

REGIONAL JOB PRECINCT

RICHMOND VALLEY

TECHNICAL REPORT

LAND USE CONSIDERATIONS

DEPARTMENT OF REGIONAL NSW

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This report has been prepared to inform the master planning process for Richmond Valley RJP. The findings and recommendations have been developed where possible in collaboration with other disciplines. It is acknowledged that some of the recommendations in this report may not be included in the Master Plan, such as where they are out of scope for the RJP, conflict with other elements of the project or are proposed to be managed via an alternate mechanism.

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ABBREVIATIONS

| | |
|-------|--|
| AEP | Annual Exceedance Probability |
| AWTS | Alternate Waste Treatment Solutions |
| BLEVE | Boiling Liquid Expanding Vapour Explosion |
| DCP | Development Control Plan |
| DG | Dangerous Goods |
| DPE | Department of Planning and Environment |
| DRNSW | Department of Regional NSW |
| EP&A | Environmental Planning and Assessment |
| ERG | Emergency Response Guidebook |
| ERPG | Emergency Response Planning Guide |
| FHA | Final Hazard Assessment |
| FIA | Flood Impact Assessment |
| HIPAP | Hazardous Industry Planning Advisory Paper |
| HSE | (UK) Health and Safety Executive |
| IMT | Intermodal Terminal |
| JSIA | Johnston Street Industrial Area |
| LPG | Liquified Petroleum Gas |
| MHF | Major Hazard Facility |
| NIP | Nammoona Industrial Precinct |
| NRLX | Northern Rivers Livestock Exchange |
| NSW | New South Wales |
| PG | Packing Group |
| PHA | Preliminary Hazard Assessment |
| RBF | Risk Based Freeboard |
| RJP | Regional Job Precinct |
| RVDCP | Richmond Valley Development Control Plan |
| SDS | Safety Data Sheet |
| SEPP | State Environmental Planning Policy |
| STP | Sewerage Treatment Plant |
| TAFE | Technical and Further Education |
| UK | United Kingdom |
| WHS | Work Health and Safety |

TERMINOLOGY

| Term | Definition |
|--|--|
| Active land use | Sporting complexes and active open space. |
| Buffer zone | An area surrounding a facility or between areas designated for certain types of developments to minimise the potential for land use safety conflicts. Beneficial activities, typically with low density populations, intermittent use or lower risk, may be permitted in buffer zones to minimise sterilisation of land. |
| Commercial land use | Commercial developments including retail centres, offices and entertainment. |
| Offsite | Areas extending beyond the facility boundary. |
| Onsite | Areas within the facility boundary. |
| Residential land use | Residential, hotels, motels, tourist resorts. |
| Risk | The likelihood of a specified undesired event occurring within a specified period or in specified circumstances, it may be either a frequency (the number of specified events occurring in unit time) or a probability (the probability of a specified event following a prior event), depending on the circumstances. |
| Sensitive land use | Hospitals, schools, child-care facilities, old age housing. |
| Separation distances | Separation distances are used in this report to describe the distance between a source of risk and a receptor. They are a function of the configuration of the RJP and surrounding land uses. |
| HIPAP 10 performance objective to 'protect residential amenity and health' | In the context of risk to people, amenity is concerned with nuisance type issues such as noise and odour. Amenity is not assessed in this study and 'health' is taken to mean safety due to acute effects of incidents for potentially hazardous facilities. |

1. SUMMARY

1.1. Background

The Regional Job Precinct (RJP) program is an initiative of the New South Wales (NSW) Government to provide planning support to drive growth, investment and development opportunities within regional NSW. An RJP has been announced in the Richmond Valley, centred around Casino. The RJP covers three areas:

- Area 1: Nammoona Industrial Precinct (NIP), located to the northwest of Casino (Figure 1.1)
- Area 2: Casino Food Co-Op and surrounds precinct, located to the west of Casino (Figure 1.2)
- Area 3: Johnston Street Industrial area and surrounds precinct (includes Sewerage Treatment Plant (STP) Primex and land around Arthur Street, located to the east of Casino (Figure 1.3).

The RJP will leverage opportunities and strengths in Richmond Valley's existing industries of agriculture, manufacturing and renewable energy¹.

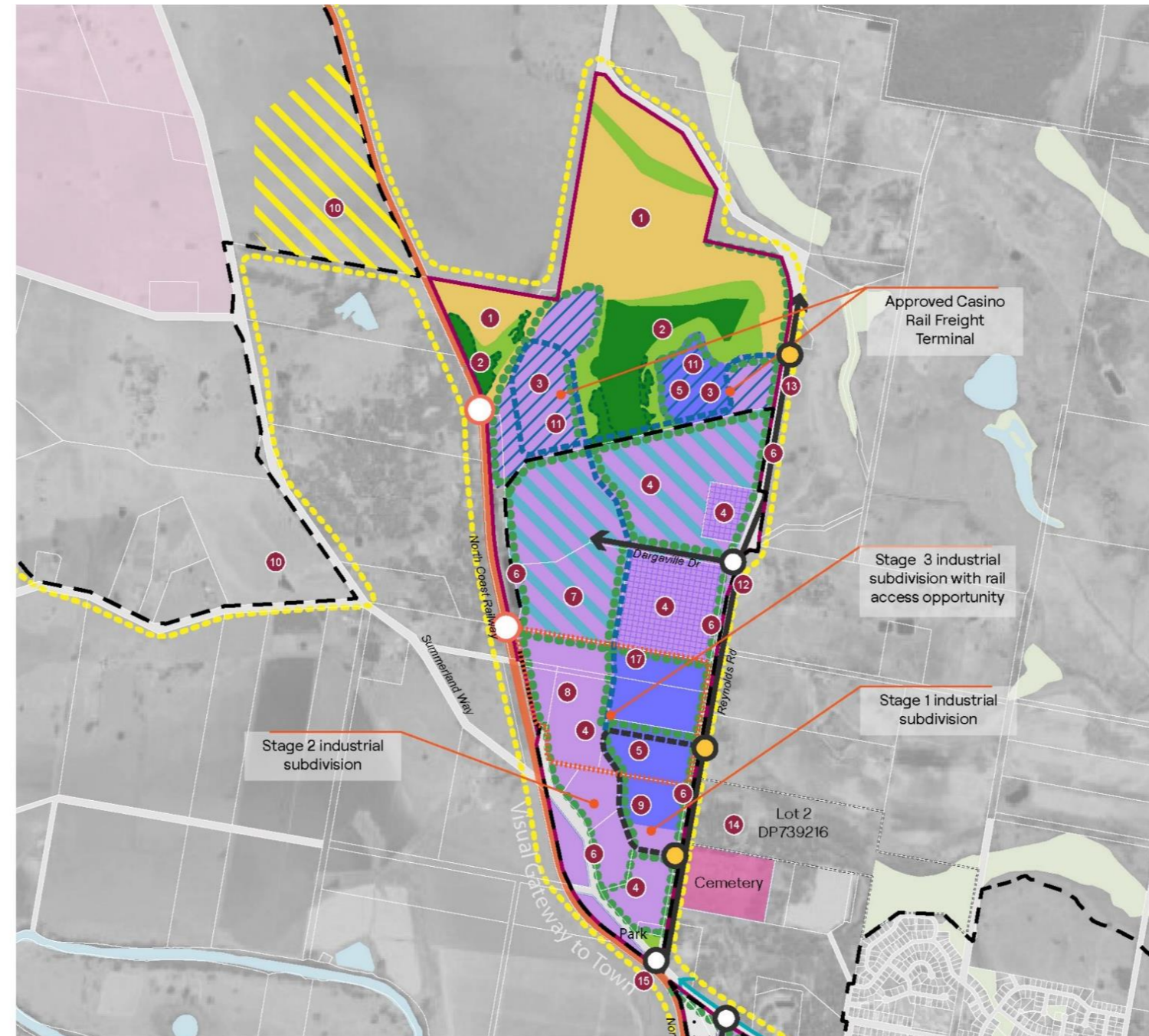
1.2. Scope

This document is the Technical Report into Land Use Consideration for the Richmond Valley RJP. It addresses land use **safety** planning matters, i.e. risk arising from potentially hazardous industries due to loss of containment of hazardous materials that could lead to fires, explosions or toxic releases with acute consequences. Other technical packages cover potentially offensive and amenity issues (i.e. air, noise and odour, contamination and environmental constraints).

¹ [Regional Job Precincts | NSW Government](#)

Figure 1.1: Area 1 Nammoona Industrial Precinct

- 1 Retain existing rural zoning north of the approved intermodal terminal
- 2 Area of high environmental value to be conserved via C3 Environmental Management zoning with some expansion of C2 Environmental Conservation to protect Paperbark Swamp Forest and Swamp Oak
- 3 Extend Urban Growth Boundary to enable rezoning for industrial uses to support the approved freight rail terminal or as an alternative use if it is not developed
- 4 Maintain existing General Industrial zone to support ongoing operation, incremental expansion and diversification of existing industrial uses
- 5 Establish Heavy Industrial zone in locations that can benefit from rail access and where air, noise and odour impacts are manageable
- 6 Establish DCP site planning controls that promote the strategic retention and enhancement of existing vegetation to establish 10m wide landscape buffers along roadsides and RJP boundaries. 20m buffers to be provided north of Stage 3 subdivision
- 7 Construct cell 6 of Council landfill site
- 8 Support the development of industrial uses in the Stage 3 Area that may benefit from accessibility to rail



- 9 Ongoing staging, delivery and curation of industrial uses in Stage 1 subdivision and later Stage 2 subdivision
- 10 Adjust urban growth boundary and reduction of NCRP Residential Investigation Area to manage impacts of industrial uses and avoid land use conflict with future residential lands
- 11 Support delivery of the approved freight rail terminal with increased land use diversity by establishing new general and heavy industrial zones
- 12 Monitor and upgrade Reynolds Road to Dargaville Drive as necessary to support intensification of industrial uses
- 13 Upgrade Reynolds Road beyond Dargaville Drive to approved freight rail by developer subject to delivery
- 14 Acquire or transfer dwelling rights from Lot 2 (DP739216) to minimise potential for noise related land use conflict on sensitive receivers
- 15 Monitor capacity of Reynolds Road / Summerland Way intersection and undertake upgrades if required to service the needs of intensifying industrial uses

- RJP Boundary
- Urban Growth Boundary
- NW Priority Growth Corridor
- Council Operational (NRLX/ Waste Transfer)
- Cemetery
- Residential Planning Proposal

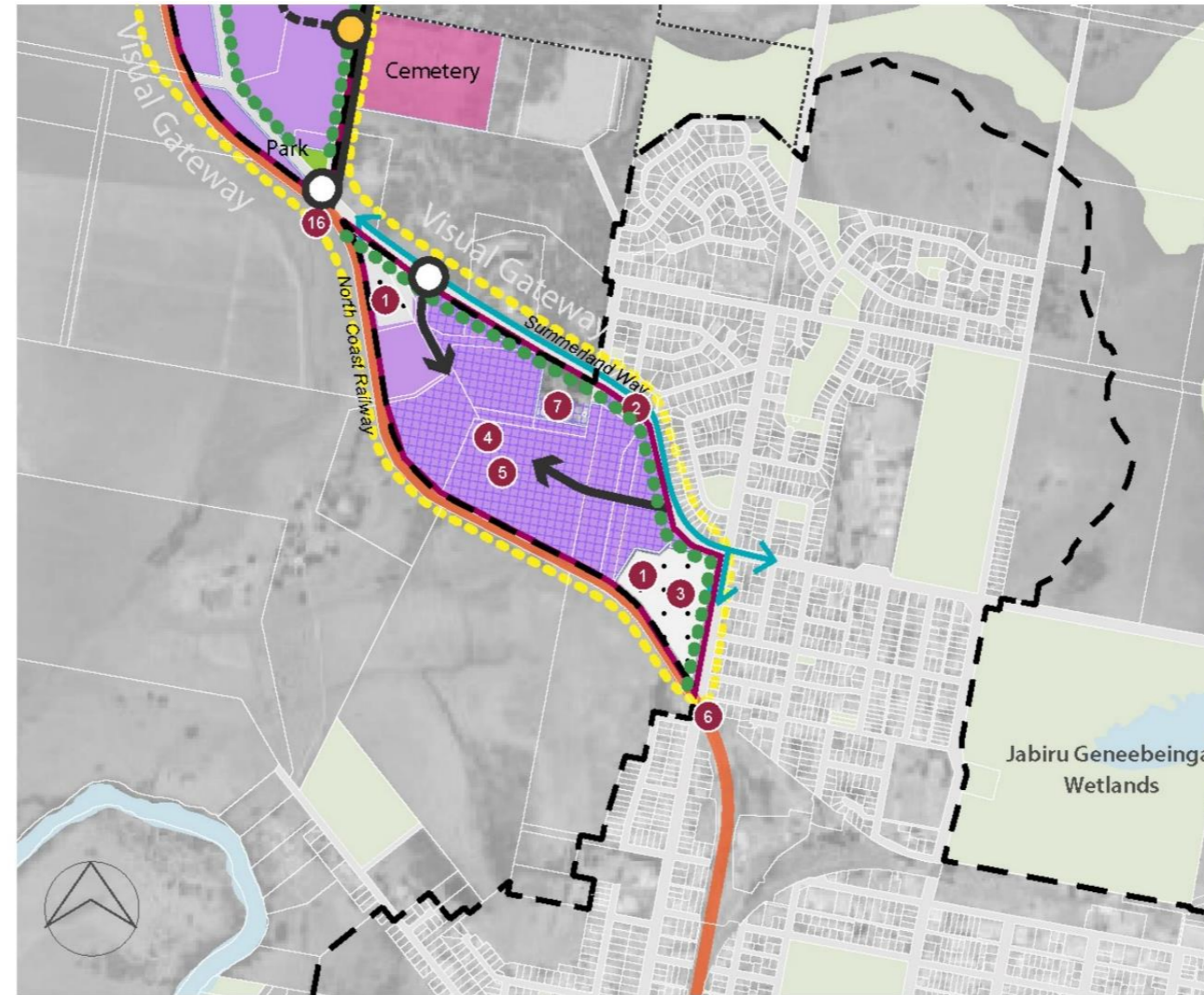
- E5 Heavy Industrial
- E4 General Industrial
- Rural Landscapes
- C2 Environmental Conservation zone
- C2 Environmental Conservation zone expansion
- C3 Environmental Management zone

