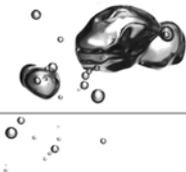


5.	Planning and Land Use	5-1
5.1	Introduction	5-1
5.2	Existing Environment	5-1
5.2.1	Existing Land Uses	5-1
5.2.2	Tenure	5-6
5.2.3	Local Planning Framework	5-10
5.2.4	Landuse Suitability and Good Quality Agricultural Land	5-19
5.3	Impact Assessment and Mitigation	5-24
5.3.1	Inundation Area and Surrounds	5-24
5.3.2	Pipeline Corridors	5-29
5.3.3	Land Use Implications of Water Availability	5-31
5.4	Conclusion	5-33





5. Planning and Land Use

5.1 Introduction

This section addresses the land use, tenure and local planning requirements for the proposed Emu Swamp Dam. The focus of this assessment is land affected by:

- the proposed dam wall, inundation areas for the Urban Water Supply Dam and the Combined Urban and Irrigation Dam, and the buffer area;
- construction activities for the dam wall;
- the Stalling Lane Access;
- the proposed Urban and Irrigation Pipelines; and
- the provision of additional water i.e. the urban water service area and proposed irrigation properties.

This section describes the current patterns of land use and tenure and investigates whether the Project would result in changes to the use of land and/or tenure. The local planning section describes the local planning instrument for Stanthorpe Shire and assesses how the Project influences the outcomes sought by this document.

The assessment describes positive and negative impacts, direct and indirect, for both the construction and operational phases of the Project. Where specific negative impacts are identified, mitigation measures are proposed to avoid or minimise the impacts.

5.2 Existing Environment

The Project area is located within Stanthorpe Shire on the Granite Belt, in Southern Queensland (refer to **Figure1-1**). The area is renowned for its horticultural land, particularly for its vineyards and orchards. Tourism is a major activity, with a focus on the region's wineries and the spectacular granite landscape of Girraween National Park and Traprock Gorges of Sundown National Park which is dissected by the Severn River.

The natural features and cooler climate provide an attractive rural environment with a number of towns and villages servicing the region. Stanthorpe is the largest town and accommodates approximately half of the Shire's population. It has a comprehensive suite of business services, health, education and community facilities. Wallangara is the second largest centre in the shire. The villages of Cottonvale, Thulimbah, The Summit, Amiens, Applethorpe and Glen Aplin service smaller residential populations, surrounding rural areas and tourists.

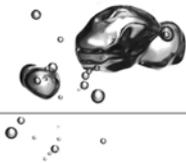
5.2.1 Existing Land Uses

The Australian Land Use and Management (ALUM) system is used to describe land use in the Project area. The ALUM system is a nationally recognised system collaborated by the States and based on the work for the Murray Darling Commission by Baxter and Russell (2004). It is used for collecting and presenting land use information. The ALUM system categorises 32 land use classes and sub-classes. The land use classes relevant to the Project area are described in **Table 5-1**.

■ **Table 5-1 ALUM Land Use Classifications**

Land Use	Definition
Nature conservation	Land that contains vegetation, geological features and ecosystems worthy of protection. Includes nature reserves, national parks, wilderness areas, habitat/species management areas and natural feature protection areas.
Other minimal use	Areas of land that are largely unused (in the context of the prime use) but may have ancillary uses. This may be the result of a deliberate decision by the manager or the result of circumstances. The land may be available for use but for various reasons remains 'unused'.
Grazing (natural vegetation and modified pastures)	Land used for grazing by domestic stock on native vegetation and where there have been deliberate attempts at pasture modification. Some change in species composition may have occurred.
Forestry	Commercial production from native forests and related activities on public and private land and land on which plantations of trees or shrubs (native or exotic species) have been established for production or environmental and resource protection purposes. This includes farm forestry and irrigated plantations. Environmental and indirect production uses associated with retained native forest (e.g. prevention of land degradation, wind-breaks, shade and shelter) are excluded from this category.
Cropping	Land under cropping at the time of mapping may be in a rotation system so that at another time the same area may be, for example, under pasture. Land in a rotation system should be classified according to the land use at the time of mapping. Cropping can vary markedly over relatively short distances in response to change in the nature of the land and the preferences of the land manager. It may also change over time in response to market conditions. Fodder production, such as lucerne hay, is treated as a crop as there is no harvesting by stock.
Horticulture	Irrigated and non-irrigated perennial and seasonal crop plants that are intensively cultivated, usually involving a relatively high degree of nutrient, weed and moisture control.
Intensive animal production	Intensive forms of animal production (excludes associated grazing/pasture). Agricultural production facilities such as feedlots, piggeries etc may be included.
Manufacturing and industry	Factories, workshops, foundries, construction sites etc. This includes the processing of primary produce e.g. sawmills, pulp mills and abattoirs.
Urban residential	Predominantly residential uses contained in an urban setting.
Rural residential	Characterised by agriculture in a peri-urban setting, where agriculture does not provide the primary source of income.
Commercial and public Services	Land allocated to the provision of commercial or public services including shops, markets, financial services and education, community and health facilities respectively.
Utilities	Electricity generation stations and transmission lines and facilities associated with gas production and supply.
Transport and communication	Airports, road, railways. Ports and navigation infrastructure.
Water	River, waterway, marsh, wetland and coastal estuaries.
Park	Premises available to the public for free recreation and enjoyment.
Sport and Recreation	Premises used for the playing of games, recreation, instruction, athletics, sport or entertainment.
Education Premises	Premises used for the systematic training and instruction designed to impart knowledge and develop skill such as pre-school, primary school and university.
Vacant Land	Land with no current recognised land use.

The land use classes are generally consistent with the land use descriptions used in the Stanthorpe Shire Council (SSC) *Planning Scheme 2004*.



5.2.1.1 Stanthorpe Shire

The major urban area of the Shire is Stanthorpe which comprises a range of land uses including urban residential, manufacturing and industry, commercial and public services, sport and recreation and education premises. Stanthorpe is supported by a number of villages where limited small scale urban residential, industrial and tourism related uses occur.

Rural land uses are prominent in the Shire along with a number of large areas set aside for nature conservation and forestry purposes. Vineyards, vegetable growing and orchards are the main horticultural activities. Grazing also occurs in areas of open woodland and grassland. Tourism land uses, including cellar doors, fruit and vegetable sales and short stay accommodation are often located in association with horticultural activities.

The New England Highway and rail line run through the Shire.

5.2.1.2 Dam Area and Surrounds

The proposed location of the dam and inundation area covers a section of the Severn River and adjoining properties within the Severn River Valley. These properties retain a high level of natural vegetation along the river. The majority of the surrounding area is classified 'natural environments' or 'other minimal use'. These land use classifications and existing buildings are shown on **Figure 5-1**.

In the area adjoining Emu Swamp Road and Fletcher Road, a number of properties are cleared for vineyards, orchards, grazing, dwelling houses, sheds, property access, as well as other associated rural uses. These uses are generally within or associated with the 'horticulture' and 'grazing' classifications.

Native vegetation occurs in a number of areas including on the northern side of Emu Swamp Road near the intersection with Fletcher Road. These areas are classified as 'other minimal use'.

The Rumbalara Estate Wines vineyard is located near the rail level crossing over Fletcher Road and includes a cellar door. Chaplin Hill Estate vineyard is also located further west along Fletcher Road. Severn River Wines is located on Sutton Lane. There are also additional vineyards in the surrounding areas to the north and south, with the closest winery cellar door in the north being Mountview Wines, which is located near the intersection of Emu Swamp Road and Mt Stirling Road.

At the eastern end of Fletcher Road, 'rural residential' type dwellings are offered on a short term basis for tourist accommodation. North and south of the river are areas of steeper terrain which are predominantly covered in vegetation and classified as 'nature conservation' or 'other minimal uses'. The steep terrain generally restricts opportunities for intensive land uses although there are pockets of horticulture, orchards and vineyards.

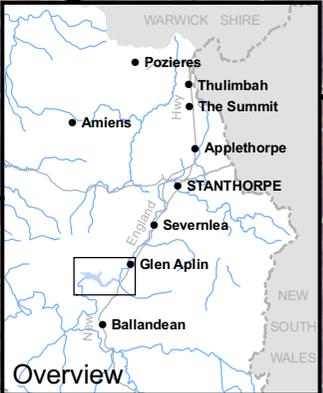
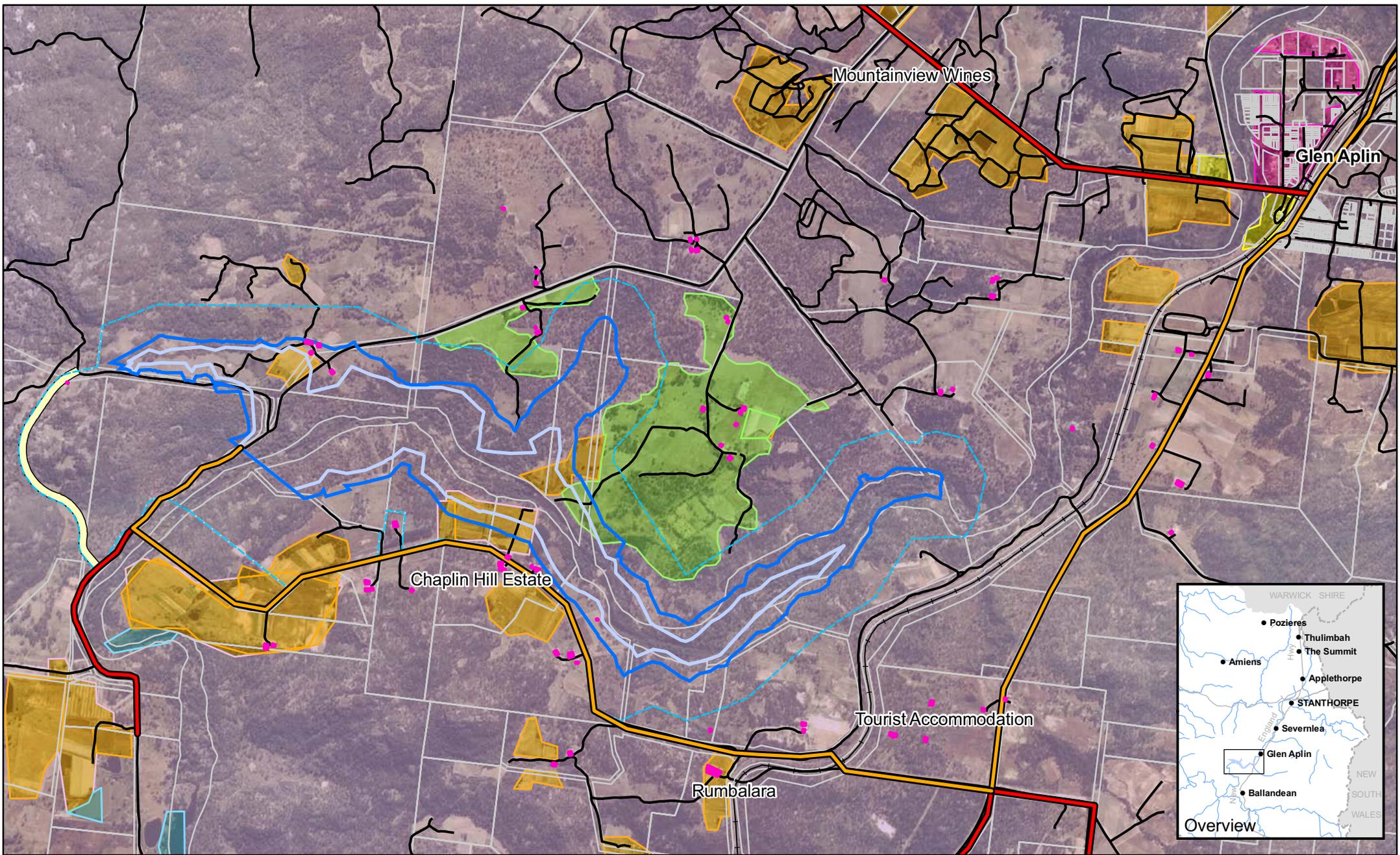
Upstream of the proposed dam area is the village of Glen Aplin which predominantly contains 'urban residential' land uses as well as minor tourism and industrial uses and a primary school. A service station is located on the highway. Glen Aplin is generally constrained by the Severn River to the west and bisected by the highway and rail line.

Immediately downstream of the proposed dam area is land covered by native vegetation with cleared land for grazing and extensive irrigated horticulture further downstream.

5.2.1.3 Pipeline Corridors

There is the potential for an Urban Pipeline and Irrigation Pipeline associated with the proposed dam. The proposed pipelines generally follow the New England Highway and the local road network. The corridors, in a limited number of areas, cross rural properties. The predominant classification is 'horticulture'. However, a number of the properties are covered by vegetation and can be classified as 'other minimal use'. Vegetation values are addressed in **Section 9** of the EIS.

The broad classification of land uses in relation to the proposed pipeline corridors is shown on **Figure 5-2**.

