew Neil <aneil@gisc.nsw.gov.au>
Sent: Tuesday, 12 November 2024 5:12 PM
To: Anthony Kamphorst <akamphorst@gisc.nsw.gov.au>
Subject: FW: Westholme Feedlot - 999 head - Traffic Assessment

Hi Tony,

As discussed if you could please assist with the below it would be appreciated.

Cheers,

Andrew

Andrew Neil
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From: Rod Davis <rod.davis@rdcengineers.com.au>
Sent: Tuesday, 12 November 2024 4:55 PM
To: Andrew Neil <aneil@gisc.nsw.gov.au>
Subject: Westholme Feedlot - 999 head - Traffic Assessment

Hello Andrew,

I am requesting some clarification and advice on the requirements for the Traffic Assessment to be prepared for the proposed Westholme FL on Newsomes Road.

For example is Council able to confirm

a. The classification of Newsomes Road;
b. Current standard / vpd;
c. Any tube count data for Wellington Vale Road and or Newsomes Road ;
d. The largest truck size able to legally access Newsomes Road. (B-Double etc) / Wellington Vale Road.

Also how to approach the closure of the southern extent of Newsomes Road. Is the DA for the feedlot also to include closure of the road.

Regards,

Rod Davis
Director
—
0427629203
rod.davis@rdcengineers.com.au

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Appendix B – TfNSW Weekly volume reports

Traffic Volume Viewer

New England Highway

Wellingrove

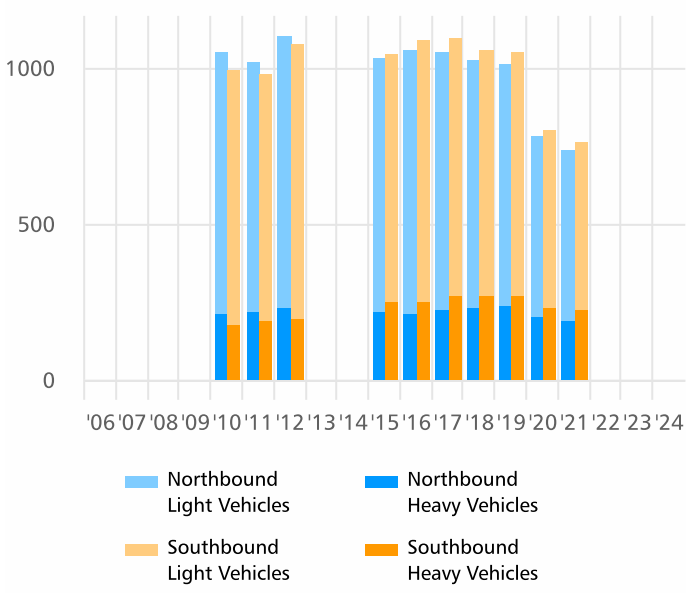
Location
200m North of Severn River Road,
Dundee 2370

Station Id: DNDSTC

Road Name: New England Highway
Road Number: 0000009
Route Number: A15
Road Classification Type: Highway
Road Classification Admin: State
Local Government Area: Glen Innes Severn
RMS Region: Northern
Device Type: Permanent Classifier
Co-ordinates: -29.568588, 151.865753

All Days

Show Heavy Vehicle %



Legend

Marker Icons

- Location Marker
- Permanent Counter
- Permanent Classifier
- Sample Counter
- Sample Classifier
- Heavy Vehicle Checking Station (Classifier)
- No data for selected year

Vehicle Count Scale

200k
100k
50k
10k

Traffic Volume Viewer

New England Highway

Location
200m North of Severn River Road,
Dundee 2370

Station Id: DNDSTC

Road Name: New England Highway
Road Number: 0000009
Route Number: A15
Road Classification Type: Highway
Road Classification Admin: State
Local Government Area: Glen Innes Severn
RMS Region: Northern
Device Type: Permanent Classifier
Co-ordinates: -29.568588, 151.865753

Legend

Marker Icons

- Location Marker
- Permanent Counter
- Permanent Classifier
- Sample Counter
- Sample Classifier
- Heavy Vehicle Checking Station (Classifier)
- No data for selected year

Vehicle Count Scale

200k
100k
50k
10k

All Days

Show Heavy Vehicle %

	2019	2020	2021
N	1,020 23.82%	792 25.76%	745 25.77%
S	1,060 26.23%	809 29.67%	769 29.91%
N S	2,080 25.05%	1,601 27.73%	1,514 27.87%