- Urban Growth Boundary Extension Area
- Urban Growth Boundary Reduction Area
- Approved Intermodal Terminal
- Stage 3 Subdivision with rail access
- Existing Connection
- Proposed New Connection
- Potential Long Term Connection / Futureproofing investigation

- North Coast Railway / Rail Access
- Northern Rivers Rail Trail
- Summerland Way share path
- Landscape Buffer
- Existing Intersection / Upgrade
- New intersection

Figure 1.2: Area 2 Casino Food Co-Op and surrounds precinct

- 1 Essential Energy, Council, and Dpt of Education's sites 'Opportunity sites' (available for specialist user that can't be accommodated elsewhere/unsolicited proposals)
- 2 Maintain and enhance dense treed interface to Summerland Way and Hotham Street to buffer and screen land uses in the Area
- 3 Dpt of Education site potential catalyst site (e.g. vocational training, or specialised facility complementary to Co-op) to consider compatibility of land use interrelationship with Co-op and adjacent residential
- 4 Consider increased height limits in light of historical approvals



- 5 Maintain existing General Industrial zone to support ongoing operation, incremental expansion and diversification of existing industrial uses
- 6 Establish DCP site planning controls that promote the strategic retention and enhancement of existing vegetation to establish 10m wide landscape buffers along roadsides and RJP boundaries. Buffer to extend along Hotham Street to minimise visual impact on nearby heritage (Casino Station Group)
- 7 Retain existing reservoir site for infrastructure purposes

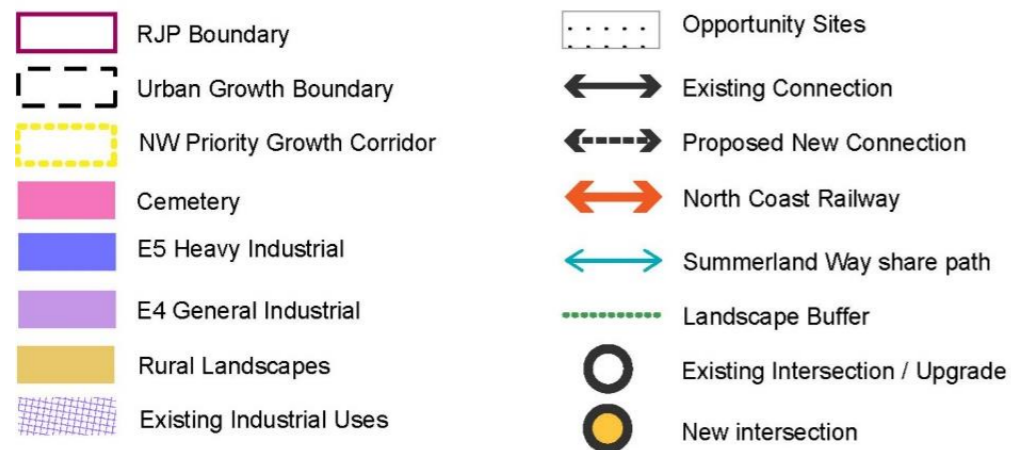
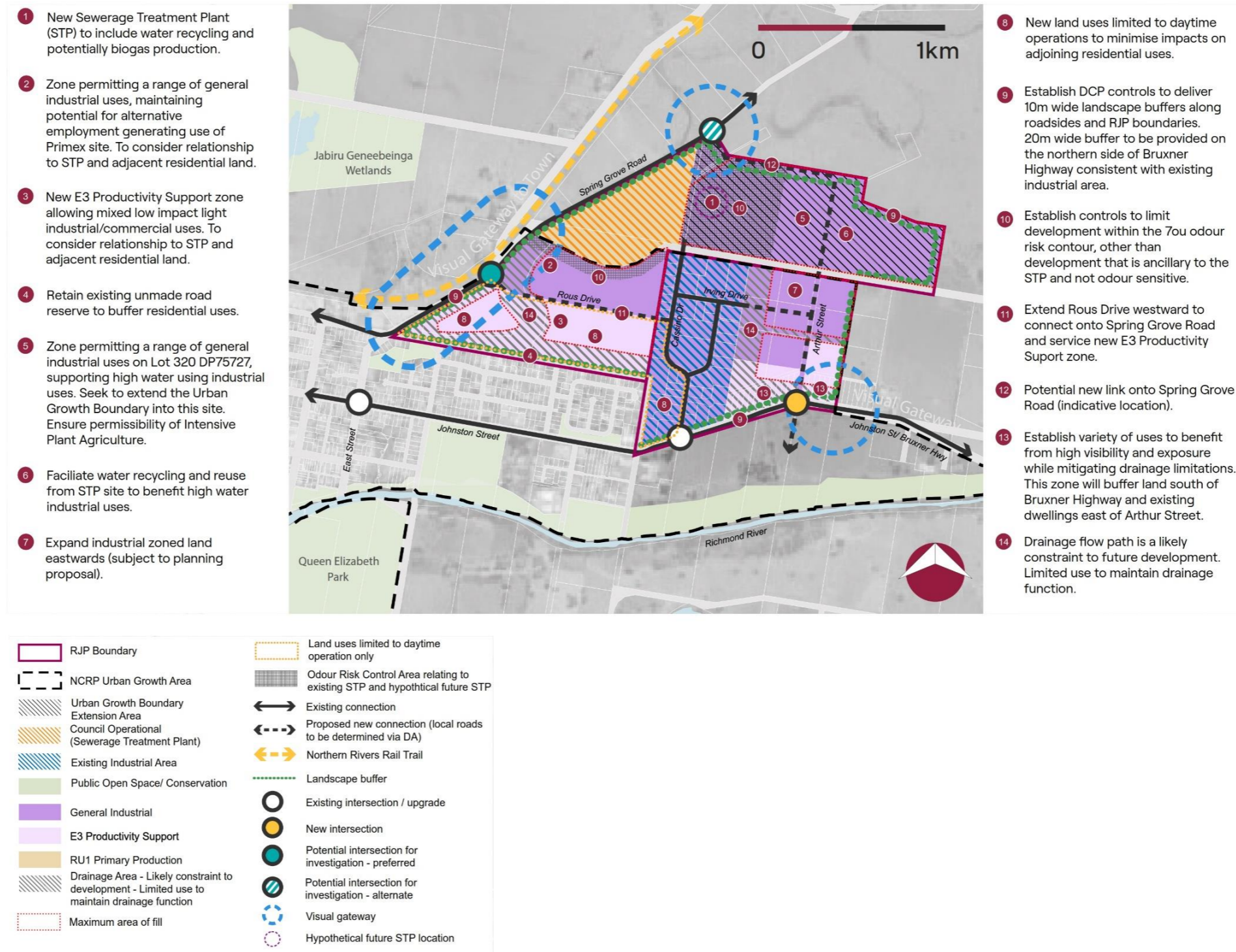


Figure 1.3: Area 3 Johnston Street Industrial area and surrounds precinct



1.3. Objective

The high-level objective of this report is to support orderly, efficient and streamlined development within the RJP by minimising the potential for land use safety conflict during future development approval processes.

The objective is achieved by conducting a technical analysis of a preferred option. The analysis uses representative developments to determine if the preferred option will support development of employment opportunities in the RJP whilst avoiding land use safety conflict.

1.4. Preferred option

This report analysed the Richmond Valley RJP preferred development option presented in Figure 1.1, Figure 1.2 and Figure 1.3.

The preferred option recognises the current operations in the RJP whilst presenting opportunities to develop the RJP in a staged process. The preferred option is not intended to indicate changes to existing operations will occur or that developments will proceed.

1.5. Development assessment framework

To avoid inadvertently prohibiting or allowing a development, the land use safety planning framework relating to potentially hazardous developments detailed in the Resilience and Hazards SEPP (Resilience SEPP), Ref [1], should be applied. The potentially offensive aspects of the Resilience SEPP are addressed in other studies covering air, noise, odour and environmental considerations.

It is necessary to apply the Resilience SEPP as:

- There is no relationship between the land use zones defined in the RJP and the nature and scale of land use safety conflicts arising from developments that may be permissible in the zones.
- The set of developments analysed in this technical report are a representation only and cannot take account of the specific hazards and controls for a proposed development. The Resilience SEPP accounts for the unique nature of hazards and controls associated with developments that are not recognised by permissible activities in a land use zone.
- The Resilience SEPP triggers a process of assessment and approval against defined risk criteria with a mechanism for regulatory oversight.

1.6. Development in the RJP

Whilst recognising the general requirement to follow the Resilience SEPP, this report concludes that the RJP can support a range of land uses that maximise the opportunity

for employment across the three areas, whilst minimising the potential for land use safety conflict, noting the following aspects.

Development of a Major Hazard Facility (MHF) may technically be acceptable in the RJP, however there is the potential for land use safety conflict within and external to the area. MHFs require specific detailed assessment to prevent land use safety conflict and are unlikely to result in efficient use of land in the RJP.

Potentially hazardous developments, including those handling toxic material(s), are likely to be acceptable in Area 1 (**Nammoona Industrial Precinct**) based on:

- retaining the existing rural zoning in the northwest of the RJP and the 600–800 m buffer to the urban growth boundary to the west and south of the NIP
- maximising the distance between storage and handling of toxic dangerous goods in the Casino Rail Freight Terminal and the urban growth boundary.

There is no detailed publicly available assessment of Area 2 (**Casino Food Co-Op and surrounds precinct**) risk profile. In the absence of a detailed assessment, it is recommended that:

- Development of the Department of Education site as an opportunity site for industrial development or an adult education facility includes consideration of individual and societal risk to ensure any increase in population near to the Casino Food Co-Op and surrounds precinct is acceptable.
- Expansion or addition of inventories of toxic dangerous goods above the Resilience SEPP screening threshold includes an assessment of the cumulative risk from all developments in the Casino Food Co-Op and surrounds precinct.

Potentially hazardous developments, are likely to be acceptable in the Area 3 (**Johnston Street Industrial area and surrounds precinct**) based on the following:

- The separation distance from the proposed general industrial areas to sensitive receptors is likely to support potentially hazardous developments subject to:
 - the current land use safety policy Hazards and Resilience SEPP [incorporating State Environmental Planning Policy (SEPP) No. 33 – Hazardous and Offensive Development] and supporting processes [embodied in the NSW Hazardous Industries Planning Advisory Papers (HIPAPs)] will be applied in the RJP under existing planning requirements.
 - a facility or development that exceeds the MHF notification threshold (set out in Schedule 15 of the NSW Work Health and Safety Regulation 2017 Ref. [2]) would not be considered eligible for any simplified or streamlined planning process.
- Provision for lower intensity developments in the south of the Primex site will provide a buffer to residential areas.

Categories of development (based on Resilience SEPP screening levels) are related to the areas in the RJP listed in Table 1.1. The table demonstrates that the RJP can support a range of developments with commentary on the likelihood of acceptability in the area.

The term ‘advise against’ reflects the fact that while a development may be able to demonstrate compliance, and hence would be permissible under the Resilience SEPP, it:

- is likely to require detailed assessment
- may lead to future land use conflict or sterilisation of land
- is not compatible with a streamlined planning process.

In all cases, a Preliminary Hazard Assessment (PHA) is required if the Resilience SEPP threshold is exceeded. This will include consideration of individual dwellings as well as areas zoned residential.

Table 1.1: Development by SEPP screening level

| Area | Potentially hazardous including toxic gas (below MHF notification quantities) | Potentially hazardous excluding toxic gas | Not potentially hazardous |
|--|---|---|---|
| Area 1: Nammoona | Likely to be acceptable for a typical installation. | Likely to be acceptable for a typical installation. | Likely to be acceptable for a typical installation. |
| Area 2: Casino Food Co-Op and surrounds precinct | Advise against | Likely to require detailed assessment including individual and societal risk. | May be acceptable subject to assessment of individual and societal risk for any increase in population. |
| Area 3: STP and STP Residue area (3b) | Likely to be acceptable for a typical development. | Likely to be acceptable for a typical development. | Likely to be acceptable for a typical development. |
| Area 3: Arthur Street area (3c) | Advise against | Likely to be acceptable for a typical development. | Likely to be acceptable for a typical development. |
| Area 3: Primex industrial area (3a) | Advise against | Likely to be acceptable for a typical development. | Likely to be acceptable for a typical development. |
| Area 3: Primex light industrial/commercial area (3a) | Advise against | Advise against | Likely to be acceptable for a typical development. |

1.7. Other considerations

1.7.1. Richmond Valley Development Control Plan

The Richmond Valley Development Control Plan (RVDCP) Section I-11, Ref [3], details minimum separation distances between industries and a range of residential and social receptors.