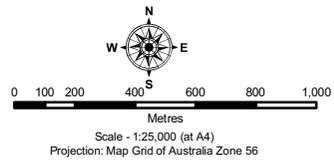


Legend

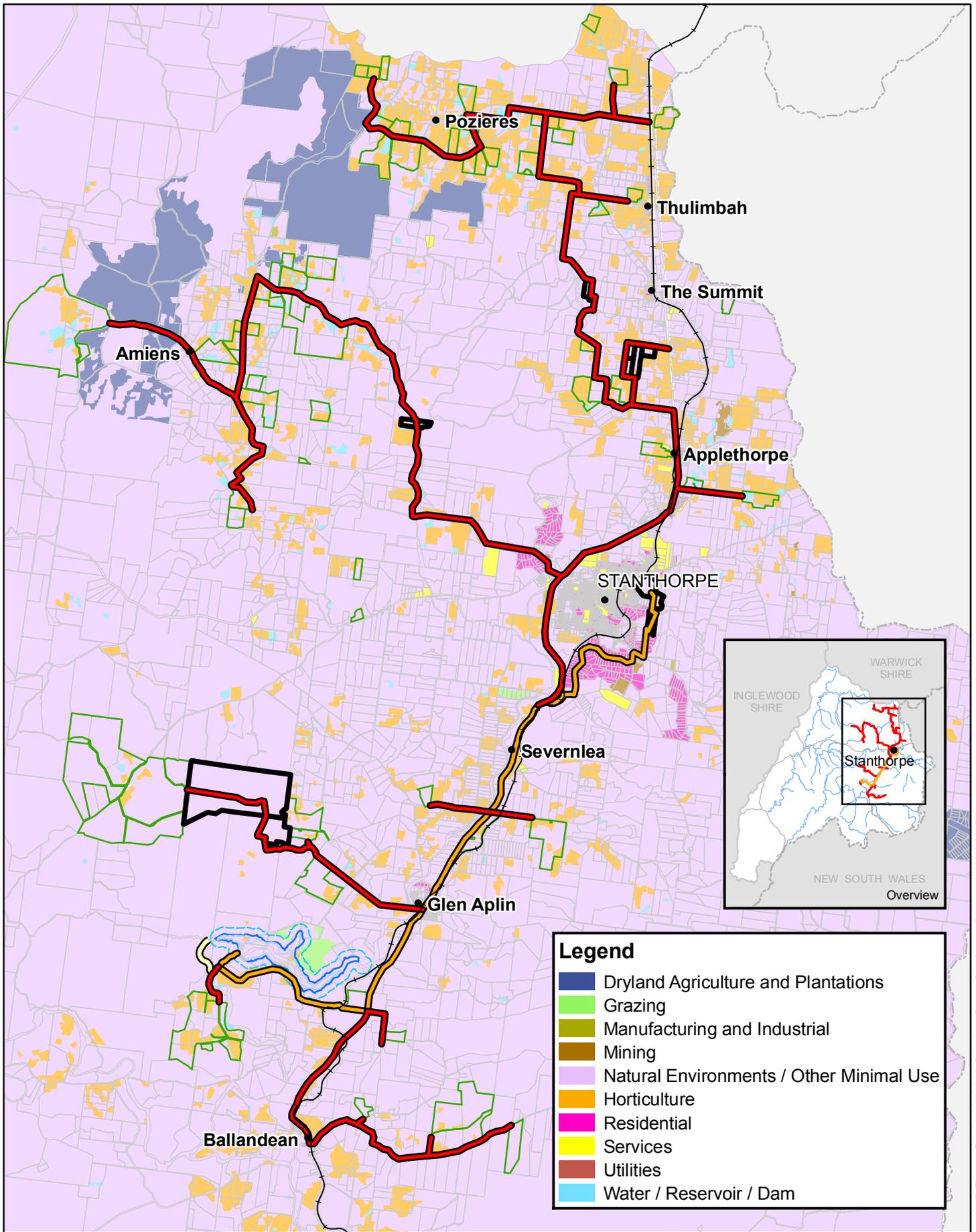
- Urban Pipeline
- Irrigation Pipeline
- Full Supply Level 734.5m AHD
- Full Supply Level 738m AHD
- Houses / Farm Buildings
- Stalling Lane Access
- Road/Track
- Buffer Area
- Cadastral Boundaries

Land Use

- Grazing
- Residential
- Services
- Water / Reservoir / Dam
- Natural Environments / Other Minimal Use
- Horticulture

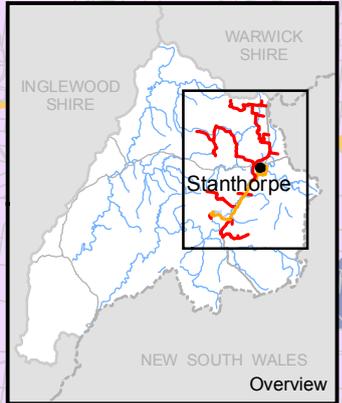


EMU SWAMP DAM EIS
 Emu Swamp Dam Site
Figure 5-1
Land Uses within the
Inundation Area and Surrounds



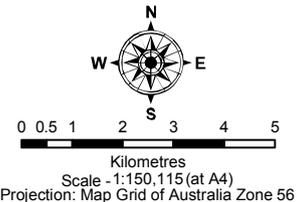
Legend

- Dryland Agriculture and Plantations
- Grazing
- Manufacturing and Industrial
- Mining
- Natural Environments / Other Minimal Use
- Horticulture
- Residential
- Services
- Utilities
- Water / Reservoir / Dam



Legend

- Urban Pipeline
- Irrigation Pipeline
- Full Supply Level 734.5m AHD
- Full Supply Level 738m AHD
- Affected Properties
- Irrigation Properties
- Stalling Lane Access



EMU SWAMP DAM EIS
Project Area

Figure 5-2 Land Uses within the Urban and Irrigation Pipeline

5.2.1.4 Urban Water Supply Area

The proposed dam would primarily service the urban water supply area in the Shire. Stanthorpe is the major reticulated water area. The dominant land use within Stanthorpe is classified as 'urban residential'. The urban residential land uses include a range of housing types from low density detached dwellings to higher density attached dwellings. Larger lot residential land uses are located on the fringes of the urban area.

A number of intensive non-residential land uses are in the urban area. In accordance with the ALUM classification system, these include manufacturing and industry, commercial services, community and public services, transport and communication, parks, sporting and recreation, education premises and utilities.

The Stanthorpe urban area includes two large undeveloped areas, an industrial area west of the highway and a residential area in the north.

The population of Stanthorpe is projected to increase steadily to 2026 (DLGPSR 2006). SSC anticipates that population growth would be supported by the Project and provide an additional water allocation for business and industry, which would boost confidence and investment and provide more opportunity for job creation within the Shire (SSC 2007). Refer to **Section 14** of the EIS for further detail.

5.2.1.5 Potential Irrigation Properties

The proposed dam would potentially service a number of rural properties by providing water for irrigation purposes.

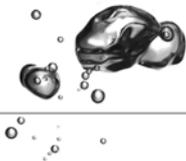
The majority of the sites which have expressed interest for water supplied by the potential Irrigation Pipeline are currently used for a range of rural purposes. The most prominent land use of these properties is horticulture including grapes, apples and stone fruits. Some of these sites also support tourism land uses such as cellar doors.

There are a limited number of properties that are not currently used for intensive rural purposes and are classified as being 'rural living' or 'other minimal use'. An example is on the corner of Fletcher Road and the New England Highway (refer **Figure 5-2**).

5.2.2 Tenure

Land tenure includes freehold and non-freehold. In general terms, freehold land affords the titleholder the highest level of independence in terms of land use and possession. Non-freehold land is largely owned or held by the State of Queensland and may be subject to a lease, licence or reserved for a particular purpose such as a community use or road.

Land tenures of relevance to the Project are identified and broadly described using the Digital Cadastral Data Base (DCDB) Tenure Codes in **Table 5-2**.



■ Table 5-2 Land Tenure Types

Tenure Code	Description
Freehold	Land held in fee Simple (freehold title) which includes titles surrendered to the State of Queensland (or Crown) under Section 358 of the <i>Land Act 1994</i> .
Leasehold	Land owned by the State of Queensland that is leased for a particular purpose, such as grazing and pastoral activities.
State Land	Land held by the State of Queensland as Unallocated State Land and other areas vested in the State but not held in Fee Simple or as a lease issued under the <i>Lands Act 1994</i> . Includes land that may have been leased but the lease has been surrendered back to the State.
Reserve	State land reserved for community or public purposes. Reserve land may be administered by various Government departments or agencies. Reserve land may be occupied by, for example, cemeteries or open space.
Road Reserve	State land dedicated as roads under the control of either the Department of Main Roads (State controlled roads) or a local government.

Within Stanthorpe Shire and across urban and rural areas, the predominant land tenure is freehold.

NRW may grant a permit to Permit to Occupy on a parcel of Unallocated State Land, Reserve or Road Reserve. A Permit to Occupy is issued for a specific purpose (eg grazing and water extraction).

There are no current Mining Leases over any part of the lands affected. The Project area is covered by a Mineral Exploration Permit which extends over an area greater than the Project area (DNRW 2007). Alluvial tin mining has been previously carried out in the area.

There are no Native Title Claims over any part of the lands affected. A Native Title Claim was submitted in September 1998 by the Bigambul People however the final status is reported as “Dismissed” (National Native Title Tribunal Online 2007). **Section 15** of the EIS provides further details on Native Title matters.

5.2.2.1 Inundation Area and Surrounds

Properties along this section of the Severn River are largely in freehold tenure (refer **Figure 5-3**). There are three State owned properties, two located along Emu Swamp Road and the other on a vegetated hill south of the river. The two properties on Emu Swamp Road are reserved for the purpose of “water”. The lot to the south of the river is Unallocated State Land. One of the reserves has two Permits to Occupy.

While **Figure 5-3** does not identify a specific tenure for the Severn River and roads, they have the following tenures:

- the Severn River is Unallocated State Land; and
- the State and SSC controlled roads are road reserves.

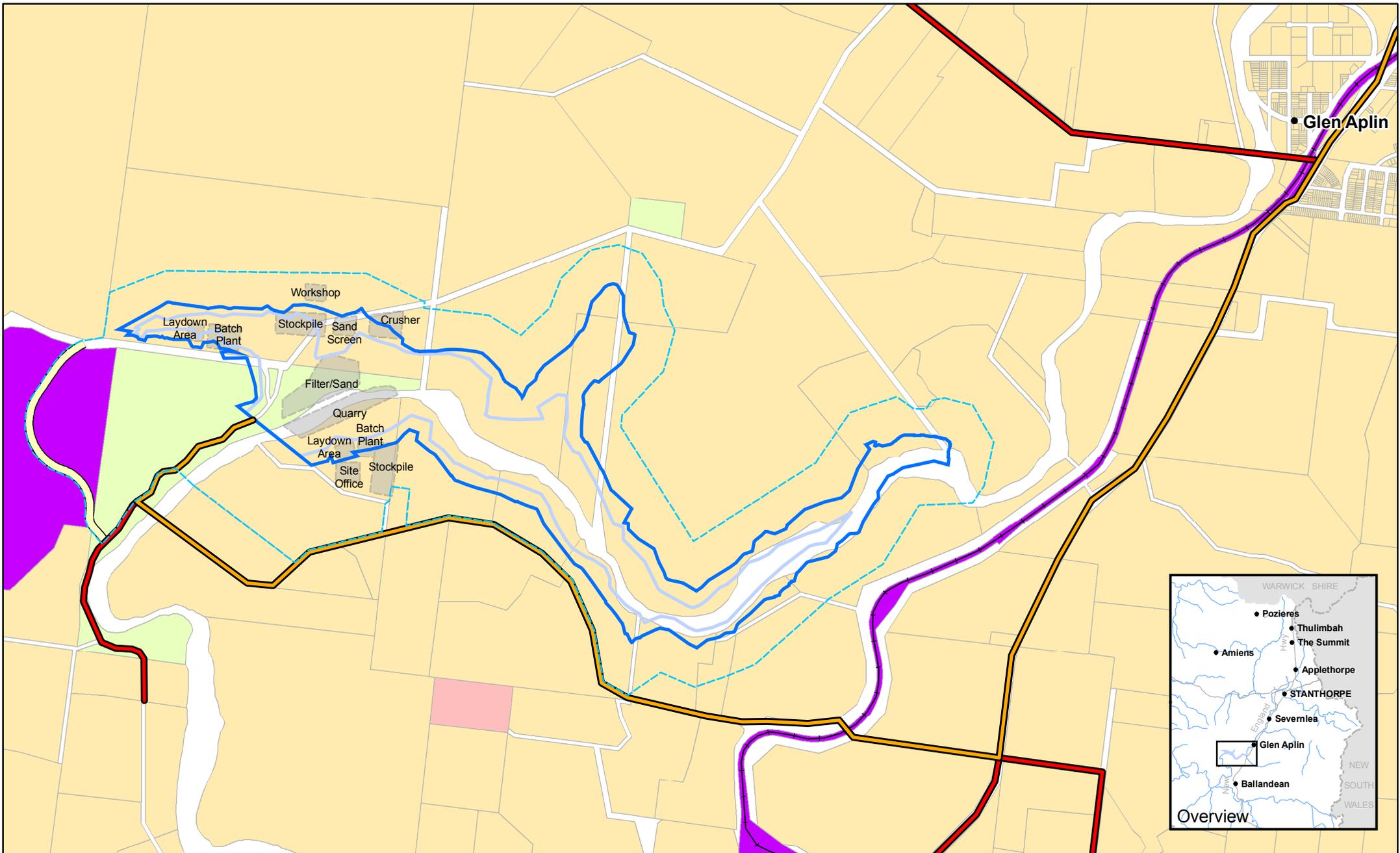
State land leases (leasehold) occur in the rail line corridor to the east as well as a large parcel of land west of the proposed dam which is used for rural purposes.