Application of the RVDCP buffer distances may preclude developments that would otherwise meet the NSW Hazardous Industry Planning Advisory Paper (HIPAP) risk criteria. For example:

- The RVDCP sets a minimum buffer distance to an 'educational establishment' as 1000 m. This would prohibit development of a TAFE adjacent to the Food Co-Op as an educational establishment is a broader definition than a 'school'.
- The RVDCP sets minimum buffer distances from residences to potentially hazardous facilities as 1000 m. This would prohibit any development that exceeds the Resilience SEPP thresholds in all RJP areas except for the northern area of the Nammoona Industrial Precinct, regardless of risk.

Application of the RVDCP buffer distances may preclude developments that would otherwise meet the NSW Hazardous Industry Planning Advisory Paper (HIPAP) risk criteria. It is recommended that the proposed planning framework for the RJP includes an RJP specific Development Control Plan (RJP DCP). The RJP DCP should provide a mechanism to capture specific buffer requirements and allow for evidence-based deviations from buffers set in the RVDCP.

1.7.2. Existing dwellings

Acceptability of development and implications for existing dwellings in the RJP should be assessed by Council and addressed on a case-by-case basis as staged development in the area is undertaken.

2. CONTEXT

The study has been conducted on the basis that the NSW land use safety policy [State Environmental Planning Policy (SEPP) Resilience and Hazards Chapter 3: Hazardous and Offensive Development] and supporting processes [embodied in the NSW Hazardous Industries Planning Advisory Papers (HIPAPs)] will be applied in the RJP.

The technical report applies criteria from Hazardous Industry Advisory Paper No.10: Land Use Safety Planning (HIPAP 10) to determine the potential for developments to result in land use safety conflict as follows:

- a performance objective to protect residential safety²
- societal risk (the cumulative risk of developments effecting a population)
- individual risk (the cumulative risk of developments effecting an individual at a location) considering the sensitivity of the receptor.

The basis of the assessment is:

- the preferred option for the RJP
- existing land uses and developments
- representative development options in the RJP.

The assessment is qualitative with some quantification of consequences to inform buffers. The level of assessment in this report reflects uncertainty in the nature and scale of developments that may be proposed for the RJP.

The proposed planning framework for the RJP will include an RJP specific DCP. This report recommends that the RJP DCP includes a mechanism to capture specific buffer requirements and allows for evidence-based deviations from buffers set in the RVDCP.

2.1. Overview

The Richmond Valley RJP covers three geographic areas centred around Casino, NSW. Each area has the potential to leverage employment opportunities from existing industries and transport links.

2.2. RJP areas

2.2.1. Area 1: Nammoona Industrial Precinct

The Nammoona Industrial Precinct (NIP) is located to the northwest of Casino with a buffer of between 600 to 800 m from the nearest residential area and the urban growth zone. Figure 1.1 shows:

- Central area with existing industries (Northern Rivers Livestock Exchange (NRLX), grain processing, landfill and timber processing) and council landfill.

² Derived from the HIPAP 10 performance objective to protect residential amenity and health.

- Southern area with the Reynolds Road industrial estate (under construction).
- Northern area, location of the approved Casino Rail Freight Terminal.

2.2.2. Area 2: Casino Food Co-Op and surrounds precinct

The Casino Food Co-Op and surrounds precinct (Figure 1.2) is centred around an existing abattoir and supporting operations (tannery, food processing and packaging). The area has residential areas to the north and east. Within the area the potential to develop energy infrastructure, water supply infrastructure and an opportunity site on Department of Education land have been identified.

2.2.3. Area 3: Johnston Street Industrial area and surrounds precinct

The Johnston Street Industrial area and surrounds precinct (Figure 1.3) comprises:

- STP area
- Primex area (Development Area 3a)
- STP Residue area (Development Area 3b)
- Arthur Street area (includes existing industrial development around Cassino Drive) (Development Area 3c).

2.3. Receptors

2.3.1. Definitions

The NSW HIPAP documents define risk criteria based on the land use descriptions in Table 2.1. Examples and commentary are provided as the HIPAP criteria do not directly map to land use zoning.

Table 2.1: HIPAP land use categories

| HIPAP category | Examples | Commentary |
|---|---|---|
| Sensitive | Hospitals, aged care facilities and schools. | Populations that are more sensitive than residential by virtue of pre-existing health conditions, requirement for co-ordinate evacuation or societal risk/public perception issues. |
| Residential | Any area zoned residential. | There is no differentiation on density of residential populations. |
| Commercial | Includes retail centres, offices and entertainment centres. | Areas that are open to the public. |
| Sporting complexes and active open spaces | Parks, sports grounds, swimming pools, golf courses. | Areas open to the public for recreational sports or non-organised outdoor activities. |

| HIPAP category | Examples | Commentary |
|----------------|---|--|
| Industrial | Factories, warehouses that are not open to the public, processing facilities. | Industrial and commercial may co-exist in an area. In general, industrial developments are not open to the public. |

The study includes consideration of development opportunities of an adult education facility (for example a TAFE college) in the Casino Food Co-Op and surrounds precinct.

NSW land use planning guidelines do not provide guidance on which HIPAP category would apply to a TAFE. Hence, the UK HSE definition of adult education was adopted in the study. Under UK HSE guidance, community and adult education are a category DT2.4 (in-door public use)³. This category includes food and drink, retail, assembly and leisure. Applying the same grouping, a non-residential TAFE is equivalent to a commercial development for land use planning purposes.

2.3.2. Location of receptors

The area in and around the RJP was reviewed to identify and map the following receptors:

- hospitals and aged care facilities (Figure 2.1)
- schools and education facilities (Figure 2.2)
- residential zones and individual residences (Figure 2.3)
- sporting complexes and parks (Figure 2.4).

The location of the receptors is used as an input to the risk assessment.

³ [HSE: Land use planning - HSE's land use planning methodology](#)

Figure 2.1: Hospitals and aged care facilities

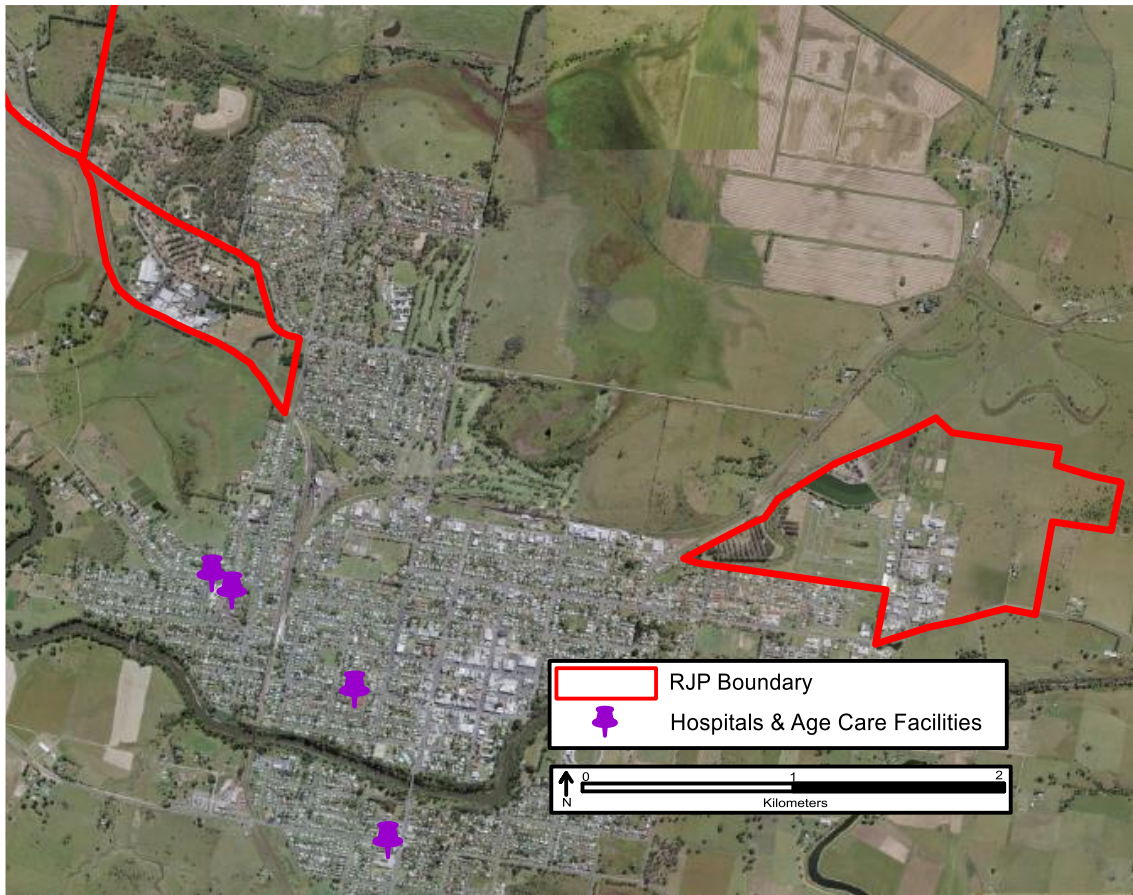


Figure 2.2: Overviews of schools and educational facilities

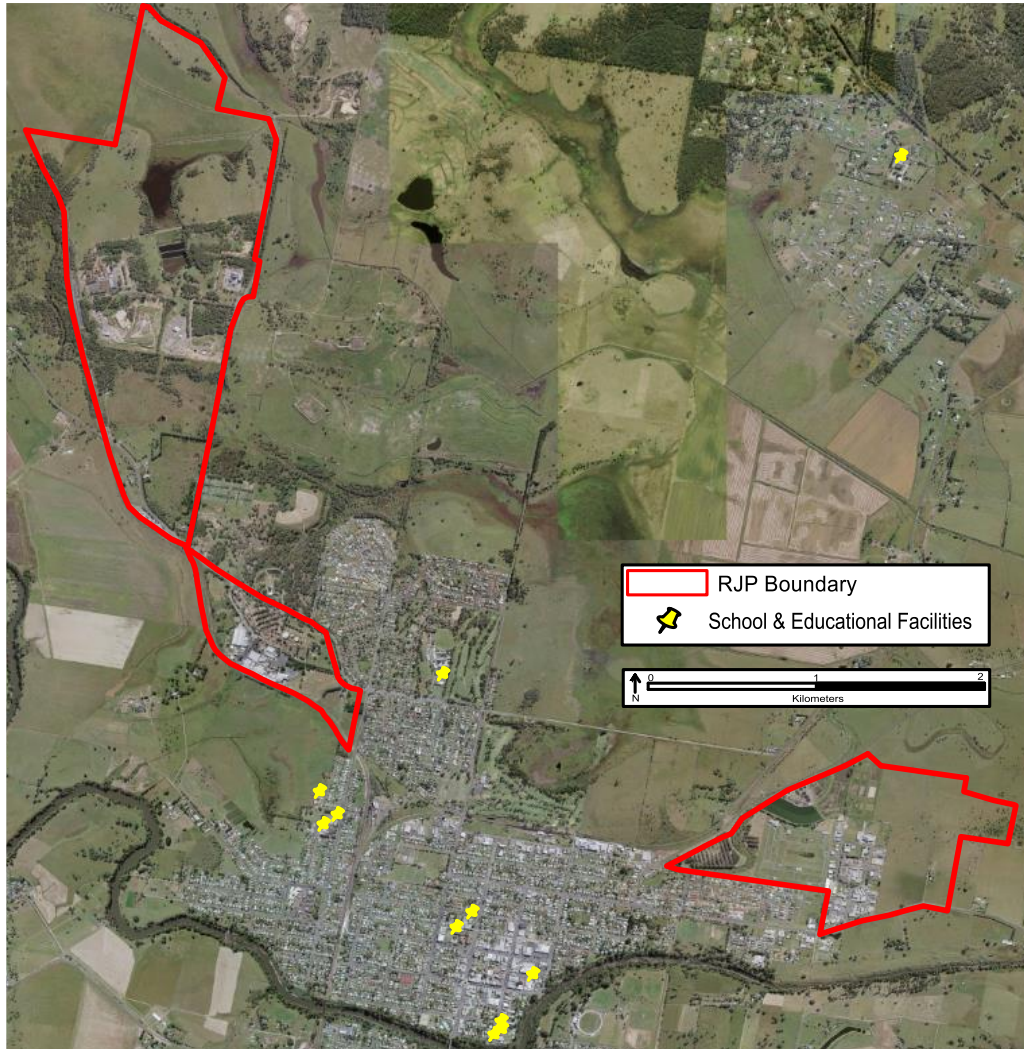


Figure 2.3: Residential zoning

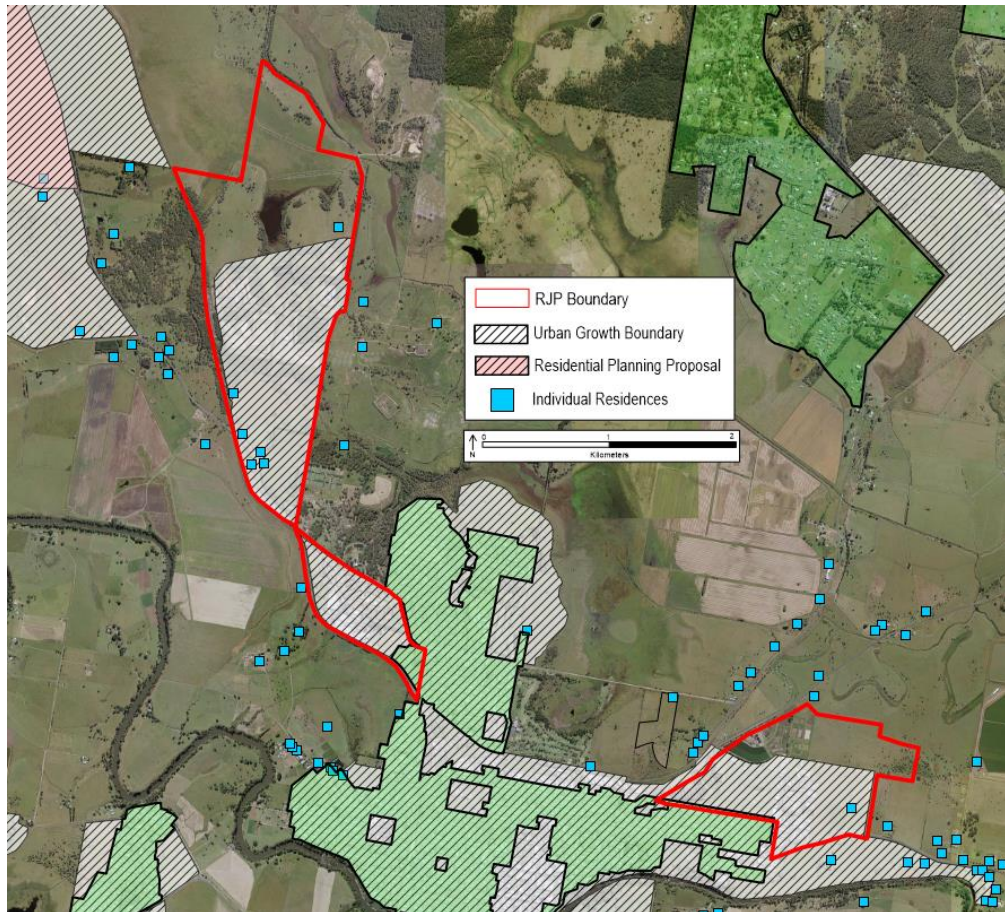
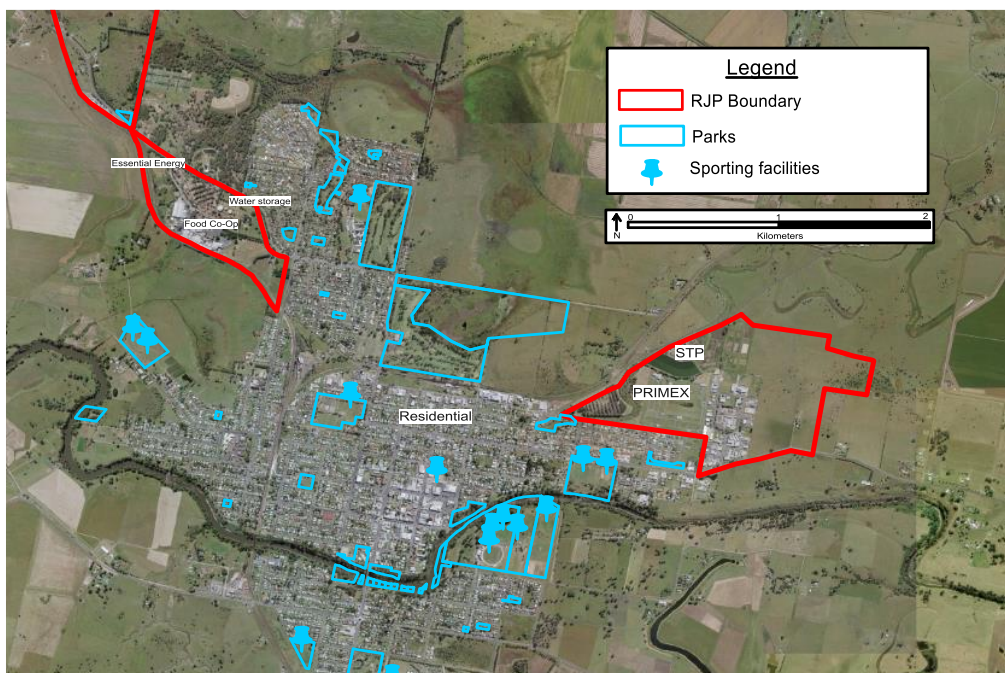


Figure 2.4: Sporting facilities and parks



2.4. Development opportunities

A broad range of industries may be attracted to the RJP. These include:

- Major Hazard Facilities (MHFs) (under the NSW WHS Act and Regulation based on the quantity of substances on site exceeding Schedule 15 quantities)
- designated developments under the NSW Environmental Planning and Assessment (EP&A) Act
- potentially hazardous developments (under the Resilience SEPP)
- non-hazardous developments.

MHFs are the highest hazard facilities that require detailed consideration of hazards and control of risks to manage offsite land use safety conflict. An MHF is typically a large-scale Dangerous Goods (DG) manufacturing, handling or storage facility. Areas allocated for heavy industry are likely to have sufficient separation distances from an MHF to sensitive, residential and commercial receptors outside of the RJP. However, they are likely to require buffers to adjacent industrial developments resulting in sterilisation of land and inefficient use of the RJP.

In the absence of development applications, a set of developments was identified for consideration in the technical study types, summarised in Table 2.2.

Table 2.2: Developments for consideration

| Area | Development | Comment |
|--|--|---|
| Area 1: Nammoona Industrial Precinct | Intermodal terminal | The Casino Rail Freight Terminal has been approved in the north of the area. There is an opportunity to develop a rail access in the southern area. |
| Area 1: Nammoona Industrial Precinct | Alternate Waste Treatment Solutions (AWTS) | Any future proposal for an AWTS will require investigation, consultation and assessment as required by relevant state legislation. |
| Area 1: Nammoona Industrial Precinct | General industrial | - |
| Area 2: Casino Food Co-Op and surrounds precinct | Essential Energy | - |
| Area 2: Casino Food Co-Op and surrounds precinct | Bio-gas | Under consideration by the Food Co-Op. |
| Area 2: Casino Food Co-Op and surrounds precinct | Adult education/TAFE | On the NSW Department of Education site. |

| Area | Development | Comment |
|--|-----------------------------|--|
| Area 2: Casino Food Co-Op and surrounds precinct | General industrial | - |
| Area 3: Johnston Street Industrial area and surrounds precinct | New/relocated STP | Area to the east of existing STP. |
| Area 3: Johnston Street Industrial area and surrounds precinct | General industrial | Primex (northern area) Arthur Street expansion eastwards. |
| Area 3: Johnston Street Industrial area and surrounds precinct | Light industrial/commercial | Primex (southern area) As a buffer to residential areas. |

3. BACKGROUND

3.1. Requirement for study

The Department of Regional NSW (DRNSW) is coordinating a planning process that will culminate in a planning framework that supports employment opportunities in the RJP.

DRNSW has engaged a master planner and a set of technical specialists to provide input and to support the development of the framework.

Sherpa Consulting Pty Ltd (Sherpa) has been retained to undertake the land use considerations study. The scope of the study is land use safety considerations, other specialists have been engaged for environmental, air, noise, odour, contamination and heritage studies.

3.2. Technical report

The Richmond Valley RJP has the potential to accommodate a wide range of developments including those that may be determined as *potentially hazardous industry* under the Resilience SEPP. The purpose of this study is to ensure that the acute safety issues associated with potentially hazardous developments are assessed during the RJP planning stage.

The study has been conducted on the basis that:

- The current land use safety policy [Hazards and Resilience SEPP incorporating State Environmental Planning Policy (SEPP) No. 33 – Hazardous and Offensive Development] and supporting processes [embodied in the NSW Hazardous Industries Planning Advisory Papers (HIPAPs)] will be applied in the RJP.
- A facility or development that exceeds the MHF notification threshold would not be considered eligible for any simplified or streamlined planning process.

3.3. Strategic land use safety planning

Strategic land use planning balances the threats and opportunities associated with developing land to maximise utility whilst managing land use conflicts and avoiding unnecessary sterilisation of land. To achieve this balance, strategic planning assesses a range of factors and issues including but not limited to threats to the natural environment, noise and air pollution.

Strategic land use **safety** planning provides the opportunity to put in place controls that eliminate or minimise land use safety conflicts through a combination of separation distances, buffer zones and limits on certain types of industries, and associated activities and quantities of hazardous materials.

This study is limited to land use **safety** planning. It takes into consideration acute risks to people living or working in and around the RJP. It should be noted that other factors may result in controls that are over and above any requirements identified in this study.

3.4. Limitations

The limitations in Table 3.1 apply to the study.

Table 3.1: Limitations

| Item | Issue | Remarks |
|------|--|--|
| 1 | Level of assessment | The study is a qualitative assessment of potential land use conflicts and preferred locations for typical generic developments. It is not a substitute for individual assessment of specific developments. |
| 2 | Reliance on existing studies and experience | The assessment is based on existing land use planning decisions, safety studies that support land use planning and experience from assessments. Existing studies in this RJP have not been verified for accuracy and completeness and study basis may not match the proposed developments. |
| 3 | Application of results | The output of the study will be guidance on land use considerations in the RJP. The study results will not be appropriate for determining if a specific development proposal meets the NSW land use safety planning criteria. |
| 4 | Potentially offensive developments | The study assessed land use safety considerations only. The study excludes potentially offensive (under the Resilience SEPP) and environmental considerations. |
| 5 | Dangerous Goods (DG) Transport Route Selection | The study has not assessed transport (road, rail or pipeline) of dangerous goods to and from the RJP. |
| 6 | Threshold quantities | The assessment covers potentially hazardous facilities (under the Resilience SEPP) but excludes the assessment of potential and existing MHFs. |
| 7 | Existing industries | <p>The risk profiles for existing industries are based on information provided to Sherpa by the Department of Regional NSW. The risk profiles have not been checked or verified.</p> <p>The assessment assumes industries return to their pre-2022 flood operational basis.</p> <p>Existing industries are assumed to have been subject to planning controls including consideration of land use safety risks. The risk from existing industries is assumed to be acceptable and no commentary in this report is intended to question existing planning decisions.</p> |

4. CONTEXT

4.1. Assessment framework

The assessment was guided by the documents in Table 4.1. The scope and relationship between the documents are discussed in the following sections.

Table 4.1: NSW and local land use planning documents

| Ref | Document | Level | Use in study |
|-----|--|------------|---|
| [4] | Hazard and Resilience SEPP – chapter 3 Hazardous and Offensive Development and the supporting application guidelines (Applying SEPP33) | Primary | Established the threshold for potentially hazardous facilities |
| [5] | DPE HIPAP 4 – Risk Criteria for Land Use Planning | Supporting | Provides land use safety criteria |
| [6] | DPE HIPAP 6 – Hazard Analysis | Supporting | Provides assessment guidance |
| [7] | DPE HIPAP 10 – Land Use Safety Planning | Primary | Established the principles, framework and criteria for the assessment |
| [8] | DPE HIPAP 12 – Hazards Related Conditions of Consent ⁴ | Supporting | Provides guidance on conditions of consent based on risk level |
| [2] | NSW Work Health and Safety Act (and supporting regulation) | Supporting | Supported guidance on threshold quantities for an MHF |
| [9] | Australian Emergency Response Guide Book 2021 | Supporting | Provides extent of evacuation and distances requiring protection |
| [3] | Richmond Valley Development Control Plan (effective 2021) | Supporting | Provides guidance on buffers |

4.2. Resilience SEPP and PHA

The Resilience SEPP provides a mechanism to determine if a development is potentially hazardous. Below defined thresholds of DGs and subject to other general considerations, developments may be determined to be not potentially hazardous and can be developed with no specific land use safety consideration.

As a society we accept certain risks based on a balance of risk and reward. The risk-based approach in land use planning prevents prohibiting a beneficial development based on an extremely unlikely but potentially catastrophic incident.

If a development is determined to be potentially hazardous, there is a requirement to undertake a PHA to determine if the risk associated with the development can be managed to an acceptable level. The PHA recognises that not all hazards and controls

⁴ SEPP33 has been consolidated into a Resilience and Hazards - 2021. See [Fact sheet - Resilience and Hazards SEPP \(nsw.gov.au\)](#)

may be known at the development application stage. Prior to commencing activities, the PHA is updated to a Final Hazard Assessment (FHA) to reflect the hazards and adopted controls.

If the risk cannot be managed to an acceptable level at the PHA stage, the development is hazardous and cannot proceed.

HIPAP 6 details the requirements of a PHA and HIPAP 4 details the criteria to determine if the risk associated with a development is managed to an acceptable level.

4.3. HIPAP 10 Land Use Safety Planning

4.3.1. General

HIPAP 10 describes land use safety planning as a mechanism for dealing with actual or potential conflicts between sources of risk, such as potentially hazardous industrial developments and surrounding land uses. HIPAP 10 focuses on the impacts of industrial hazards, in particular 'those arising from loss of containment of hazardous materials leading to fires, explosions and toxic releases'.

As presented in HIPAP 10, the aim of strategic land use safety planning is the avoidance or minimisation of land use conflicts by considering issues as early as possible in the planning cycle, with four factors that should be taken into consideration:

1. permissibility of the proposed land use
2. the need to avoid environmentally sensitive areas⁵
3. compatibility with nearby land uses; and
4. results of initial site investigations as to the fundamental suitability of the site.

This strategic land use safety consideration study focusses on avoiding impacts to existing and proposed land uses and the compatibility of nearby land uses, in the context of acute safety impacts to people.

The factors are supported by four general principles:

- the avoidance of avoidable risks
- the risk from a major hazard should be reduced wherever practicable, even where the likelihood of exposure is low
- the effects of significant events should, wherever possible, be contained within the site boundary; and
- where the risk from an existing installation is already high, further development should not pose incremental risk.

⁵ From a land use safety planning perspective as per HIPAP 10 'environmentally sensitive' includes areas close to sensitive land uses such as schools, nursing homes and hospitals.