5.2.2.2 Urban and Irrigation Pipelines and Potential Irrigation Properties

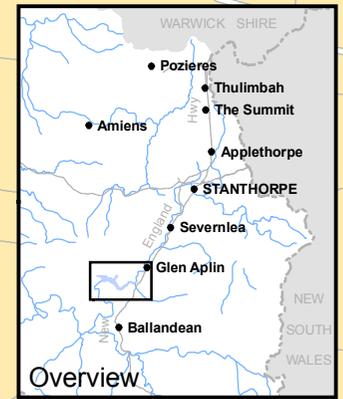
Land tenures associated with these areas are shown on **Figure 5-4**.

The proposed pipelines are generally to be located within State or SSC controlled road reserves. The rail line (leasehold) is located nearby to and crosses these road reserves. The Urban and Irrigation Pipeline corridors cross, in a number of limited situations, freehold properties.

The majority of Stanthorpe Shire is in freehold tenure. Isolated pockets of leasehold and reserve tenures also occur. The potential irrigation properties are all in freehold tenure.



• Glen Aplin

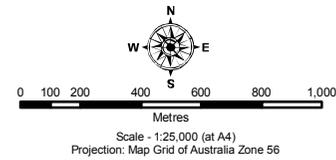


Legend

- Urban Pipeline
- Irrigation Pipeline
- Full Supply Level 734.5m AHD
- Full Supply Level 738m AHD
- Stalling Lane Access
- Buffer Area
- Construction Site Facilities

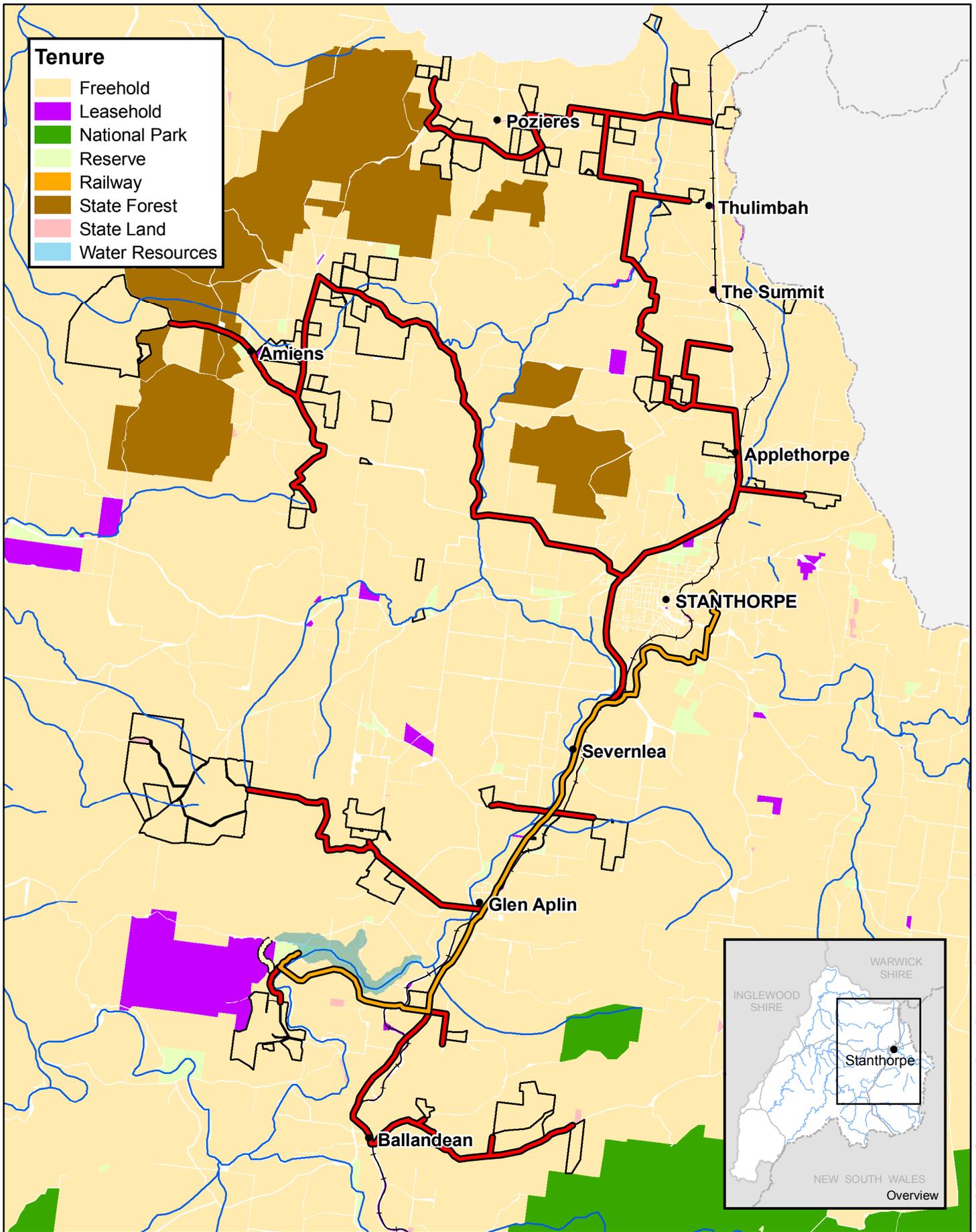
Tenure

- Freehold
- Leasehold
- Reserve
- State Land



EMU SWAMP DAM EIS
 Dam Area and Surrounds
Figure 5-3
 Land Tenure for Inundation
 Area and Buffer Area

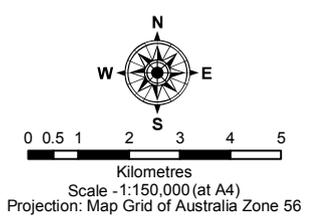
I:\ENVI2\Projects\0206454\Spa\A4\AFC_MXD\Figures\Planning\07121E_Tenure_Fig-3.mxd Produced: 18/12/2007



- Tenure**
- Freehold
 - Leasehold
 - National Park
 - Reserve
 - Railway
 - State Forest
 - State Land
 - Water Resources



- Legend**
- Urban Pipeline
 - Irrigation Pipeline
 - Stalling Lane Access
 - Irrigation Properties



EMU SWAMP DAM EIS
 Project Area
Figure 5-4
Land Tenure for the Urban and Irrigation and Potential Irrigation Properties

5.2.3 Local Planning Framework

The *Integrated Planning Act 1997* (IPA), establishes the framework for the planning system in Queensland. IPA provides for development to be managed through State, regional and local planning instruments and the Integrated Development Assessment System.

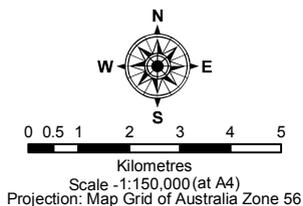
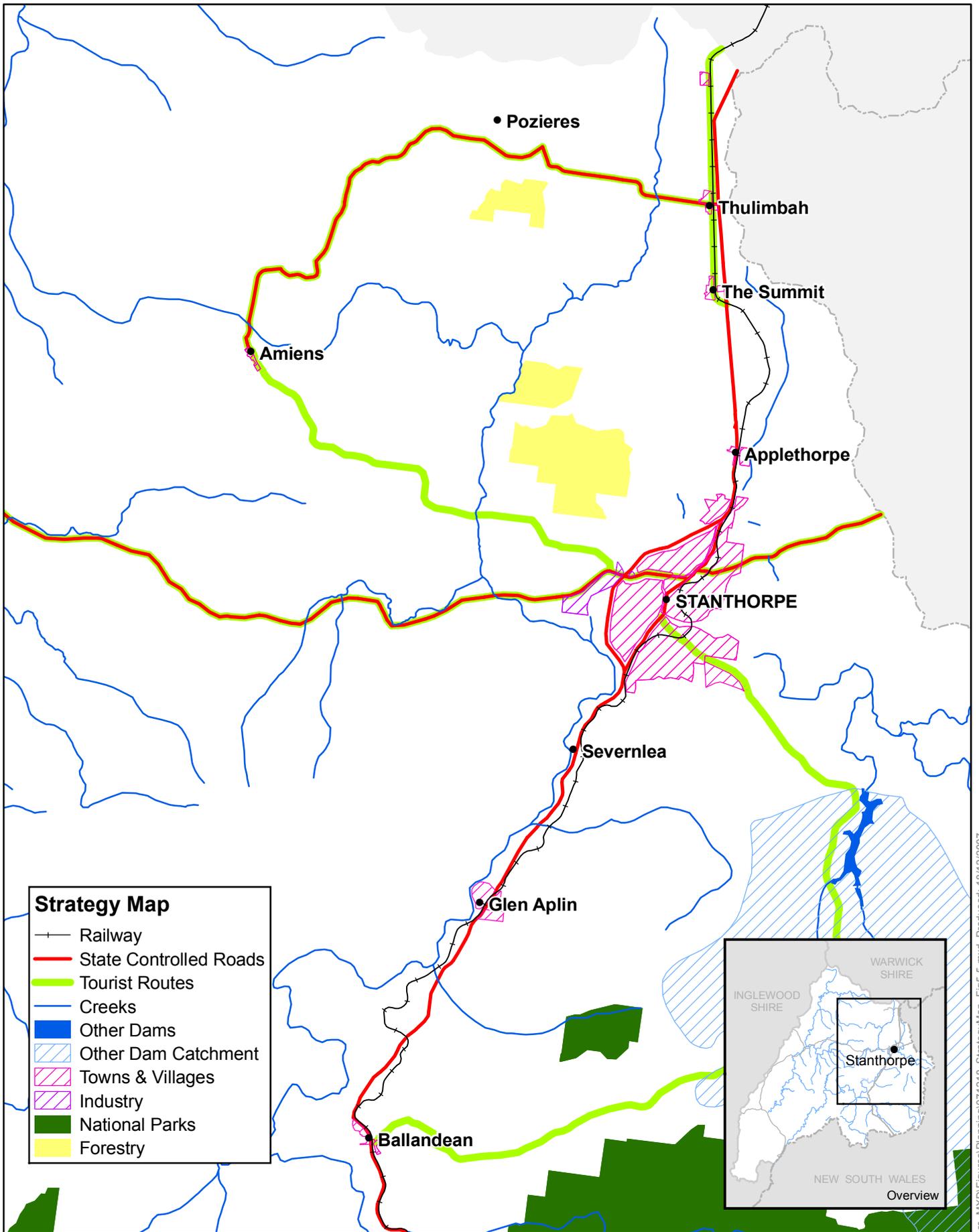
The Project area is covered by a number of planning instruments. The following section identifies the applicable local planning instrument, the SSC Planning Scheme. **Section 1** of the EIS discusses the relevant State and regional planning instruments and approval requirements.

5.2.3.1 Stanthorpe Shire Council Planning Scheme

The Planning Scheme is the local planning instrument for Stanthorpe Shire. The Planning Scheme establishes a framework for managing development and land uses that supports the broad strategic objectives for the Shire.

Strategic Provisions

The Strategy Map for the Shire as identified in the Planning Scheme is shown in **Figure 5-5**. It identifies the preferred land use pattern in the Shire. The strategic objectives relevant to the Project are identified in **Table 5-3**.