4.3.2. Strategic land use planning criteria

HIPAP 10 provides guidance on integrating land use safety considerations into a strategic plan and land use safety performance objectives. Table 4.2 summarises how the HIPAP 10 factors are taken into consideration in this study and summarises how the factors are used to determine land use safety conflicts and separation distances.

The HIPAP 10 performance objective (summarised in Table 4.3) to ‘protect residential amenity and health’ was used to frame the assessment of impact at residential and sensitive land uses. In the context of risk to people, amenity is concerned with nuisance type issues such as noise and odour. Amenity is not assessed in this study and ‘health’ is taken to mean safety due to acute effects of incidents from potentially hazardous facilities.

Table 4.2: HIPAP 10 strategic land use planning factors

| Factor | HIPAP 10 consideration | Use in study |
|---------------------------------------|--|---|
| Permissibility of land use | Determine which types of development are permissible in an area. | The study assesses the implications of locating types of proposed development in the RJP. |
| Avoid environmentally sensitive areas | Lists examples of environmentally sensitive areas which includes areas close to sensitive land uses such as schools, nursing homes and hospitals. | The study assesses the potential impact of proposed development types on schools, nursing homes and hospitals. This is extended to commercial, active open spaces and sporting facilities. |
| Compatibility with land uses | Provision of buffer zones including the identification of beneficial land uses which can form a buffer between potentially hazardous industries and sensitive land uses such as residential areas. | The study assesses the need for and extent of buffer zones to sensitive land uses including beneficial use of land in buffer zones. |
| Initial site investigation | The purpose of the initial site investigation is to provide an early indication of the suitability of a proposed site. | Given the generic nature of the possible developments under consideration and the lack of any formal development applications, the site level assessment was limited to likely compliance with risk criteria. |

Table 4.3: HIPAP 10 performance objective in the context of acute risk to people

| Land use | Performance objective | Factor for determining appropriate separation distances in HIPAP 10 | Adopted in study |
|---|---|---|---|
| Residential areas, hospitals or schools | Protect residential, hospital and school safety | What is the likelihood of the performance objective being achieved by the mitigation measures alone? | Assessment based on the quantity of DGs on site. Resilience SEPP guidelines applied based on consequence. Likelihood considered for large toxic releases. |
| Residential areas, hospitals or schools | Protect residential, hospital and school safety | What is the likelihood of the mitigation measure failing? | Assessment based on the quantity of DGs on site. Resilience SEPP guidelines applied based on consequence. Likelihood considered for large toxic releases. |
| Residential areas, hospitals or schools | Protect residential, hospital and school safety | What is the likelihood of an incident which will result in a failure to meet the performance objectives? | Assessment based on the quantity of DGs on site. Resilience SEPP guidelines applied based on consequence. Likelihood considered for large toxic releases. |
| Residential areas, hospitals or schools | Protect residential, hospital and school safety | What back up mitigation measures are available? | Assessment based on the quantity of DGs on site. Resilience SEPP guidelines applied based on consequence. Likelihood considered for large toxic releases. |
| Residential areas, hospitals or schools | Protect residential, hospital and school safety | What is the likely geographic extent of the impacts if mitigation measures fail or an incident occurs? | Yes |
| Residential areas, hospitals or schools | Protect residential, hospital and school safety | What separation distances are required to achieve the performance objective: Under normal operational and mitigation performance conditions. If mitigation measures fail or an incident occurs. | Yes |

4.3.3. Consequence criteria

The consequences (acute impact) of incidents from potentially hazardous facilities were assessed against the criteria in Table 4.4. Where quantitative data was available for the developments under consideration, the results were used to inform the assessment.

Table 4.4: Consequence criteria

| Impact | Qualitative criteria | Quantitative criteria |
|------------------------|--|--|
| Heat radiation | Heat radiation reaches target | Incident heat flux radiation: <ul style="list-style-type: none"> at a residential and sensitive use areas does not exceed 4.7 kW/m² (injury) at neighbouring hazardous installation does not exceed 23 kW/m² (escalation potential). |
| Explosion overpressure | Explosion overpressure of concern reaches target | Incident explosion overpressure at a residential and sensitive use areas should not exceed 7 kPa (significant effect to people and property damage). Incident explosion overpressure at 21 kPa at industrial facility to cause escalation. |
| Toxic exposure | Emergency response guideline distances met | Toxic concentrations in residential and sensitive areas should not exceed a level which would be seriously injurious to sensitive members of the community following a relatively short period of exposure [Emergency Response Planning Guide (ERPG 2) or 1% fatality level]. |

4.3.4. Individual and societal risk criteria

Individual and societal risk criteria are presented in HIPAP 10.

Given the uncertainty in the nature, scale and controls and the number of proposed developments, individual risk and societal risk were not assessed quantitatively. Developments were qualitatively assessed for their potential to result in individual risk, increased societal risk or impact on populated areas with the potential to result in land use safety conflict.

4.4. HIPAP 12 Hazards related conditions of consent

HIPAP 12 sets out a fit for purpose framework for setting conditions of consent. The intention is to set conditions of consent to ensure there is an appropriate level of regulatory oversight based on the risk of non-imposition of a particular condition. The framework provides options for conditions of consent based on risk. The options and requirements are summarised in Table 4.5.

Table 4.5: HIPAP 12 summary

| Risk level | HIPAP 12 condition | Summary of requirements |
|------------|------------------------|--|
| Very low | May not need condition | Analogous to not potentially hazardous – hazard related conditions of consent may not add value. |
| Low | Option 1 | Relatively low worst-case conditions. Qualitative assessment unless there is a sensitive receptor (e.g. school or hospital) in which case option 2 is suggested. |
| Medium | Option 2 | Potential for major accident, with low risk. Semi-quantitative assessment. |

| Risk level | HIPAP 12 condition | Summary of requirements |
|------------|--------------------|--|
| High | Option 3 or 4 | Potential for major accidents with higher complexity and controls. Quantitative assessment. Option 4 for major projects and potential MHFs. |
| Very high | Option 3 or 4 | Potential for major accidents with higher complexity and controls. Quantitative assessment. Option 4 for major projects and potential MHFs. |

4.5. Richmond Valley Development Control Plan

The RVDCP provides guidance on required buffers between developments. The buffers are used in the study to inform the assessment of separation distances from developments to residential or sensitive land uses. The following are noted:

- buffers are provided for guidance only; detailed assessment may result in larger or smaller buffers
- buffers do not provide guidance on separation distances between industrial developments.

4.6. Uncertainty

A key aspect of this assessment is the uncertainty in the nature, scale, number and location of developments.

The above criteria were used to frame a discussion of the types and locations of development in the RJP. The assessment adopted a precautionary approach when assessing the potential outcomes of hazardous incidents.

The report is not a substitute for application of the Resilience SEPP in the development approval process. However, it does provide guidance on areas where potentially hazardous facilities will have the least impact on sensitive receptors and hence the best potential for approval under the Resilience SEPP framework.

5. RECEPTORS

5.1. Definitions

The NSW HIPAP documents define risk criteria based on the land use descriptions in Table 5.1. Examples and commentary are provided as the HIPAP criteria do not directly map to land use zoning.

Table 5.1: HIPAP land use categories

| HIPAP category | Examples | Commentary |
|---|---|---|
| Sensitive | Hospitals, aged care facilities and schools. | Populations that are more sensitive than residential by virtue of pre-existing health conditions, requirement for co-ordinate evacuation or societal risk/public perception issues. |
| Residential | Any area zoned residential. | There is no differentiation on density of residential populations. |
| Commercial | Includes retail centres, offices and entertainment centres. | Areas that are open to the public. |
| Sporting complexes and active open spaces | Parks, sports grounds, swimming pools, golf courses. | Areas open to the public for recreational sports or non-organised outdoor activities. |
| Industrial | Factories, warehouses that are not open to the public, processing facilities. | Industrial and commercial may co-exist in an area. In general, industrial developments are not open to the public. |

5.2. Location of receptors

The area in and around the RJP was reviewed to identify and map the following receptors (Section 2.3):

- hospitals, aged care, schools and higher education facilities
- residential.

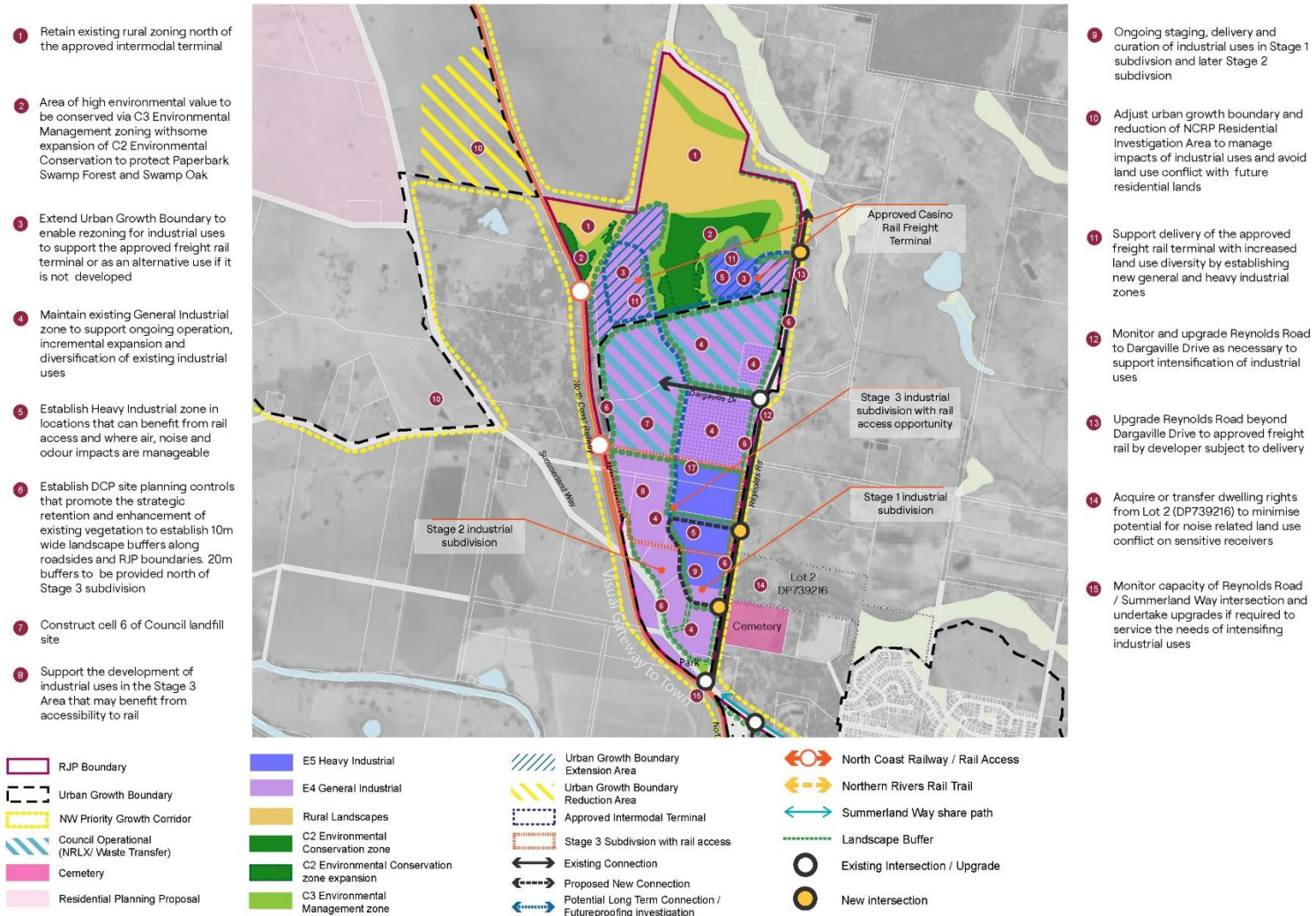
The locations of the receptors are used as an input to the risk assessment.

6. AREA 1: NAMMOONA INDUSTRIAL PRECINCT

6.1. Overview

The NIP is located to the northwest of Casino. It is bounded on the west by the North Coast railway line with direct access to Summerland Way, as seen in Figure 6.1.

Figure 6.1: Nammoona Industrial Precinct



6.2. Current activities

The following industrial developments are in operation in the central section of the NIP:

- Northern Rivers Livestock Exchange (NRLX)
- Riverina feedstocks
- Timber processing facility
- Council landfill
- Reynolds Road industrial development.

6.3. Potential developments

The following potential developments are assessed in this report:

- Casino Rail Freight terminal (approved)
- Rail access opportunity
- General Industrial (E4) and Heavy Industrial (E5) developments in the northern and southern sections of the NIP
- Agribusiness in the northern section of the NIP
- Alternate Waste Treatment Solutions (AWTS).

6.4. Northern Rivers Livestock Exchange

6.4.1. General

The NRLX handles livestock. Small quantities of dangerous goods may be stored and used on the site, but it is unlikely any storage would exceed the Resilience SEPP thresholds.

The recommended minimum buffer distances from stockyards are reproduced from Table I-11.3 of the RVDCP in Table 6.1. The minimum distances are met.