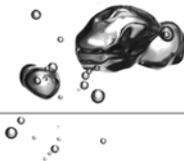


EMU SWAMP DAM EIS
Project Area
Figure 5-5
Strategy Map for Stanthorpe Shire

■ **Table 5-3 Strategic Objectives of SSC Planning Scheme**

Broad Strategies for Stanthorpe Shire	Comment
(1) Most of the Shire is included in the Rural zone where agriculture, horticulture and pastoral land uses are expected to occur.	The proposed dam and the Irrigation Pipeline would support the ongoing use of land zoned Rural for agricultural, horticultural and pastoral uses. A limited area of the Rural zone would be inundated by the proposed dam.
(2) Stanthorpe is the main business and community centre in the Shire.	The proposed Urban Pipeline would increase the reliability of water supply for the urban areas of the town of Stanthorpe. This would encourage industry and business to locate within the urban areas of Stanthorpe strengthening the central role and function of the town.
(4) The villages of Cottonvale, Thulimbah, The Summit, Applethorpe, Amiens, Glen Aplin and Ballandean are subsidiary but important community and tourist centres.	Glen Aplin and Ballandean are located nearest to the proposed dam area. Glen Aplin and Ballandean may benefit from the dam through tourism and recreation.
(6) Secondary industries are located on the Industrial Estate in Stanthorpe and east of Wallangarra and only located outside these areas if the site is suitable for industrial activity and environmental and community impacts are contained.	The industrial estate in Stanthorpe is located within the Urban Water Supply area. Additional water supply through the proposed Urban Pipeline, would support the development of industrial uses in this area. Temporary industrial uses would occur in the proposed dam area during the construction period.
(7) Tourist facilities are located in areas where, due to their nature, scale and effects, they are compatible with the existing land uses, have no adverse effects on the environment and can be adequately served by existing infrastructure or infrastructure provided by the developer.	Tourist facilities are not part of this Project but the construction of the dam may influence future tourism opportunities. If new tourism development was to occur in areas surrounding the dam, they would need to address the requirements of the Planning Scheme.
(9) Areas of ecological significance and waterways are recognised and protected where possible.	The proposed dam is located along a waterway and areas of ecological significance. The ecological values of the area are addressed in Section 9 and Section 10 of the EIS. The hydrological values of the area are addressed in Section 7 of the EIS. A buffer area is proposed around the dam to support ecological values in this area.
(10) Mining and extractive uses are located within the rural area as determined by the location of natural resources.	Extractive resources would be sourced from within the Project area during construction which is located within the Rural zone.
(12) Urban water supply is a constraint for residential and industrial growth in Stanthorpe and Wallangarra.	The Project proposes to increase the supply of water available to Stanthorpe through the Urban Pipeline. This would assist in addressing this constraint for Stanthorpe. There is an opportunity for supply to Wallangara following the implementation of the Project.
(14) The configuration of lots reflects land capability and suitability for various land uses and the requirements of uses for specific land sizes.	The Project would, as a minimum, acquire the parts of the land directly affected by the proposed dam and inundation area. It may be necessary to acquire the full properties. Options for the buffer area include tenure arrangements or acquisition. The inundation area and buffer area would result in a reduction of the area of the lots as well as the area within the lots available for rural use.

Local strategies for the Rural zone relevant to the Project are identified in **Table 5-4**:



■ **Table 5-4 Strategies for Rural Zone in SSC Planning Scheme**

Local Strategies for Rural Zone	Comment
<p>(1) Land within the Rural zone is used for a range of rural purposes including agriculture and grazing. These activities form the economic base of the Shire. Land which is constrained for agricultural or pastoral use retains its natural environment character.</p>	<p>The Project area is located within an area of the Rural zone which presently retains much of its natural environmental character. Rural zoned land would be inundated by the proposed dam. The ecological values of the area are addressed in Section 9 and Section 10 of the EIS.</p> <p>Through the proposed irrigation pipeline, the Project would support the ongoing use of rural land in the Shire by improving water supply and reliability for rural activities.</p>
<p>(2) Other uses that may occur in the Rural zone include –</p> <p>(a) some intensive animal husbandry activities where appropriate separation distances are achieved and where the site is not included in a conservation overlay area;</p> <p>(b) some industrial uses, including extractive industry, where locational constraints are overcome; and</p> <p>(c) some tourist uses including tourist accommodation where the use complements rural activities, is suitably buffered from existing or potential agricultural activity and is not likely to result in adverse environmental impacts.</p>	<p>The land surrounding the proposed dam and inundation area is located within the Rural zone and includes some tourist uses. It is possible that the Project would support some tourism uses in the surrounding area which would be assessed against the Planning Scheme to ensure agricultural activities and environmental values would not be affected.</p> <p>The proposed quarry, which is required during construction, is consistent with the Rural zone.</p>
<p>(5) Land is subdivided into lots that reflect its capability and suitability for agricultural and pastoral purposes.</p>	<p>The Project would, as a minimum, acquire the parts of the land directly affected by the proposed dam and inundation area. It may be necessary to acquire the full properties. Options for the buffer area include tenure arrangements or acquisition.</p> <p>The inundation area and buffer area would result in a reduction of the area of the lots as well as the area within the lots available for rural use.</p>

Local strategies for the Residential zone relevant to the Project are identified in **Table 5-5**:

■ **Table 5-5 Strategies for Residential Zone in SSC Planning Scheme**

Relevant Local Strategies for Residential Zone	Comment
<p>(1) The existing residential communities of Stanthorpe and Wallangarra are located within the existing subdivided areas of the towns.</p>	<p>The Project supports the development of Stanthorpe in accordance with the Planning Scheme. Water to Stanthorpe would be delivered by the proposed Urban Pipeline.</p>
<p>(2) Residential expansion in Stanthorpe is limited to the north eastern sector of town where there is no potential for conflict with existing or proposed agricultural, commercial, industrial or recreational uses, where there are no physical or engineering constraints to development and where the use of land for residential purposes would not result in unacceptable environmental hazards.</p>	<p>The Project would add to the water available to service the proposed residential expansion areas. These areas are currently zoned to accommodate new residential dwellings. Water to Stanthorpe would be delivered by the proposed Urban Pipeline.</p>
<p>(3) All residential areas are serviced with a reticulated water supply and, with the exception of the large residential lots adjoining the outskirts of Stanthorpe, all are connected to a reticulated sewerage system.</p>	<p>The Project would support the provision of water for the reticulated water supply. Water to Stanthorpe would be delivered by the proposed Urban Pipeline.</p>

Local strategies for the Commercial zone relevant to the Project are identified in **Table 5-6**:

■ **Table 5-6 Strategies for Commercial Zone in SSC Planning Scheme**

Relevant Local Strategies for Commercial Zone	Comment
(1) The existing central business area of Stanthorpe is the commercial hub where shops, offices, restaurants, hotels, other commercial uses and government services are located in a comprehensive, convenient, safe and attractive centre designed to meet the commercial needs of the whole of the Shire.	The Project would support the ability of the Planning Scheme to achieve this strategic intention through the provision of additional water to Stanthorpe.

Local strategies for the Industrial zone relevant to the Project are identified in **Table 5-7**:

■ **Table 5-7 Strategies for Industrial Zone in SSC Planning Scheme**

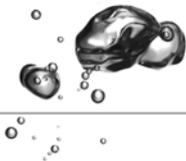
Relevant Local Strategies for Industrial Zone	Comment
(1) The Industrial Estate at Texas Road is the centre for industry in the Shire accommodating a broad range of manufacturing and service industries.	The Project would support the future development of the Industrial Estate by the provision of additional water through the proposed Urban Pipeline.

Local strategies for the Village zone relevant to the Project are identified in **Table 5-8**:

■ **Table 5-8 Strategies for Village Zone in SSC Planning Scheme**

Relevant Local Strategies for Village Zone	Comment
(1) The villages are existing small urban areas that function as community centres and are emerging as tourist and accommodation hubs.	Glen Aplin and Ballandean, the nearest villages to the proposed dam, would not be directly affected. They may benefit from potential increases in tourism and recreational activities.

The strategies identified above are incorporated into the Desired Environmental Outcomes (DEOs) of the Planning Scheme. They are used to assess whether development and land uses achieve ecological sustainability. The DEOs apply across the whole Shire. The DEOs for Stanthorpe Shire are identified in **Table 5-9**.



■ **Table 5-9 Desired Environmental Outcomes in SSC Planning Scheme**

Desired Environmental Outcome	Comment
<p>DEO 1: Ecological Processes and Natural Systems The existing natural capital of the Shire, the life supporting capacity of air, water, soil and ecosystems, would be maintained and, in some cases, restored.</p>	<p>Much of the vegetation subject to inundation is recognised within the <i>Vegetation Management Act 1999</i> as having values worthy of conservation. Further detail on these values is provided in Section 9 of the EIS.</p> <p>The life supporting capacity of water would be managed and harvested for urban and agriculture land uses (refer to Section 10).</p>
<p>DEO 2: Economic Development The economy of the Shire will be increasingly diverse and efficient and economic development will complement the environmental and social values of Shire residents.</p>	<p>Agricultural activity would continue to underpin the economy of the Shire and would be strengthened and supported by a potential additional water supply. The proposed irrigation pipeline would deliver the additional water to rural properties</p> <p>The Project also has the potential to attract recreation uses to the water body increasing tourism opportunities in the Shire.</p> <p>The proposed dam is located in close proximity to the New England Highway and a number of winery cellar doors. It provides a good opportunity to strengthen the attractiveness of the southern Stanthorpe area as a tourist destination.</p>
<p>DEO 3: Community Wellbeing The cultural, economic, physical and social wellbeing of the residents of Stanthorpe Shire will be maintained.</p>	<p>The additional water supply would:</p> <ol style="list-style-type: none"> i. through the proposed dam and Urban Pipeline, increase the reliability of the urban water supply and in turn the long term sustainability of Stanthorpe; and ii. through the proposed dam and irrigation pipeline, provide reliable irrigation water to rural properties. This supports the important agricultural sector into the future.

The strategic intentions discussed above provide the direction for the Planning Scheme in regard to land use zones, development codes and planning scheme policies.

Planning Scheme Maps

The Planning Scheme contains a number of maps which identify specific values and constraints that are to be considered in regard to future development. **Table 5-10** identifies the constraint map relevant to the Project.

■ **Table 5-10 SSC Planning Scheme Map**

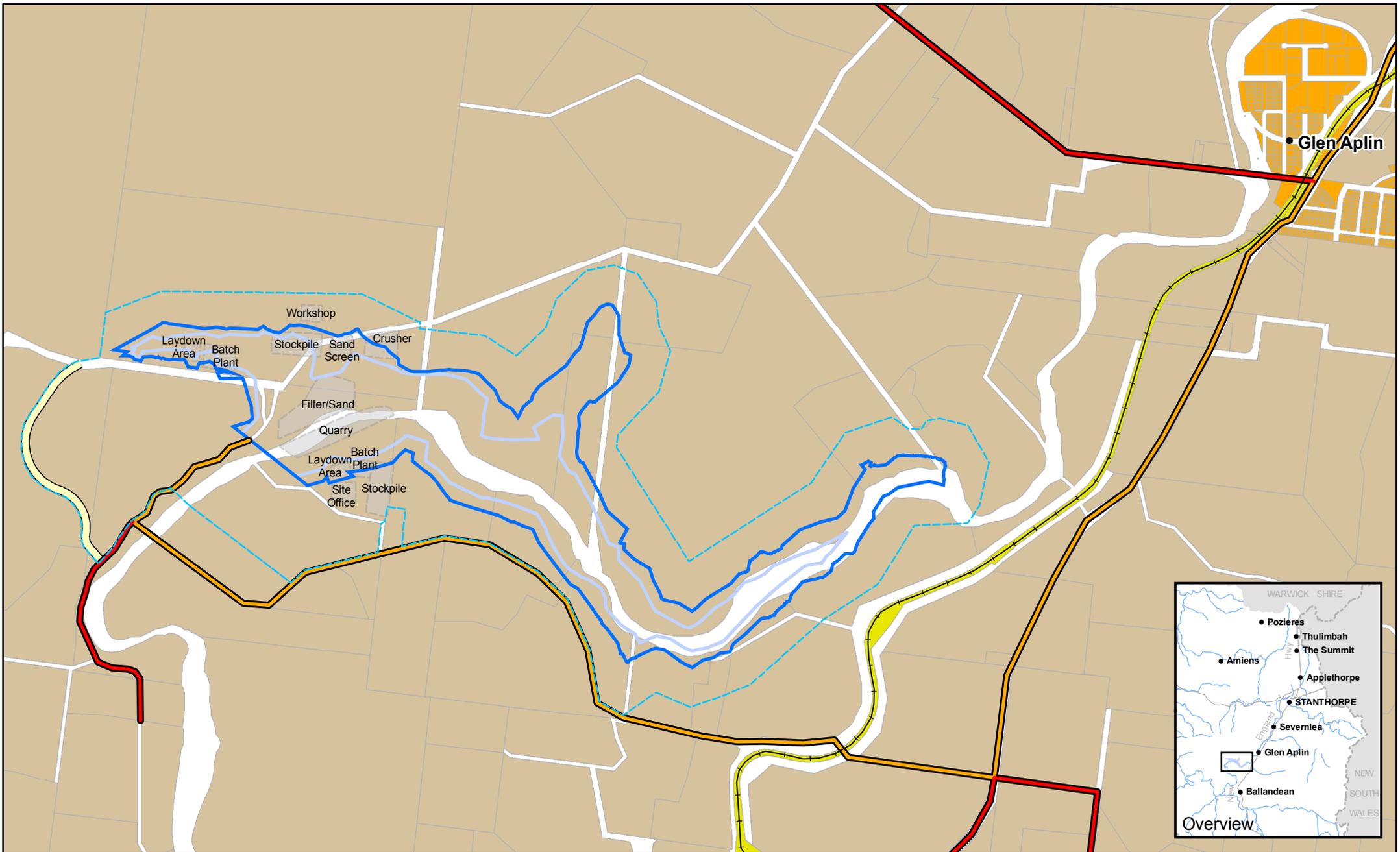
Map	Comment
Bushfire Hazard Regulatory Map 4	This identifies low, medium and high bushfire hazard areas in the Shire. The proposed dam area is generally in a medium bushfire hazard area. Bushfire hazards should be considered for any facilities associated with the Project. Section 18 addresses hazard and risk issues.

Planning Scheme Zones

The Planning Scheme zones, their intents and consistent land uses which are relevant to the Project, are discussed in **Table 5-11**.

■ Table 5-11 SSC Planning Scheme Zones and Land Uses

Name of Zone	Intent of Zone	Consistent Land Uses
Rural	The Rural zone applies to agricultural and grazing land and also includes areas of land with a natural environment character that may be constrained for agriculture or grazing use but which are located in the vicinity of land used for agriculture and grazing.	Land within this zone is predominantly used for rural and conservation purposes. Other uses which may be established in the zone include extractive industries, other uses which may require isolation from urban areas as a consequence of their impacts, uses such as produce stores or rural industries that service rural uses or value add rural produce and some limited tourist facilities.
Residential	The intent is to provide for residential development comprising a range of housing types in a well-serviced urban environment.	Land within this zone is principally used for dwelling houses. Some non-residential uses that are compatible with residential uses such as Bed and Breakfast establishments are also accommodated.
Commercial	Intent is to maximise the use of land for commercial activities within the existing central business area of Stanthorpe and provide for the redevelopment and consolidation of the CBD.	Land within this zone accommodates the full range of services found typically in a centre supporting a population approximately 10,000 people. These uses include business and professional suites, convenience stores, shops, shopping centres, hotels, catering establishments, medical centres, hot bread shops, laundromats and some limited residential use including higher density multiple dwellings.
Industrial	The intent of the zone is to provide for a wide range of industrial uses and supporting activities and to maximise the use of land in the Industrial zone for industrial purposes.	Land is used for the purpose of manufacturing, the breaking up or dismantling of goods, the extraction or processing of earth material, the repairing, renovating or servicing of articles, warehousing, freight depot, sawmilling, landscaping and produce supplies, retail plant nursery, and the handling, treating, processing or packing of primary produce.
Mixed Use	Provide for the existing mix of residential, commercial and industrial uses in the area adjacent to the central business district in Stanthorpe.	The zone is located east of the CBD and west of the rail line and includes a mix of residential, commercial and industrial uses.
Village	A very small amount of Village area in the north of Stanthorpe where the Highway and main access road in Stanthorpe diverge is serviced by the town water supply. The intent of this area is to provide for local community and service centres servicing the existing and expanding residential populations around the village.	Dwelling houses are the dominant use in the village zone. The main community uses in the Village area include schools, halls and recreation facilities. Some tourist uses and industrial uses are also consistent provided these can be integrated successfully into the character and fabric of the village.
Conservation	The intent is manage development in a manner that protects the significant ecological and landscape values.	All uses carried out by a public sector entity with statutory responsibility for management of the particular land (for example the local government) are consistent with the zone. Mt Marlay to the east of Stanthorpe and Girraween and Sundown National Parks are included in the Conservation zone.
Community Infrastructure	Protect the continued operation of major community facilities and provide for future facilities that contribute to the community.	Community use where carried out by a public sector entity with statutory responsibility for management of the particular land.

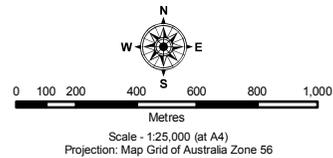


Legend

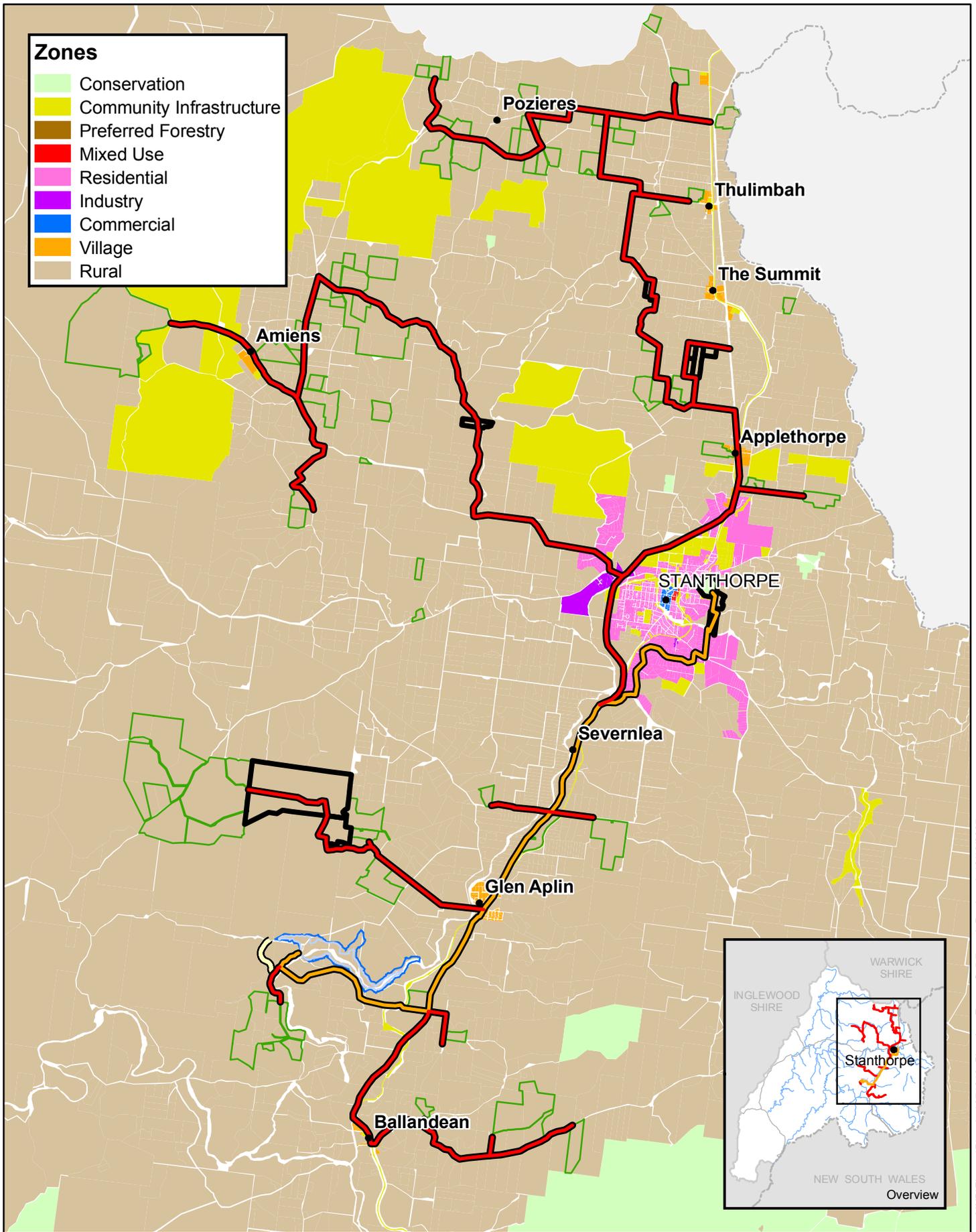
- Urban Pipeline
- Irrigation Pipeline
- Full Supply Level 734.5m AHD
- Full Supply Level 738m AHD
- Buffer Area
- Stalling Lane Access
- Construction Site Facilities

Zones

- Community Infrastructure
- Village
- Rural



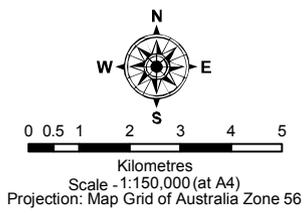
EMU SWAMP DAM EIS
 Emu Swamp Dam Site
Figure 5-6
Planning Zones for Inundation Area



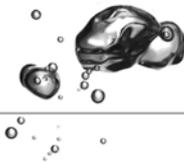
- Zones**
- Conservation
 - Community Infrastructure
 - Preferred Forestry
 - Mixed Use
 - Residential
 - Industry
 - Commercial
 - Village
 - Rural



- Legend**
- Urban Pipeline
 - Irrigation Pipeline
 - Full Supply Level 734.5m AHD
 - Full Supply Level 738m AHD
 - Stalling Lane Access
 - Affected Properties
 - Irrigation Properties



EMU SWAMP DAM EIS
 Project Area
Figure 5-7 Planning Zones
 for the Urban and
 Irrigation Pipelines and
 Potential Irrigation Areas



The Rural zone is categorised on the basis of “Rural Suitability” which incorporates the principles of State Planning Policy 1/92: Development and the Conservation of Agricultural Land. Rural land suitability is addressed in detail in **Section 5.2.4**.

Under the Planning Scheme, roads and watercourses have the zones of the adjoining parcels of land.

Most of the land in the Shire is included in the Rural zone with urban zones limited to Stanthorpe, Wallangarra and the villages.

Inundation Area and Surrounds

The properties adjoining this length of the Severn River as well as surrounding areas are zoned Rural. The nearby rail line is zoned Community Infrastructure. The Severn River, the New England Highway and local roads are included in the same zone as the adjoining parcels of land.

Urban and Irrigation Pipeline Corridors and Potential Irrigation Areas

The proposed pipelines generally follow State and SSC controlled road reserves which have the zones of the adjoining land. Where the corridors cross freehold land, the properties are zoned Rural. The connection to the existing water infrastructure at Stanthorpe is located on land zoned Conservation.

The urban water supply area which will be supplied by the proposed dam, contains the ‘urban’ zones – Residential, Industry, Commercial and Community Infrastructure.

The properties which have expressed interest in water for irrigation areas are all zoned Rural.

5.2.4 Landuse Suitability and Good Quality Agricultural Land

Land suitability deals with the existing specific or potential uses for grazing and or cropping. The five-class assessment system proposed by Land Resources Branch (1989) and used by Shields and Williams (QDPI 1990) in the Kilcummin Soil Survey was used to assess land suitability in this study.

Tuck (2007) has identified the main factors limiting the suitability for rainfed cropping and grazing in the Project area as plant available moisture, nutrient deficiency, soil physical factors, erosion, workability and susceptibility to flooding. Land suitability classification is based on specific land uses, assessed using the classes outlined in **Table 5-12**.

■ **Table 5-12 Landuse suitability Classes**

Class	Description
Class 1	Suitable land with negligible limitations and is highly productive requiring only simple management practices;
Class 2	Suitable land with minor limitations which either reduce production or require more than simple management practices to sustain the use;
Class 3	Suitable land with moderate limitations – Land which is moderately suited to a proposed use but which requires significant inputs to ensure sustainable use;
Class 4	Marginal land with severe limitations which make it doubtful whether the inputs required to achieve and maintain production outweigh the benefits in the long term; and
Class 5	Unsuitable land with extreme limitations that precludes its use.

Note: Land suitability class is determined by the highest ranking limiting factor or a combination of a number of factors. Normally only the most severe two or three limiting factors determine suitability and the remainder become irrelevant.

The assessment of good quality agricultural land is based on the classifications outlined in *The Identification of Good Quality Agricultural Land* (DLGP and DPI, 1993). This guideline establishes four Classes of agricultural land for Queensland, as summarised in **Table 5-13**.