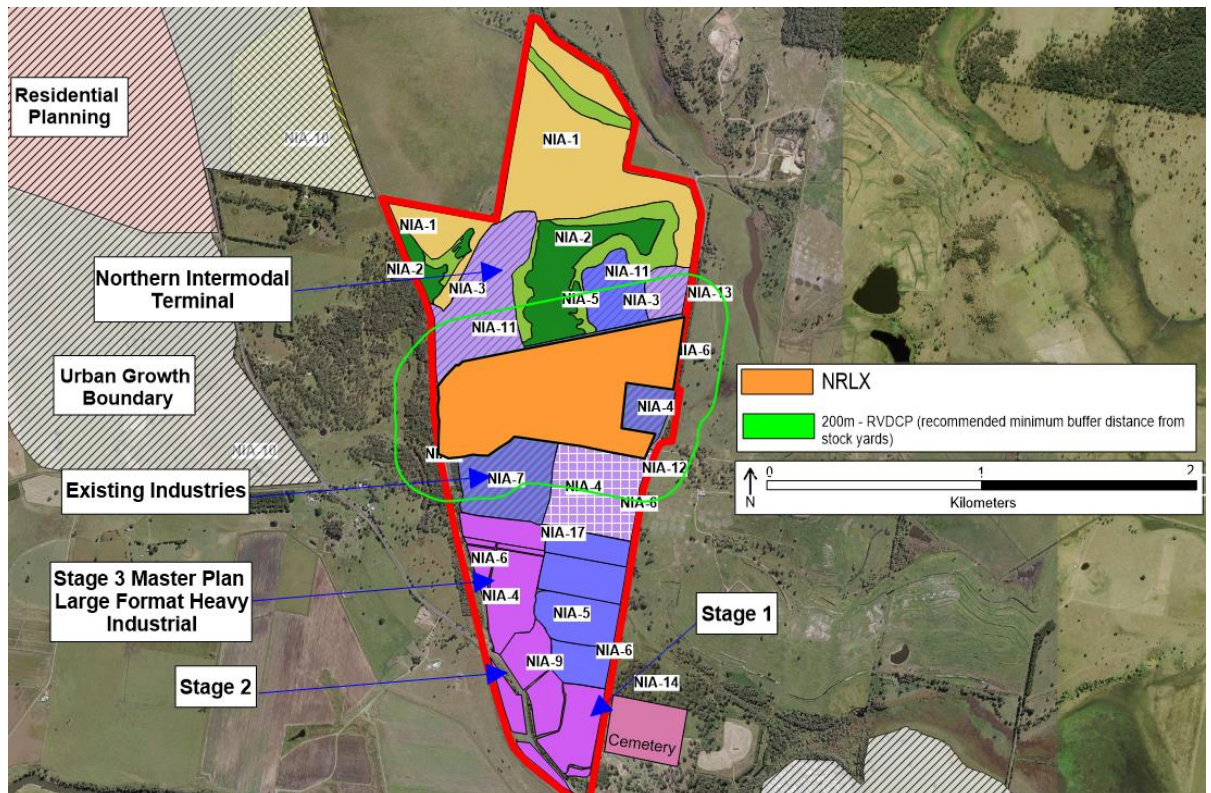
Table 6.1: Recommended minimum buffers stockyards

| Facility | Residential and urban development | Rural settlement | Educational facilities and pre-school | Rural tourist accommodation |
|------------------------------------|-----------------------------------|------------------|---------------------------------------|-----------------------------|
| Stock yards including cattle yards | 200 m | 200 m | 200 m | 200 m |

6.4.2. Planning considerations

The facility is in operation and potential for land use safety conflict is minimal. The RVDCP buffers (all set at 200 m) are shown in Figure 6.2. Since there is no minimum buffer distance for neighbouring industrial activity in the RVDCP, the RVDCP requirements are met.

Figure 6.2: NRLX RVDCP buffers⁶



6.5. Riverina Stockfeeds

6.5.1. General

Stockfeed facilities store and handle grain and process grain and animal feedstock. There are grain silos on site.

6.5.2. Hazards

Typical hazards at grain handling and storage facilities are associated with:

- dust explosion associated with grain handling
- toxic exposure during fumigation.

The risks of dust explosion are managed by minimising dust generation, controlling ignition sources and designing explosion vents to minimise the overpressure generated. Risk is generally retained onsite and localised to the area around explosion vents.

Fumigation involves the use of toxic substances in treatment silos. There are two typical methods of fumigation:

- Placing solid phosphine tablets in a silo, the silo is sealed and left for several days. When the solid fumigant is exposed to water vapour in the air, phosphine gas

⁶ See Appendix B for additional figure legends

(hydrogen phosphide) is released and spreads through the grain. Phosphine tablets are brought to site in small quantities for immediate use and the activity is intermittent.

- Injecting Methyl Bromide as a gas into a sealed silo. Methyl Bromide is brought to site for the activity and not typically stored on site, the activity is intermittent.

In both cases, once the fumigation is complete, the silo is ventilated prior to entry.

Typical hazardous materials are listed by DG class in Table 6.2.

Table 6.2: Grain and fumigant hazardous materials

| Typical material on site | DG code | Hazards | Resilience SEPP threshold | Comment |
|----------------------------|-------------------|---------|--------------------------------------|--|
| Phosphine fumigant tablets | Class 6.1 PG I | Toxic | 0.5 tonnes for Packing Group I (PGI) | Generates toxic gas on exposure to water |
| Methyl Bromide | Class 2.3 | Toxic | 100 kg | Toxic gas |

Given the uncertainty in the generation rate and dispersion of toxic gas, the general guidance on emergency response contained in the Emergency Response Guidebook (ERG) was used to inform the assessment and is summarised in Table 6.3. The small spill is considered appropriate for phosphine as single packages need to interact with water to generate consequences. A large spill of Methyl Bromide may occur if loss of containment is from the transport cylinder.

Table 6.3: Guidance from Emergency Response Guidebook

| UN Code | Name | First isolation | Protect downwind distance - Day | Protect downwind distance - Night |
|---------|---|-----------------|---------------------------------|-----------------------------------|
| 1397 | Aluminium Phosphide (when spilled in water) | 60 m | 200 m | 900 m |
| 1062 | Methyl Bromide (small spill) | 30 m | 100 m | 100 m |
| 1062 | Methyl Bromide (large spill) | 150 m | 300 m | 700 m |

The recommended minimum buffer distances from rural industries, which include feed mills, are reproduced from Table 1-11.3 of the RVDCP in Table 6.4.

The buffers are consistent with the downwind distances to protected places from the ERG for large spills.

Table 6.4: Recommended minimum buffers for feed mills

| Facility | Residential and urban development | Rural dwellings | Educational facilities and pre-school | Rural tourist accomm. | Property boundary | Roads |
|-----------|-----------------------------------|-----------------|---------------------------------------|-----------------------|---|-------|
| Feedmills | 1000 m | 500 m | 500 m | 500 m | Site specific assessment no minimum buffer | 50 m |

6.5.3. Planning considerations

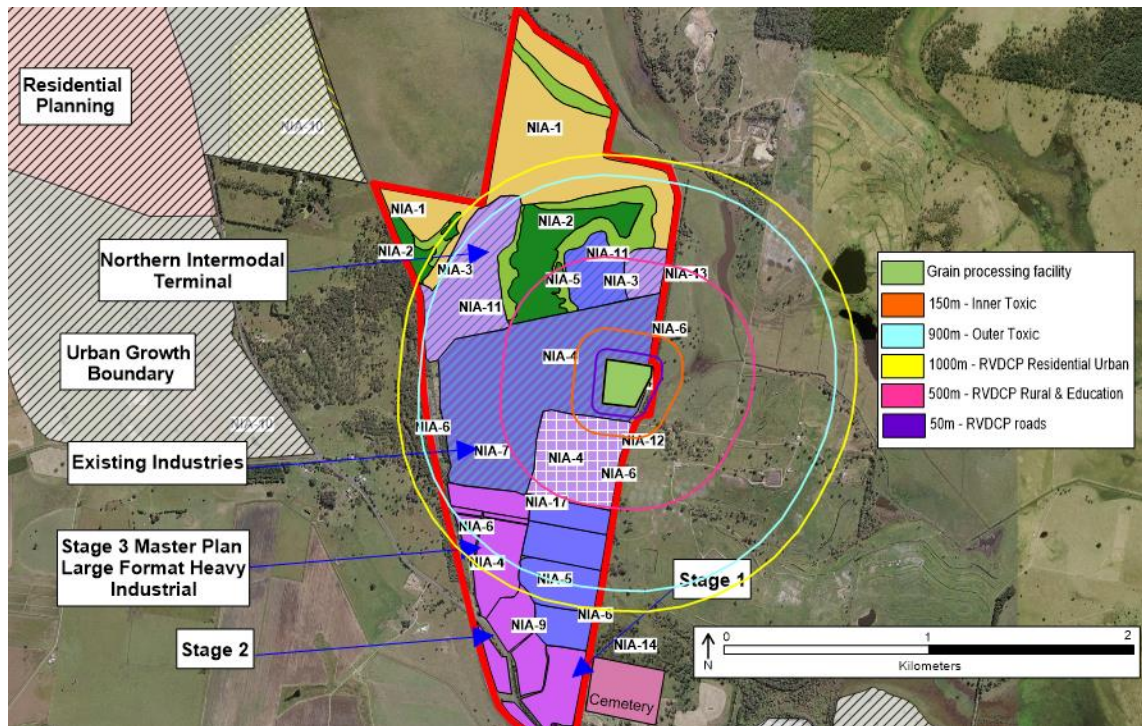
The potential for offsite impact from the grain store due to dust explosions is minimal given the application of standard design and controls. It is also noted that there is approximately 50 m from the silos to the site boundary which will reduce any residual risk.

The buffers shown on Figure 6.3 are based on the RVDCP. Based on land use safety planning, the 50 m contour is representative of the fire and dust explosion risk. Fumigation, if undertaken at all, is likely to be an infrequent activity.

In the worst case of fumigation being undertaken, the 1000 m RVDCP buffer to residential urban areas is sufficient to manage the risk to an acceptable level.

As the industry is an existing operation, it is assumed any land use safety risks due to operation of the site have been taken into consideration and are acceptable.

Figure 6.3: Feedstock contours⁷



6.6. Nammoona Landfill

6.6.1. General

Landfills may receive small quantities of dangerous goods in deliveries and have the potential to generate flammable gas (land fill gas). Fires have occurred at landfills with offsite impact typically limited to smoke and products of combustion.

6.6.2. Hazards

The land use planning safety risks associated with landfilling are likely to be associated with stockpile or underground waste fires. Once initiated, such fires may be hard to extinguish but the offsite consequence in terms of immediate safety is likely to be limited.

NSW Fire and Rescue has published a fire safety guideline for waste facilities (Fire Safety Guideline, Fire safety in waste facilities, Version 02.02). The guideline includes separation distances between stockpiles and fire mitigation options.

Landfill gas seepage may result in small quantities of gas at low pressure with minimal potential for offsite impact.

If the facility has a landfill gas extraction system, this should be reviewed to ensure compliance with appropriate codes and standards and assessment for offsite risk.

⁷ See Appendix B for additional figure legends

The recommended minimum buffer distances from waste facilities are reproduced from Table I-11.3 of the RVDCP in Table 6.5.

Table 6.5: Recommended minimum buffers for waste facilities

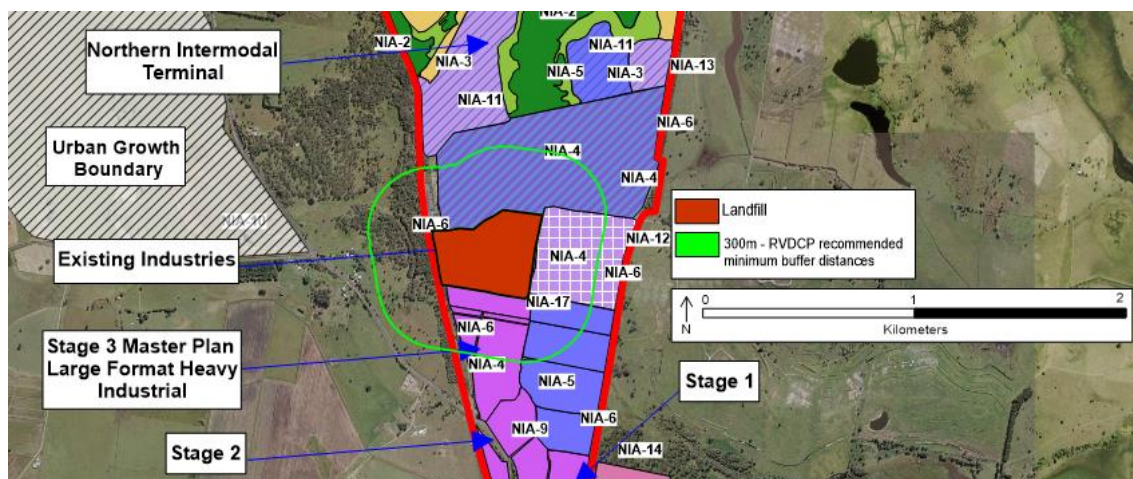
| Facility | Residential and urban development | Rural settlement | Educational facilities and pre-school | Rural tourist accommodation |
|------------------|-----------------------------------|------------------|---------------------------------------|-----------------------------|
| Waste facilities | 300 m | 300 m | 300 m | 300 m |

6.6.3. Planning considerations

As the landfill is active with a limited potential for offsite impact, no additional land use safety controls are proposed.

The RVDCP buffers are shown on Figure 6.4. As RVDCP does not provide minimum buffer distances to industrial or commercial operations, the buffers will be adequate to manage offsite risk.

Figure 6.4: Landfill buffers⁸



Other considerations such as noise, odour and leachate generation are likely to dictate land use planning considerations.

6.7. Timber processing

6.7.1. General

Timber processing presents hazards associated with dust explosions and stockpile fires (including woodchip/waste). The facility also treats timber with the potential for flammable or combustible chemicals to be stored and handled.

⁸ See Appendix B for additional figure legends

6.7.2. Assessment

The risks of sawdust explosion are managed by minimising dust generation, controlling ignition sources and designing explosion vents to minimise the overpressure generated. Risk is generally retained onsite and localised to the area around explosion vents.

Stockpile fires are typically localised with limited potential for offsite impact.

Fire threats from flammable or combustible materials may result in heat radiation up to 50 m from the storage location.

The recommended minimum buffer distances from rural industries, which include timber, are reproduced from Table I-11.3 of the RVDCP in Table 6.6.

Table 6.6: Recommended minimum buffers for timber mills

| Facility | Residential and urban development | Rural dwellings | Educational facilities and pre-school | Rural tourist accomm. | Property boundary | Roads |
|--------------|-----------------------------------|-----------------|---------------------------------------|-----------------------|--|-------|
| Timber mills | 1000 m | 500 m | 500 m | 500 m | Site specific assessment no minimum buffer | 50 m |

6.7.3. Planning considerations

As the mill is active with a limited potential for offsite impact, no additional land use safety controls are proposed.

The RVDCP does not provide minimum buffer distances to industrial or commercial operations.

6.8. Reynolds Road Industrial Estate stage 1

6.8.1. General

Operations in industrial estates may currently or in the future involve the storage and use of dangerous goods. Stage 1 is currently under development for general industrial use.

6.8.2. Assessment

Given the range of possible activities in a general industrial estate, it is not possible to undertake a specific assessment of the potential for land use conflict. The following planning considerations are provided based on a general assessment.

6.8.3. Planning considerations

If developments are restricted to below the Resilience SEPP thresholds, there will be minimal potential for land use safety conflict. Developments that exceed the Resilience SEPP threshold should be assessed under the existing planning framework. The

RVDPC should be referred to for buffer distances required for the range of possible developments.

6.9. Intermodal Terminal

6.9.1. General

The potential for land use safety conflict associated with an intermodal is dependent on the nature and scale of material that is handled and stored. There is also the potential for intermodals to attract associated activities such as warehouse, logistics and freight handlers. A mix of General Industrial (E4) and Heavy Industrial (E5) is proposed for the approved Casino Rail Freight Terminal area.

If the intermodal handles dangerous goods, then there is the potential for additional risk if the goods are stored and handled in warehouses. The associated businesses may also result in increased population on site.

6.9.2. Hazards

In consultation with the RJP team, the materials in Table 6.7 were screened to identify those with the potential to be handled at an intermodal in the RJP.

Table 6.7: Intermodal material handling

| Material | Potentially handled | Additional information |
|--|---------------------|------------------------|
| Ammonia | No | |
| Chlorine | No | |
| Toxic agricultural chemicals | No | |
| Fertiliser | Yes | Urea/Superphosphate |
| Combustible solids (e.g. wood chip or biomass) | Yes | Woodchips and waste |
| Paints and thinners | No | |
| Ammonium nitrate (mining) | No | |
| Sodium cyanide (mining) | No | |
| Concentrated acids (tannery, food preparation, mining) | No | |
| Liquid fuels | No | |

Safety Data Sheets (SDS) for urea and superphosphate fertilisers report they are not classified as dangerous goods and do not present a hazard during routine handling and storage. Both substances have the potential to evolve toxic products of combustion if they are involved in a fire or mixed with incompatible materials.

Woodchips and waste are combustible solids and may contribute to a fire. There is also the potential for stockpiles to generate heat and spontaneously combust. In general, stockpile fires have limited potential for offsite risk. The fire takes time to develop and heat radiation is localised to the stockpile.

Adoption of standard material handling and segregation practices will minimise the potential for offsite risk from these products.

Toxic inventories will be limited by package size.

6.9.3. Casino Rail Freight Terminal planning considerations

The approved Casino Rail Freight Terminal that may handle non-toxic dangerous goods is unlikely to result in offsite impact and land use safety conflict within the RJP or to surrounding areas. A buffer of 50 m would be sufficient to manage offsite impact from fire associated with storage and handling of flammable or combustible material.

Societal risk is the main criteria when considering the consequences of the less likely but larger consequence toxic gas releases.

If the intermodal handles toxic material, then there is the potential for adverse impacts on residential areas between 500 m and 900 m. However, Figure 6.5 shows that storage and handling of toxic material at the Casino Rail Freight Terminal is likely to be acceptable as the contour does not reach the current residential areas or the proposed urban growth boundary. This is consistent with Heavy Industrial (E5) zoning.

As the development is approved it is assumed that land use safety risks are acceptable. Any further development (e.g., supporting warehouses, or change in goods handled or stored) should be assessed under the Resilience SEPP including impact to individual residence (Figure 6.7).

6.9.4. Southern rail access opportunity planning considerations

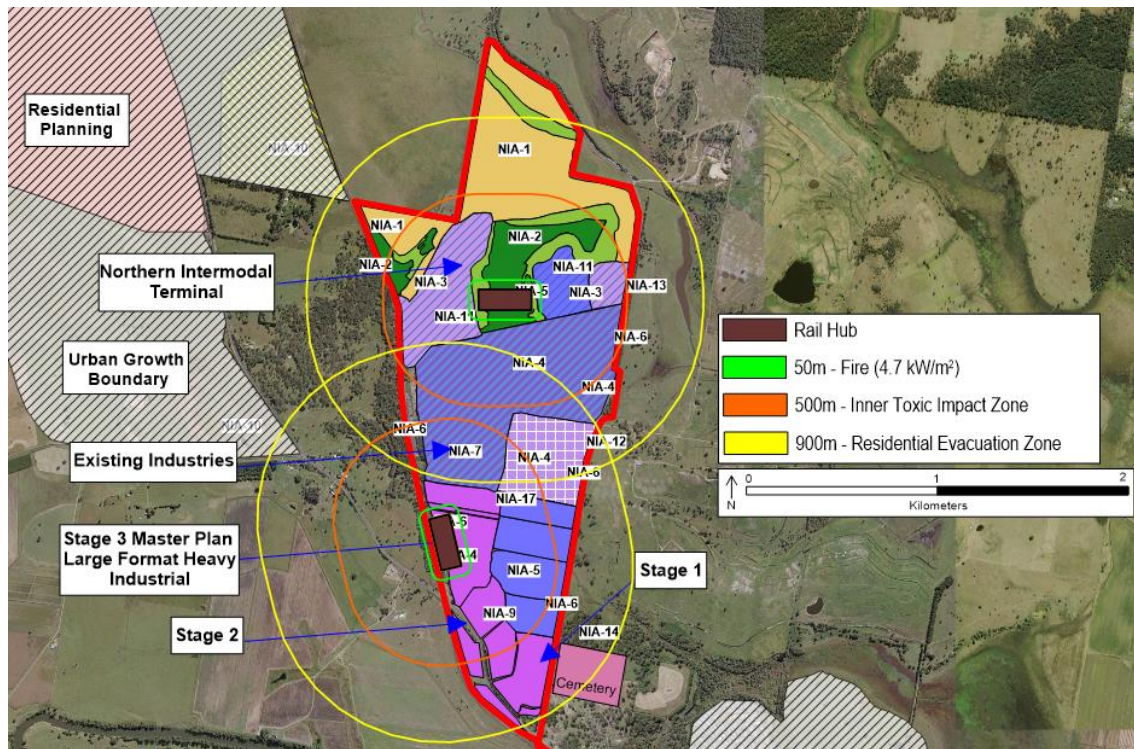
A southern rail access opportunity that handles non-toxic dangerous goods is unlikely to result in offsite impact and land use safety conflict within the RJP or to surrounding areas. A buffer of 50 m would be sufficient to manage offsite impact from fire associated with storage and handling of flammable or combustible material.

Societal risk is the main criteria when considering the consequences of the less likely but larger consequence toxic gas releases.

If the rail access opportunity handles toxic material, then there is the potential for adverse impacts on residential areas between 500 m and 900 m. However, Figure 6.5 shows that storage and handling of toxic material at the Casino Rail Freight Terminal is likely to be acceptable as the contour does not reach the current residential areas or the proposed urban growth boundary.

Assessment under the Resilience SEPP should consider impact to individual residences (Figure 6.7).

Figure 6.5: Intermodal buffer distance⁹



6.10. Reynolds Road Industrial Estate stage 2

6.10.1. General

Operations in industrial estates may involve the storage and use of dangerous goods. To accommodate such activity, the stage 2 area has been assessed with the inclusion of larger scale warehousing and dangerous goods storage areas (General Industrial (E4) and Heavy Industrial (E5)).

6.10.2. Assessment

Given the range of possible activities in general and heavy industrial estates, it is not possible to undertake a specific assessment of the potential for land use conflict. The following planning considerations are provided based on a general assessment.

6.10.3. Planning considerations

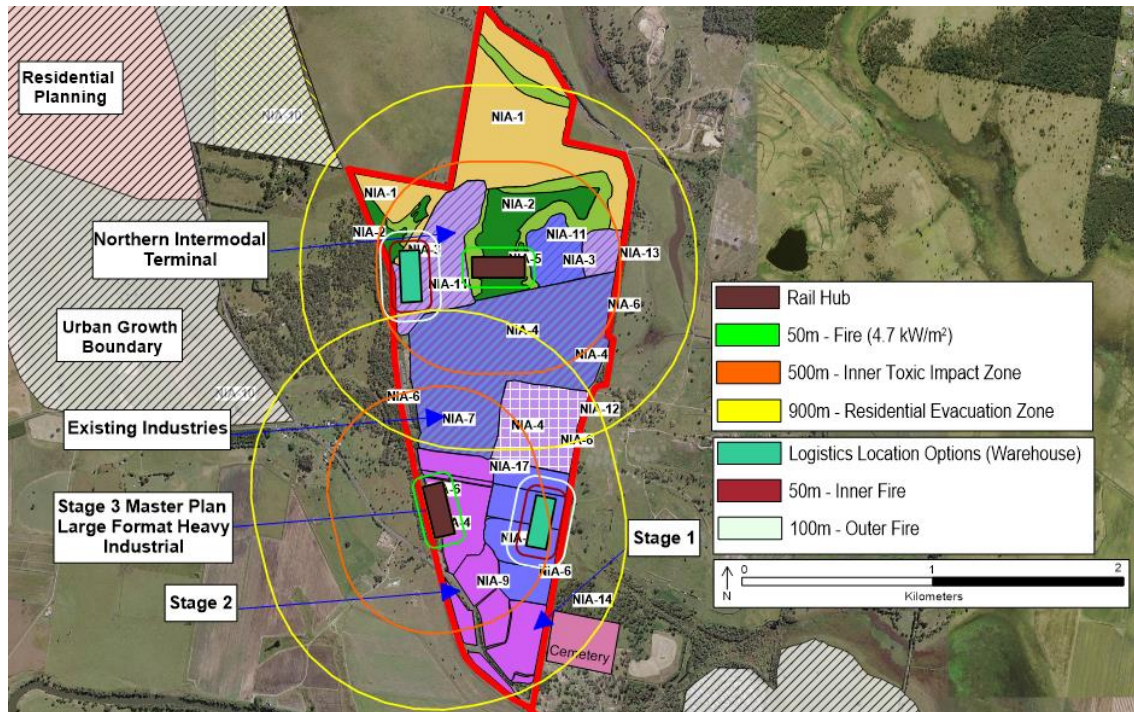
Potentially hazardous developments may include warehouses that store flammable or combustible dangerous goods. There is the potential for fully developed warehouse fire with heat radiation.

Figure 6.6 shows buffers for a warehouse fire and the intermodal development options with the individual residences (blue squares) added in Figure 6.7. The figures show that there is sufficient buffer to areas that may be more densely populated for all but the

⁹ See Appendix B for additional figure legends

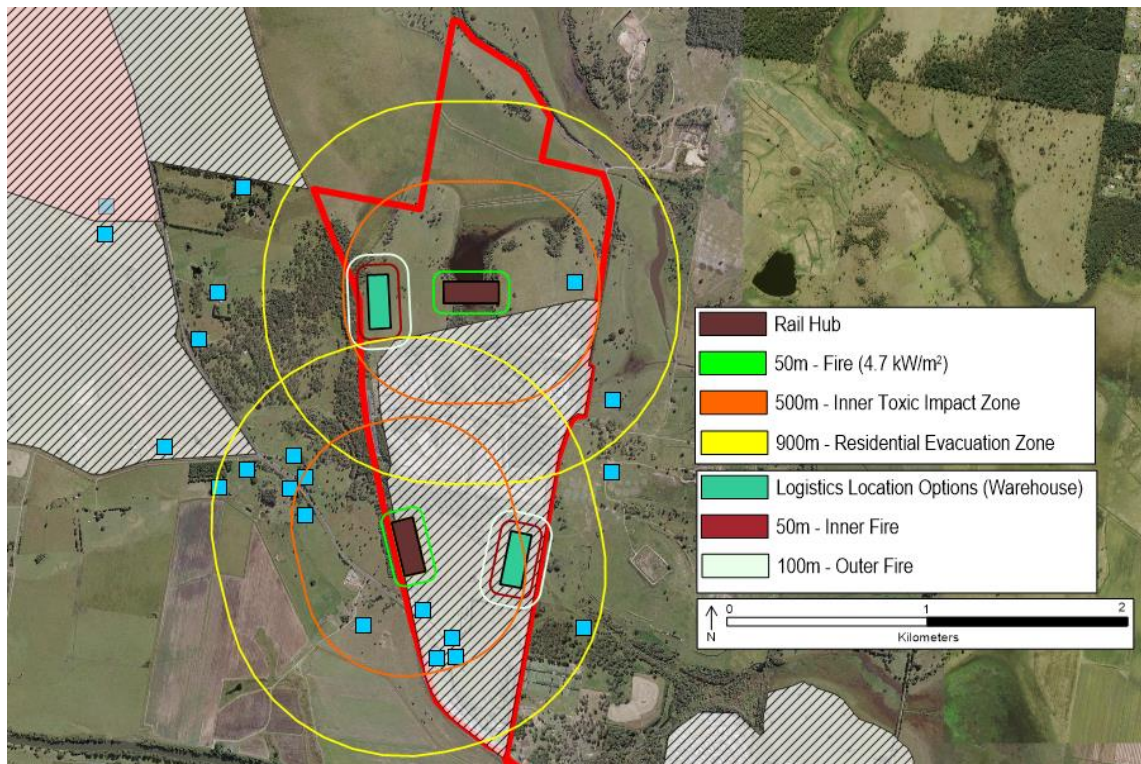
largest toxic residential evacuation buffers. Individual residences fall within the potential toxic impact area. Given the low frequency of larger toxic releases, it is likely that the individual risk at individual residences can be assessed and managed by applying the principles of the Resilience SEPP in the planning process. The low frequency and low population density should result in acceptable societal risk for the area.