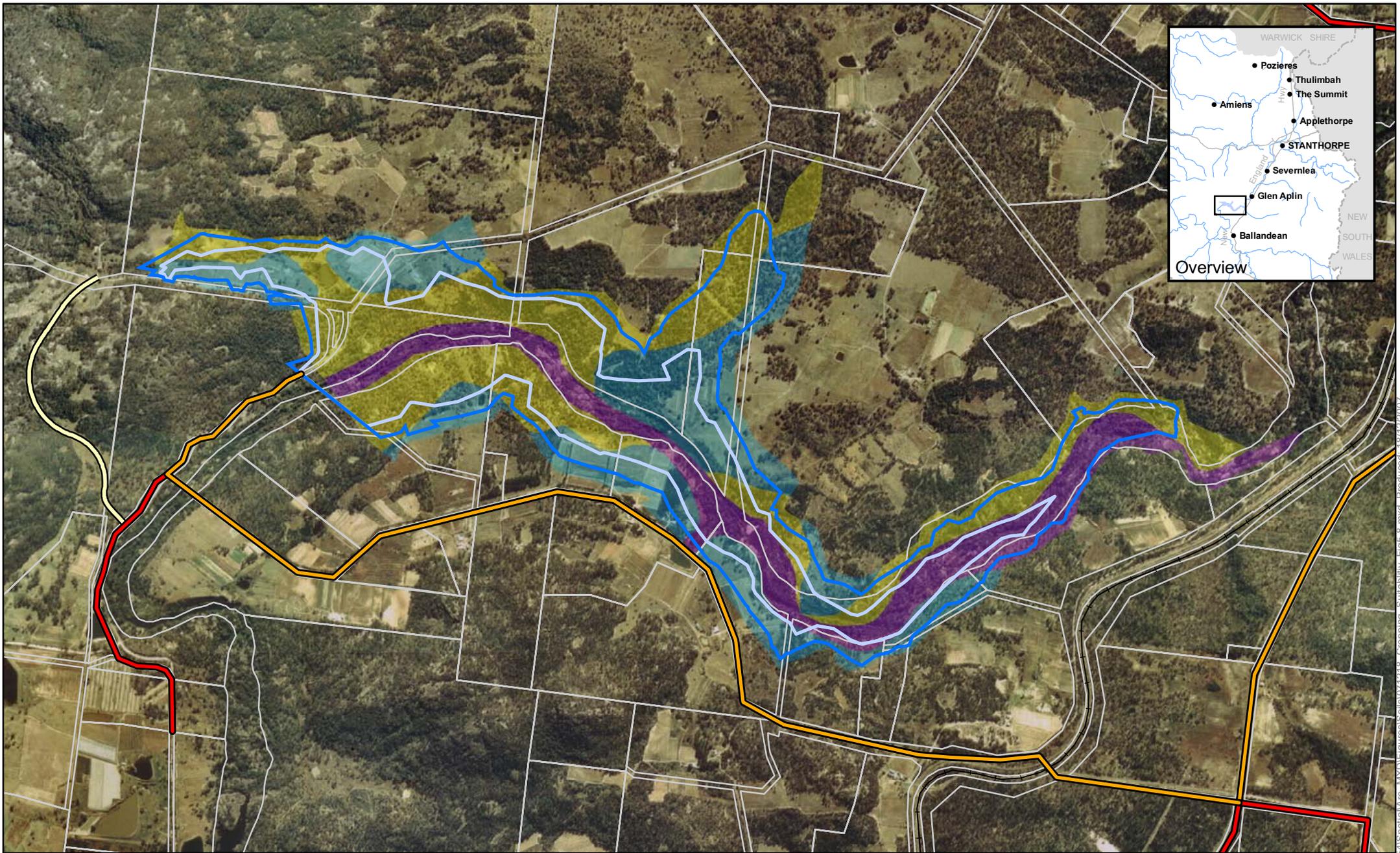


■ **Table 5-13 Good Quality Agricultural Land Classification**

Class	Description
Class A – Crop Land	Land suitable for current and potential crops with limitations to production which range from non to moderate levels
Class B – Limited Crop Land	Land that is marginal for current and potential crops due to severe limitations; and suitable for pastures. Engineering and/or agronomic improvements may be required before the land is considered suitable for cropping
Class C – Pasture Land	Land suitable only for improved or native pastures due to limitations, which preclude continuous cultivation for crop production; but some areas, may tolerate a short period of ground disturbance for pasture establishment.
Class D - Non-agricultural Land	Land not suitable for agricultural uses due to extreme limitations. This may be undisturbed land with significant habitat, conservation and/or catchment values or land that may be unsuitable because of very steep slopes, shallow soils, rock outcrop or poor drainage.

Current agricultural suitability for cropping land uses in the inundation area are shown in **Figure 5-8**. This classification evaluates the potential for growing non-irrigated cash crops which may include forage crops for stock feed, vegetables, vines and fruit. Current agricultural suitability for grazing land uses in the inundation area is shown in **Figure 5-9**.

It is noted that irrigation practices used in the area can improve agricultural suitability potential considerably on soil types where the major limiting factor is low moisture storage potential.

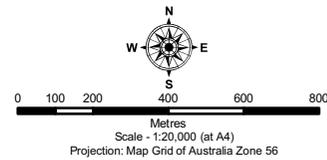


Legend

- Urban
- Irrigation
- Full Supply Level 734.5m AHD
- Full Supply Level 738m AHD
- Stalling Lane Access
- Cadastral Boundaries

Cropping Suitability Class

- Suitable cropping land with moderate limitations from low moisture availability and low fertility
- Unsuitable to marginal for cropping
- Unsuitable for cropping

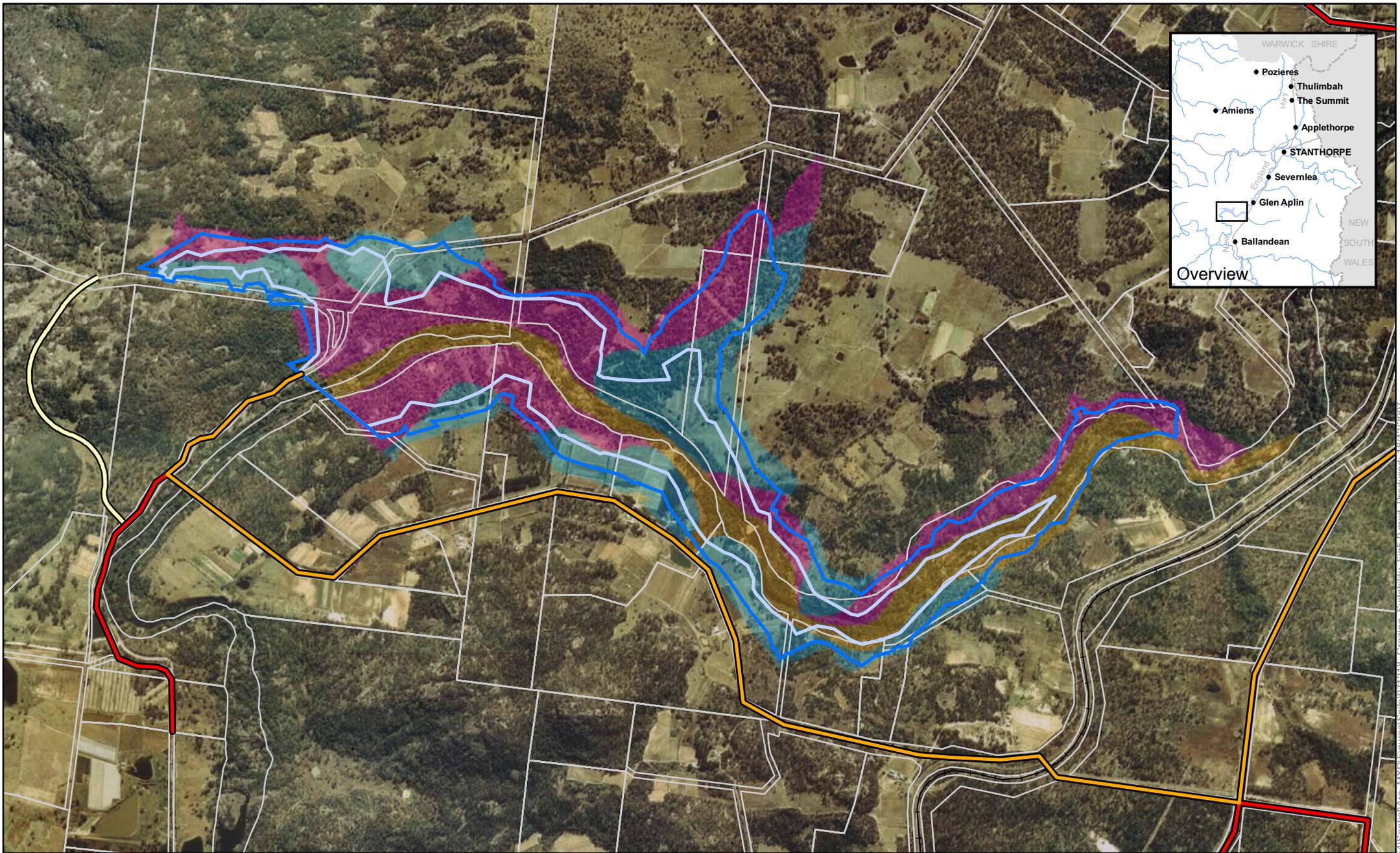


EMU SWAMP DAM EIS

Emu Swamp Dam Site

Figure 5-8

Cropping Suitability within the Inundation Area

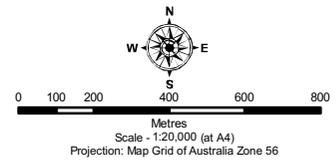


Legend

- Urban
- Irrigation
- Cadastral Boundaries
- Full Supply Level 738m AHD
- Full Supply Level 734.5m AHD
- Stalling Lane Access

Grazing Suitability Class

- Suitable grazing land with minor limitations
- Suitable grazing land with moderate limitations
- Suitable grazing land with major limitations

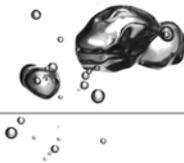


EMU SWAMP DAM EIS

Emu Swamp Dam Site

Figure 5-9
Grazing Suitability within the Inundation Area

I:\QENV2\Projects\CE\06494\Spatial\Arc_MXD\Figures\Soils\071218_Grazing_Suitability_Figs-9.mxd Produced: 18/12/2007



A summary of the suitability for cropping and grazing on soil mapping units within the inundation area, is provided in **Table 5-14**. A summary of the areas of good quality agricultural land present within the Inundation area is also provided.

■ **Table 5-14 Land use Suitability and GQAL Summary - Inundation area**

Soil Map Unit	GQAL Class	Area (ha)		Land Suitability	
		Urban Water Supply Dam	Combined Water and Irrigation Dam	Cropping	Grazing
A	Class D Non agricultural Land	34	46	<p><u>Class 5</u> - Not suitable due to severity of major land use limitations:</p> <ul style="list-style-type: none"> ■ Flooding and access, ■ highly variable surface topography with rock outcropping, steep embankments, creek flats; ■ Highly variable soil depth and high erosion risk if cleared; ■ Very low fertility; ■ very low water holding capacity; ■ Effective plant root depth low and highly variable. ■ Sodic subsoil below 30cm in site 1 	<p>Class 3/4 suitable for low density grazing of native pastures but managed to prevent erosion pathways developing as stock move down steep creek embankments.</p> <p>Likely management problems in control of stock & maintenance of fences and access.</p>
B	Class B Limited crop land suitable to pastures	49	83	<p><u>Class 4/5</u>. Unsuitable to marginal for cropping due to:</p> <ul style="list-style-type: none"> ■ Very low plant available water; ■ rockiness (stone and rock); ■ physical factors including excessively drained and waterlogging due to water trapped by bedrock or hardpans; ■ topography and workability problems; ■ Very infertile; ■ Erosion risk increasing in cultivation on slopes >2%. 	<p><u>Class 3</u> Suitable grazing land with moderate limitations from:</p> <ul style="list-style-type: none"> ■ low moisture availability for pasture growth; and ■ erosion potential
C	Class A Crop land	28	67	<p><u>Class 2</u> suitable for grazing native or improved pastures and forage</p> <ul style="list-style-type: none"> ■ Low plant available water holding capacity, ■ Moderate to low fertility, ■ excessively drained and waterlogging due to water trapped by bedrock or hardpans; ■ Effective plant root depth in depth range of 40 – 90cm common; ■ Erosion risk increasing in cultivation on slopes >1%. 	<p><u>Class 3</u> Most areas are well suited to improved pasture, forage cropping, vines, vegetables or fruit however irrigation may need to cover for low plant available water holding capacity</p>

5.3 Impact Assessment and Mitigation

This section identifies the potential positive and negative impacts of the Project on current land uses, tenures and the outcomes sought by planning instruments. It also identifies the mitigation measures proposed to avoid or minimise adverse land use changes and other measures to promote positive outcomes.

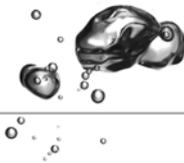
Discussion of impacts is separated into construction and operational impacts where appropriate.

5.3.1 Inundation Area and Surrounds

Table 5-15 identifies the land parcels to be affected by the proposed dam and inundation areas (urban, and urban and irrigation). Construction and operational impacts are further described in the following sections. Land proposed to be inundated would be purchased which would result in partial and full acquisitions. The land subject to the buffer area would be purchased or remain with the current owners though future use would be restricted to maintain ecological values in these areas through tenure arrangements.

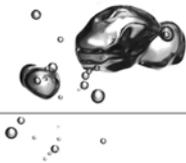
■ **Table 5-15 Dam Area and Surrounds – Directly Affected Land**

Land Description	Address	Description of Current Use	Possible Impacts of the Project on the Land
n/a (Unallocated State Land)		Watercourse	Use for a watercourse would not change. Tenure arrangements would need to be secured.
Lot 89 RP902806 and Lot 3 SP140702 (freehold)	137 Fletcher Road	Wine Sales and Production on the southern side of Fletcher Road (L3 SP140702) currently trading as Rumbalara Winery. On the northern side of Fletcher Road, the land use is minimal with some cleared patches and some re-growth of native vegetation.	<i>Urban inundation area:</i> Lot 89 – minor impact. <i>Combined inundation area:</i> Lot 89 – partial impact. <i>Buffer area:</i> Lot 89 – most of lot impacted. Most or all of Lot 89 would be affected by the buffer area which restricts future rural use of the lot.
Lot 1 RP902806 (freehold)	168 Fletcher Road	There's a single dwelling on the land as well as remnant vegetation with some cleared patches.	<i>Buffer area:</i> Lot 1 – most of lot impacted. The impact would restrict future rural use of the lot.
Lots 6-7 RP222897 (freehold)	257 Fletcher Road	Land used for horticulture	<i>Urban inundation area:</i> Lot 7 – partial impact. <i>Combined inundation area:</i> Lot 7 – partial impact. <i>Buffer area:</i> Lot 7 – most of lot impacted. Most or all of Lot 7 would be within the buffer areas restricting future use. The combined inundation area would partly impact on the area used for grape vines and an orchard.
Lot 2 RP12336 and Lot 1 RP904551 (freehold)	377 Fletcher Road	There are vineyards and stone fruit trees located on the lot along with a dwelling and shed.	<i>Urban inundation area:</i> partial impact. <i>Combined inundation area:</i> partial impact. <i>Buffer area:</i> most of lot impacted. Most of the lot would be contained within the buffer areas and all present land uses, including horticultural uses, would be affected.



Land Description	Address	Description of Current Use	Possible Impacts of the Project on the Land
Lot 1 RP52709 (freehold)	388 Fletcher Road	There is a dwelling house and large patches of cleared land used for agricultural activities.	<p><i>Urban inundation area:</i> partial impact.</p> <p><i>Combined inundation area:</i> partial impact.</p> <p><i>Buffer area:</i> all of lot impacted.</p> <p>Major components of the construction activities are proposed on this lot including a site office and stockpile within the buffer areas. Current uses would be affected including land cleared for agricultural uses.</p>
Lot 1 RP55215 (freehold)	Fletcher Road	An area approximately 250m wide from the road reserve is used for cropping whilst the remainder of the lot is generally vegetated and used for other minimal purposes.	The buffer area covers part of the lot north of Fletcher Road. This area is largely vegetated with a small area of cleared land. A construction road is proposed through the buffer area which would affect vegetation.
Lot 2 RP122990 (freehold)	Severn River Wines 3 Sutton Lane	Severn River Wines – Rural Industry (Winery)	<p><i>Urban inundation area:</i> minor impact.</p> <p><i>Combined inundation area:</i> partial impact.</p> <p><i>Buffer area:</i> partial impact.</p> <p>The buffer areas would impact on some of the land cleared and used for rural industry purposes. Most of the current productive land on the lot is located to the east and is not affected.</p> <p>The inundation and buffer areas largely affects vegetated land.</p>
Lot 2 SP145917 (freehold)	175 Sutton Lane	Land used for 'other minimal uses'. There is a cleared area and an overland flow dam providing evidence of some rural use. A structure is located in the middle of the lot otherwise the lot is vegetated.	<p><i>Combined inundation area:</i> minor impact.</p> <p><i>Buffer area:</i> most of lot impacted.</p> <p>The land affected is largely vegetated.</p> <p>Most of the cleared land and the existing structure are outside of the buffer area. This allows existing uses to continue but future expansion would be limited.</p>
Lot 2 RP63905 and Lot 470 B3415 (freehold)	147 Emu Swamp Road	Mixed used farm used for some horticulture and grazing.	<p><i>Urban inundation area:</i> Lot 470 – most of lot impacted, Lot 2 – minor impact.</p> <p><i>Combined inundation area:</i> Lot 2 –partial impact, Lot 470 – mostly inundated.</p> <p><i>Buffer area:</i> Lot 2 – partial impact, Lot 470 – all of lot.</p> <p>Lot 470 is mostly vegetated with some clearing in the southern portion. It is completely covered by the inundation and buffer areas.</p> <p>Lot 2 is mostly vegetated along its boundary with the river where the inundation areas and buffers areas are proposed. The majority of the lot, buildings and cleared area would be unaffected.</p>
Lot 1 RP63905 (freehold)	161 Emu Swamp Road	Rural residence and other minimal uses.	<p><i>Combined inundation area:</i> minor impact.</p> <p><i>Buffer area:</i> covers approx. one third of the southwest corner of lot.</p> <p>Lot 1 is mostly vegetated with clearing and buildings in the eastern portion. The use of the western portion of the land which is vegetated is affected.</p>

Land Description	Address	Description of Current Use	Possible Impacts of the Project on the Land
Lot 95 BNT4 (freehold)	259 Emu Swamp Road	Rural residence, vegetated areas and other minimal uses including grazing.	<p><i>Urban inundation area:</i> partial impact.</p> <p><i>Combined inundation area:</i> partial impact.</p> <p><i>Buffer area:</i> partial impact.</p> <p>While the buildings on the land are not affected, the combined dam scenario removes most of the land from future use (mostly vegetated).</p>
Lot 131 SP183767	365 Emu Swamp Road	There is a dwelling house on the site and large patches of land are cleared for grazing and other minimal rural purposes.	<p><i>Urban inundation area:</i> Lot 131–partial impact.</p> <p><i>Combined inundation area:</i> partial impact.</p> <p><i>Buffer area:</i> partial impact.</p> <p>Present rural land uses, buildings and vegetation on these lots would be affected.</p> <p>The northern half of Lot 131, which is partially cleared, would remain outside of the buffer areas and available for future rural use.</p>
Lot 132 SP183767 (freehold)	365 Emu Swamp Road	There is a dwelling house on the site and large patches of land are cleared for grazing and other minimal rural purposes.	<p><i>Urban inundation area:</i> partial impact.</p> <p><i>Combined inundation area:</i> most of lot impacted.</p> <p><i>Buffer area:</i> all of lot impacted.</p> <p>Some of the construction activities would be located within the proposed inundation and buffer areas.</p> <p>Present rural land uses, buildings and vegetation on these lots would be affected.</p>
L101 BNT728 and L1 RP49661 (freehold)	91 Mascadri Lane	Large patches of land cleared for grazing and other minimal rural purposes. Mostly vegetated along river.	<p><i>Combined inundation area:</i> Lot 101, L1 – minor impact.</p> <p><i>Buffer area:</i> Lot 101, L1 – partial impact.</p> <p>The impacts would be limited to the riparian vegetation and a relatively minor patch of cleared land. Up to a half of the area of these lots and the buildings would remain available for future use.</p>
Lot 4674 on PH512 (leasehold)	Stalling Lane	There is a dwelling house on this leasehold land with patches of land cleared for grazing and other minimal rural purposes.	<p><i>Buffer area:</i> all of lot impacted.</p> <p>The Stalling Lane realignment is proposed through this lot for access to western parts of Stalling Lane. This is discussed in the following section.</p>
Lot 39 on BNT 1522 (reserve)	Emu Swamp Road	Currently used for minimal uses and is subject to a water reserve. Predominantly vegetated.	<p><i>Urban inundation area:</i> partial impact.</p> <p><i>Combined inundation area:</i> partial impact.</p> <p><i>Buffer area:</i> most of lot impacted.</p> <p>There is not a significant difference in impacts between the dam scenarios. The inundation impacts would be limited to the eastern corner and affect vegetated land. The buffer area would be greater in the eastern and northern portions and these areas are vegetated.</p> <p>Construction activities would be located in the eastern portion in the inundation areas.</p> <p>The proposed Stalling Lane realignment is located in the southern portion of this lot, affecting a small area of vegetated land. This would result in the creation of a small lot south of the new road reserve. Construction roads would be located within the buffer areas affecting vegetation.</p>



5.3.1.1 Construction

All construction activities, including the sourcing of material for the proposed dam wall, would be conducted within properties acquired for the proposed dam (refer **Figure 3-6**). Overall the construction period is expected to last approximately 18 months.

During this time land use impacts could potentially occur in relation to:

- construction of the dam wall and associated buildings e.g. pumping station;
- construction of the Stalling Lane Access; and
- pipeline works in the vicinity of the dam wall.

Dam Wall

A number of facilities would be established to enable construction to proceed. The construction facilities are discussed in more detail in **Section 3**. The construction facilities include:

- a portable site office to accommodate the office activities;
- a workshop to maintain various mechanical equipment;
- a concrete batching plant;
- an on-site quarry to extract material needed for the dam wall;
- a crusher plant; and
- a number of temporary roads used to access the construction facilities.

The affected land is zoned Rural and has freehold and water reserve tenures (refer **Figure 5-3**). The land is generally vegetated. The nearest cleared areas for houses, farm sheds and agricultural activities are located on Emu Swamp Road and Fletcher Road (refer **Figure 5-1**).

The construction site substantially increases the intensity of land uses in the area i.e. land use changes from rural to industrial. Low intensity land uses dominate at present including cropping, grazing and rural living. The low intensity uses would cease following land acquisition and the more intensive construction activity and associated land clearing would occur.

The use of land for a construction site i.e. industrial use, is generally consistent with the intent of the Rural zone.

Potential impacts from construction works for the proposed dam or pipelines on access to adjoining properties are addressed in **Section 13** of the EIS.

Mitigation Measures

The acquisition of the properties affected by the proposed dam and inundation area would assist to minimise impacts on land uses directly affected as well as adjoining land uses. However, the construction activities should be located at an appropriate distance from surrounding land uses or appropriate management arrangement put in place to minimise impacts. Specific mitigation measures in relation to the impact of construction activities on adjoining land uses, e.g. dust and noise nuisance, road access changes, are identified in **Sections 11** and **12** of the EIS.

The construction site should be remediated upon completion of works, including landscaping, to ensure the site is compatible in the long term with the surrounding land uses.

Stalling Lane Access

The proposed Stalling Lane Access would affect land zoned Rural with water reserve and leasehold tenures (refer **Figure 5-3**). The affected land is generally vegetated with some grazing (refer **Figure 5-1**).

The construction of the road would bisect the leasehold parcel creating a smaller lot on the eastern side of the new road. The leasehold tenure would be extinguished within the new road reserve. This would disrupt the current rural use of the land and create a smaller lot on the eastern side of the new road. This smaller lot would be acquired by the project.

It is unlikely to have any other significant impacts on adjoining or neighbouring land uses. Road access issues are investigated in **Section 13** of the EIS.

Mitigation Measures

The portion of the leasehold land required for the Stalling Lane realignment would need to be acquired. Management arrangements, such as access and future use, for the balance parcel of land created to the east of the new road would need to be established.

Access to affected land uses by pipeline works in road reserves would need to be maintained including through temporary alternative arrangements.

5.3.1.2 Operation

Following the completion of construction, the area behind the dam would flood.

The Project generally supports the Planning Scheme Strategies and DEO's particularly in regard to supporting the future development of residential, commercial and industrial uses in Stanthorpe and agricultural uses in the rural areas as identified in **Table 5-3, Table 5-4, Table 5-5, Table 5-6, Table 5-7, Table 5-8, and Table 5-9.**

Inundation Area and Surrounds

The constructed dam wall, pumping facilities, inundation area and buffer would affect land generally zoned Rural and with water reserve and freehold tenures (refer **Figure 5-3**). The affected land is used for a range of land uses with native vegetation generally along the river and clearing for horticulture, grazing, houses and sheds further from the river and along Emu Swamp Road and Fletcher Road (refer **Figure 5-1**). Good quality agricultural land would be affected however there is little scope for avoiding this impact.

The land directly affected by the proposed dam and inundation area would be acquired prior to inundation removing current land uses on these properties. This would result in full and partial acquisitions, adversely affecting property owners' land ownership and future use. Where only partial acquisition is undertaken, the area of the lots would be reduced affecting current and future use of the land.

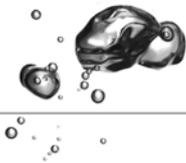
The acquired area would then be principally used for the provision of water supply. This would necessitate the rezoning of the land from the Rural zone.

The proposed buffer area also affects the use of the balance area of the lots. The land included in the buffer is proposed to be acquired by the Project or retained in the ownership of the current owners. Land maintenance would be a responsibility of the Project or the land owners. This would result in fully or partially restricting the future rural use of the affected land parcels.

As a key water storage catchment for the Shire, the maintenance of water quality would become paramount. The proposed buffer, through retaining vegetation, would assist in achieving water quality outcomes.

The catchment would need to be protected from new land uses and development that affect water quality. The Planning Scheme, as it stands, would generally achieve this outcome. It would be appropriate to amend the Planning Scheme to provide for the protection of the dam catchment, buffer and inundation areas.

Glen Aplin and Ballandean, the nearest villages, may benefit from the dam through increased tourism and recreational activities. The villages are unlikely to substantially increase in size beyond their current boundaries given the topographical and transport infrastructure constraints as well as existing Planning Scheme controls.



Properties in the immediate environs, not acquired for the proposed dam and inundation area, that currently support rural based tourism activities would potentially benefit due to increased tourism and recreational activities from the dam and inundation area. Subject to satisfying the requirements of the Planning Scheme, further tourist related activities may be developed in the surrounding area.

It is also possible that further horticultural activities may develop on suitable land given greater water certainty for rural uses, subject to any legislative and Planning Scheme requirements.

The Stalling Lane Access would maintain access to land uses to the west of the proposed dam.

The pipeline from the dam wall would be located within the road reserves in the area. It would not have any operational land use or planning impacts.

In general the operation of the dam, inundation areas and buffer would remove a relatively small area of Rural zoned land from rural use in comparison to the amount of Rural zoned land within the Shire. The impact is likely to be minor in regard to the Rural zone though direct property impacts would be borne by a number of land owners. The dam may create opportunities to expand of horticultural and tourism activities in the surrounding area. The Planning Scheme contains provisions for the management of further rural and related development in the area.

Mitigation Measures

Impacts on land ownership and future use should be appropriately managed in close consultation with affected land owners, with appropriate arrangements put in place to compensate for the impacts.

The Stanthorpe Shire Planning Scheme would need to be amended to reflect the change in land use of the dam and inundation area from rural to a waterbody (Community Infrastructure zone).

In order to protect the water quality within the catchment, development on surrounding land should be managed by the Planning Scheme to ensure that water entering the system does not adversely affect the water quality. SSC should review water quality protection measures as part of future Planning Scheme amendments.

5.3.2 Pipeline Corridors

The proposed Urban and Irrigation Pipelines generally follow road reserves (the New England Highway and local roads) and cross the rail line in a number of locations. Specific impacts to infrastructure are addressed in **Section 13** of the EIS.

Impacts to land uses would occur through the temporary loss of access to the adjoining road. Impacts to road accesses are addressed in **Section 13**. Consequent impacts to the land uses which rely on these accesses should be temporary and minor in nature subject to appropriate consultation and access mitigation measures, e.g temporary alternative access.

The proposed Urban Pipeline corridor traverses two Rural zoned freehold properties south of the Mt Marlay water treatment plant. The affected property details, other than the affected road reserves and rail line, are provided in **Table 5-16**.

■ **Table 5-16 Properties Affected by the Location of the Proposed Urban Pipeline**

Real Property Description	Site Characteristics	Location of Urban Pipeline
Lot 4 RP 41874 (Freehold)	The site is not intensively used for low intensity grazing and is therefore classified as “other minimal uses”. There appears to be some unsealed tracks through the property leading to approximately three buildings on site.	The pipeline enters the property near the south-west corner of the site and traverses the site to exit near the north-east corner of the lot.
Lot 42 BNT 215 (Freehold)	The site slopes in a north to south direction at a relatively steep incline. The land is identified in the context of the ALUM classification system as a Vacant Lot. There are no buildings on site. This lot is owned by SSC	The pipeline would be located along the western boundary of the subject site.

The Urban Pipeline ends at the Mt Marley water treatment plant resulting in construction works on this land. The pipeline is considered to be consistent with the current use of this land.

The proposed Irrigation Pipeline is longer than the Urban Pipeline, however only a small number of Rural zoned freehold lots are directly affected (refer **Table 5-17**). It is considered that the location of the pipeline in relation to the existing land uses on these sites would have minimal impact on land use and tenure apart from temporary impacts during construction.

■ **Table 5-17 Properties Affected by the Location of the Proposed Irrigation Pipeline**

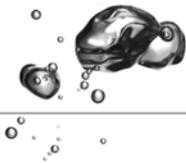
Real Property Description	Site Characteristics	Location of Urban Pipeline
Lot 1 RP 31766 (Freehold)	Some cropping is undertaken on site but it appears that more intensive use of the site is possible. The site is relatively flat.	The pipeline would be located along the northern boundary of the subject site.
Lot 2 RP 31768 (Freehold)	Some cropping is undertaken on site but it appears that more intensive use of the site is possible. The site is relatively flat.	The pipeline would be located along the northern boundary of the subject site.
Lot 1 RP31769 (Freehold)	Some cropping is undertaken on site but it appears that more intensive use of the site is possible. The site is relatively flat.	The pipeline would be located along the northern boundary of the subject site.
Lot 3 RP228687 (Freehold)	The principal use of the site is unclear from the road reserve. The intensity of the land use is low and is potentially a Rural living or grazing pasture.	The pipeline enters Lot 3 in the vicinity of the driveway off Church Road. It then heads north into Lot 1RP59328.
Lot 1 RP59328 (Freehold)	The principal use of the site is unclear from the road reserve. The intensity of the land use is low.	The pipeline would traverse the eastern boundary of the site.
Lot 670 BNT1754 (Freehold)	The principal use of the site is unclear from the road reserve. The intensity of the land use is low.	The pipeline runs across the property so that the pipeline would run within the road reserve on either side of the lot.
Lot RP162655 (Freehold)	Rural living or grazing is the likely principal use of the land. At the boundary of the road there are extensive tracts of native vegetation and regrowth is evident.	The pipeline would follow the unsealed road through the property in a westerly direction.

Construction through these properties would cause temporary disruption to activities that occur on the land and some land clearing on sites with native vegetation. However, the Irrigation Pipelines is relatively narrow and the route generally follows property boundaries or paths so as to minimise disturbance.

Mitigation Measures

Through appropriate consultation with the owners of the affected land, the temporary disturbance can be minimised. Returning the disturbed land to its pre-existing state or to a state acceptable to the land owner would be necessary.





Arrangements would need to be established with affected landowners for the use of their land for the pipeline as well as allow ongoing access for maintenance. Tenure arrangements such as easements of approximately 3 m in width may be required. This may result in some restrictions on activities above the pipeline.

5.3.3 Land Use Implications of Water Availability

Urban

The Urban Pipeline would supply the urban area of Stanthorpe, providing additional water and improving the reliability of water supply. This would support planned future development. The two key areas for future development are an area zoned Residential in the northern section of Stanthorpe and an area zoned Industrial in the western section of Stanthorpe (refer **Figure 5-10**). Both areas include freehold land as shown on **Figure 5-4**.

Development of the identified urban residential area has commenced. This area retains some vegetation cover. The Planning Scheme advises that this is the preferred area for future residential development due to the lack of possible land use conflicts.

The improvement to the water supply would benefit the ongoing development of this area but it is unlikely to, by itself, significantly increase the rate of its development. Factors such as the provision of other infrastructure, the availability of jobs and services, and the requirements of relevant legislation and the Planning Scheme are also important to how this area develops.

A section of the identified industrial area has been developed for industrial uses. The majority of the site remains under significant vegetation cover which would be an important issue for future development. The development of this area for industrial land uses in the future is unlikely to result in land use conflicts as it is separated from residential land uses.

It is considered that while the improved water supply and reliability would assist future development as proposed by the Planning Scheme, it is unlikely to result in a significant change in the timing of how this land develops.

Irrigation

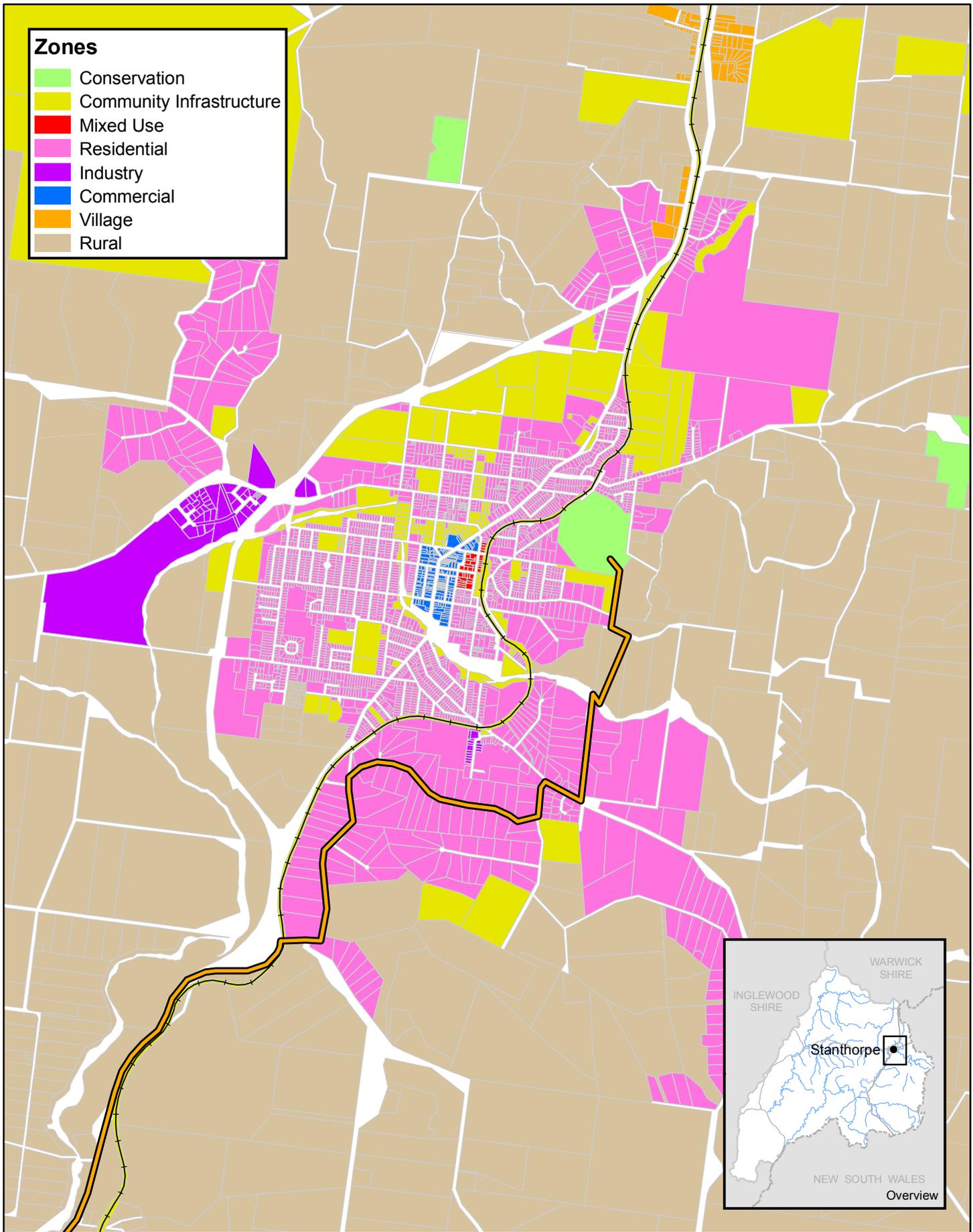
The majority of these properties are currently used for horticultural, agricultural and associated tourism purposes. A number of these properties are undeveloped or retain undeveloped sections. Topographical and other constraints may limit further development on a number of these properties.

The availability and improved reliability of water supply would support further rural and associated tourism development of these lands. Further development of rural purposes would be consistent with the Planning Scheme though tourist uses would require assessment and approval. Possible conflicts would be addressed through the requirements of the Planning Scheme.

Given the requirements of the Planning Scheme, non-rural uses would not be supported on these rural properties.

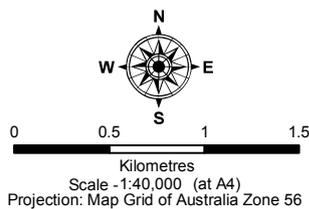
Mitigation measures

As the Planning Scheme includes appropriate provisions to manage development, it is not necessary to identify specific mitigation measures. However, it would be appropriate for SSC, in future Planning Scheme reviews, to review how the availability of additional water has affected urban and rural development.



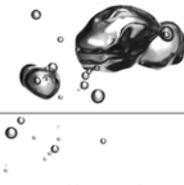
Legend

-  Urban Pipeline
-  Railway
-  Cadastral Boundaries



EMU SWAMP DAM EIS
Stanthorpe Town

Figure 5-10
Zoning in Stanthorpe Town



5.4 Conclusion

Direct adverse impacts would occur to the areas subject to the construction of the dam wall and the inundation area. The Urban Water Supply Dam would have a smaller direct impact area compared to inundation area for the Combined Urban and Irrigation Dam.

Land to be inundated would be acquired and would result in the loss of Rural zoned land of which most is in freehold tenure. While mostly vegetated, this land also contains cleared areas for dwelling houses, farm sheds, orchards, vineyards and other rural uses.

A water reserve would also be directly affected but the dam would be compatible with the purpose of the reserve.

The proposed buffer area, through acquisition and/or tenure based use restrictions, would further affect Rural zoned land surrounding the inundation areas. This would affect land already affected by the inundation areas and further reduce future rural uses on these properties. Land owners would be responsible for land maintenance in the buffer areas.

Some of the proposed temporary construction (industrial) activities would require approval under the Planning Scheme, for example the proposed extractive industries. However, with appropriate mitigation of impacts to surrounding land uses, such activities are generally consistent with the Rural zone.

The inundation of the dam area would necessitate an amendment of the Planning Scheme to change the affected land from the Rural zone to the Community Infrastructure zone.

The current Planning Scheme ensures impacts from future development in Rural zones on the environment are considered. The provision of the buffer area, which would retain vegetation, would also assist with achieving water quality outcomes. However, it is recommended that SSC review these provisions as part of future Planning Scheme amendment process to ensure water quality in the dam catchment is adequately protected.

There are a range of other adverse impacts due to the Stalling Lane Access and where the Urban and Irrigation Pipelines cross freehold properties. These properties are all zoned Rural and are in freehold tenure apart from the leasehold property and water reserve bisected by the Stalling Lane Access. The realignment would result in the subdivision of these parcels with smaller lots created by the new road reserves. Mitigation measures are recommended to minimise these impacts.

The provision of water from the proposed dam would not significantly change patterns and rates of development upstream or downstream given the current Planning Scheme provisions regarding the assessment of new land uses and development constraints. However, the creation of a water body is likely to create recreational and tourism opportunities in the general area. This has the potential to benefit Glen Aplin and Ballandean as well as horticultural based tourism ventures such as wineries and tourist accommodation surrounding the dam.

The provision of additional water to Stanthorpe would support its future planned development particularly for the identified residential and industrial growth areas. The Planning Scheme would manage how this land is developed.

The provision of water for irrigation to the nominated properties would improve reliability and support the ongoing use of these properties for horticultural and other rural uses. Expansion of rural uses may occur within these properties as well as the development of ancillary tourism uses. The Planning Scheme contains provisions which manage the type and scale of development on these Rural zoned properties.

Overall the availability and improved reliability of water supply contributes to the planned future development of urban and rural uses in Stanthorpe Shire. This beneficial impact assists the local development of Stanthorpe Shire and it also benefits areas outside the Shire as the role of Stanthorpe as a key provider of quality rural produce and tourism attractions is strengthened.