Figure 6.6: Rail and warehouses buffers¹⁰



¹⁰ See Appendix B for additional figure legends

Figure 6.7: Rail and warehouse buffers to individual residences



6.11. Agribusiness

There is limited potential for land use safety conflict associated with the development of agricultural crops, glass house operations and hydroponics. The operation may use fertiliser and chemicals but storage volumes on site are typically minor with most substances only brought on site for use. They are likely to be acceptable developments in the RJP.

6.12. Alternate Waste Treatment Solutions

6.12.1. General

The Protection of the Environment Operations (Thermal Energy from Waste) Regulation 2022 [10], which commenced on 8 July 2022, identifies four nominated precincts in NSW for investigation of Energy from Waste initiatives, including the Richmond Valley Regional Jobs Precinct.

There are a range of Alternate Waste Treatment Solutions (AWTS) either in operation or under development worldwide. The AWTS operate at different scales and employ a variety of different processes and technologies.

At the time of preparation of this report, there is no indication of the type, scale or location of AWTS that may be proposed in the Nammoona sub-precinct. It is therefore not possible to undertake a hazard assessment as part of this report.

Any future proposal for an AWTS facility will require detailed support studies, community engagement and assessment in accordance with NSW State legislation. This assessment will need to consider whether there are any potential hazards related to the processes and technologies that are proposed to be used.

6.13. Conclusion

The range of developments proposed for the NIP are likely to be compatible and generally not result in land use safety conflict as they do not involve significant quantities of hazardous materials or hazardous processes.

Whilst there may be impact to individual residences, it is likely the individual risk at the receptor can be managed by applying the Resilience SEPP and societal risk will be acceptable due to the separation distances to concentrated areas of population.

From a land use safety consideration, the development of industrial activities and intermodals are likely to be compatible with existing developments with the following constraint:

- Application of Resilience SEPP risk approach to manage land use safety conflict, noting the separation distance to current and proposed residential areas is likely to allow for potentially hazardous developments.

Any future proposal for an AWTS will require investigation, consultation and assessment as required by relevant state legislation.

7. AREA 2: CASINO FOOD CO-OP AND SURROUNDS PRECINCT

7.1. Background

The Casino Food Co-Op and surrounds precinct is located to the west of Casino. It is bounded on the north by Summerland Way and to the south by the North Coast Railway. Figure 7.1 shows existing and proposed development in this section of the RJP. Existing operations may contain quantities of dangerous goods that exceed the MHF notification threshold.

Figure 7.1: Casino Food Co-Op and surrounds precinct



7.2. Developments and features

The operational and proposed developments are summarised in Table 7.1.

Table 7.1: Casino Food Co-Op and surrounds precinct development options

| Development | Status |
|-------------------------------|--|
| Livestock processing industry | Operational Bio-gas development under consideration On site accommodation for workers under consideration (DA lodged). |
| Water supply infrastructure | Operational. |
| NSW Education | Potential to be developed, currently zoned residential. |
| Essential Energy/Bioenergy | May be developed for energy infrastructure. |

Features of the Casino Food Co-Op and surrounds precinct that are relevant for the land use conflict assessment are:

- Land zoned residential up to the north and eastern boundary.

7.3. Livestock processing industry

7.3.1. General

This assessment of the livestock processing industry in the Casino Food Co-Op and surrounds precinct was informed by typical facilities that include refrigeration circuits (ammonia) and fuel for power/heating (LPG or diesel).

7.3.2. Assessment

The Food Co-Op submitted a DA in 2022 to add accommodation for up to 60 workers on the Food Co-Op site. The DA is still under review by the council (as of December 2022). If the DA is approved the population group will become a risk receptor and will require consideration if further development occurs in this area of the RJP.

The Food Co-Op stores and handles ammonia in refrigeration circuits and LPG for heating. Ammonia is a toxic gas with the potential to lead to localised fatalities and injury/irritation several hundred metres from the facility. LPG is a heavier than air flammable gas that has the potential to result in fatalities and injuries within the pCasino Food Co-Op and surrounds precinct.

There is no detailed publicly available assessment of the Food Co-Op risk profile. In the absence of a detailed assessment, it is recommended that:

- Development of the Department of Education site as an opportunity site for industrial development or an adult education facility includes consideration of individual and societal risk to ensure any increase in population near to the Food Co-Op is acceptable.

- Expansion or addition of inventories of toxic dangerous goods above the Resilience SEPP screening threshold includes an assessment of the cumulative risk from all developments in the Casino Food Co-Op and surrounds precinct.

7.3.3. Water supply infrastructure

Water supply infrastructure presents a risk of engulfment if there is a catastrophic failure of a tank.

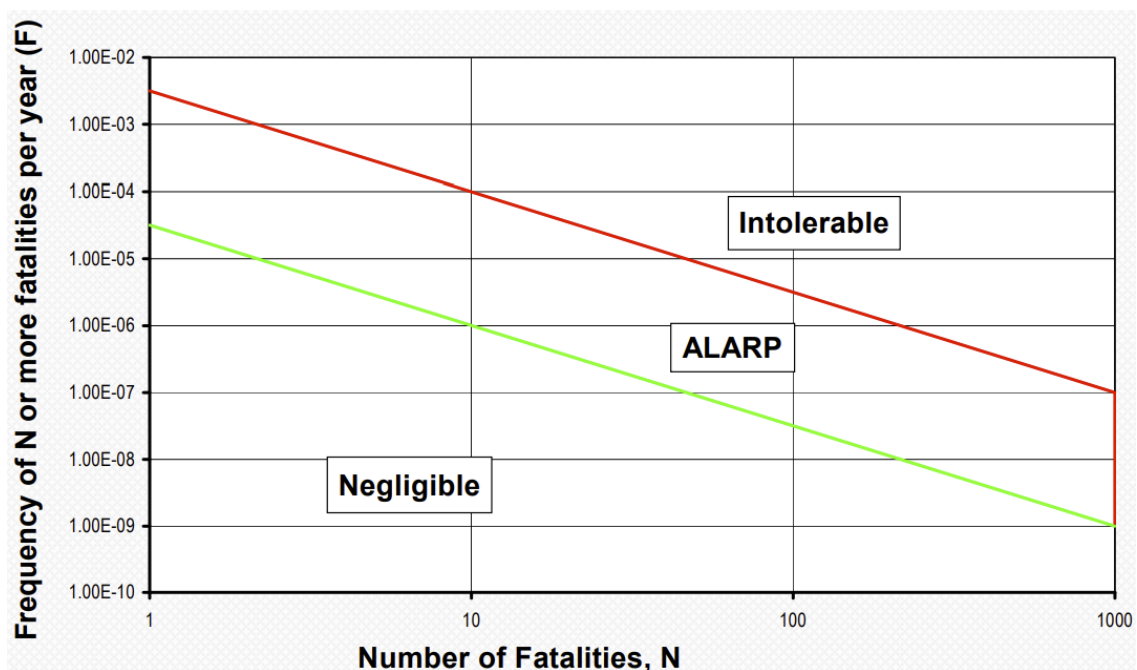
Any development adjacent to the tanks should be assessed taking into consideration the topography, and hence flow of water following a catastrophic failure and associated risks to occupied buildings.

7.3.4. Societal Risk

The NSW HIPAP societal risk criteria are reproduced in Figure 7.2. The criteria require consideration of very unlikely but potentially catastrophic events.

On the basis an adult education facility is likely to result in populations of between 100 and 1000 closer to the risk sources, an assessment of societal risk will be required.

Figure 7.2: HIPAP 10 societal risk criteria



7.4. NSW education site

it is not recommended to plan for a sensitive land use such as a school or residential development in the area marked as NSW education due to:

- the potential risk profile presented by the Food Co-Op
- potential for a sensitive land use to constrain employment opportunities in the RJP

- the RVDCP minimum buffer distance of 1000 m from an abattoir to an educational facility, and
- the land use safety planning principle of avoiding avoidable risk.

The NSW HIPAP criteria do not provide guidance on acceptable risk for an adult education facility (e.g., TAFE), but based on UK HSE planning guidance a non-residential adult education facility would fall under the HIPAP commercial zoning with a higher risk criterion than a school ¹¹.

Subject to application of the Resilience SEPP including an assessment of individual risk and societal, development of a non-residential adult education facility may be appropriate on the education site.

7.5. Essential Energy/Bio-energy

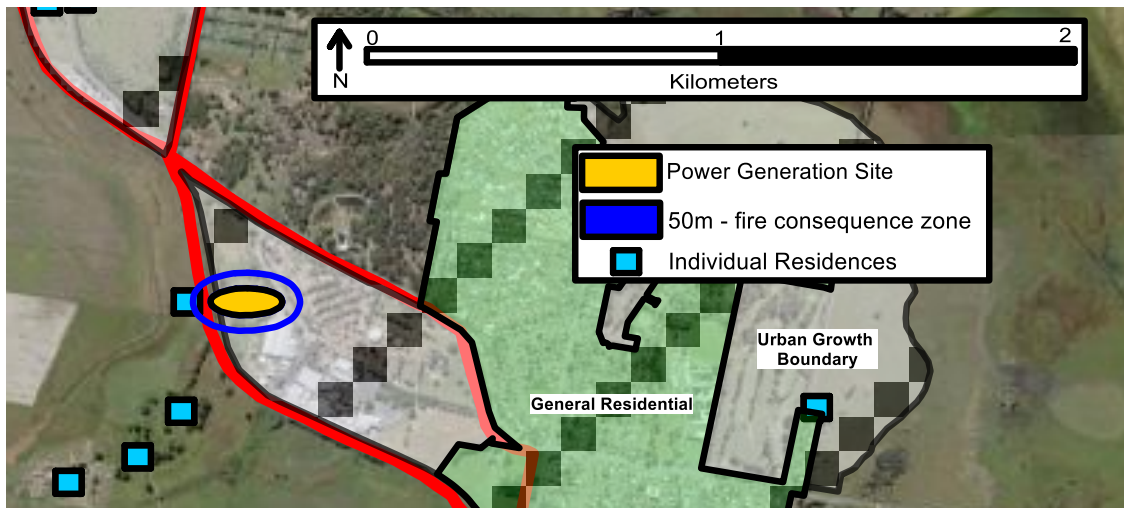
Traditional energy infrastructure such as transformers have the potential for fires and explosions, but heat radiation, overpressure and blast effects are typically localised with risks managed by application of codes and standards in design and fenced areas to prevent unauthorised access.

The Food Co-Op is considering a bio-hub power generation facility with the preferred location adjacent to the Food Co-Op property (Figure 7.3). The bio-hub would use bio-digesters to produce bio-gas and solid feed pellets from waste streams.

Biogas facilities typically handle gas at low pressure before final compression to fuel gas pressure to burn in a gas fired turbine or to fire a heater to generate steam for a steam turbine. As the gas is low pressure at the source, any hazards are typically limited to a jet fire around the compressor area. The proposed location provides a buffer to densely developed residential areas, however, as shown on Figure 7.3 there is an individual residence (blue square) adjacent to the boundary that will require consideration in any assessment for the development of the bio-gas facility.

¹¹ [HSE: Land use planning - HSE's land use planning methodology](#)

Figure 7.3: Energy site



7.6. Land use adjacent to the Casino Food Co-Op and surrounds precinct

The closest residential areas are on the boundary of the Casino Food Co-Op and surrounds precinct. Any development in the Casino Food Co-Op and surrounds precinct will need to consider new risks to receptors outside of the area and intensification of risk from existing operations.

7.7. Conclusion

Current operations in the Casino Food Co-Op and surrounds precinct have inventories of toxic and flammable material with the potential for land use safety conflict within and outside the area.

Societal risk will be a key consideration for development of a TAFE for this location, with approval likely to be dependent on the proposed number of people on site. A quantitative risk assessment of the Food Co-Op combined with the proposed location and population levels will be required to determine if societal risk is acceptable.

In general, further development in the Casino Food Co-Op and surrounds precinct should be accompanied by a PHA to demonstrate that at a minimum:

- the risk of escalation to incidents involving ammonia or LPG at the Food Co-Op is acceptable
- societal risk is acceptable.

The following constraints apply:

- Avoid additional potentially hazardous developments which have the potential for consequences outside of the Casino Food Co-Op and surrounds precinct.
- Development of an adult education establishment (non-residential) (e.g. TAFE) requires a quantitative assessment of the risk from the operations in the Casino Food

Co-Op and surrounds precinct including societal risk to determine acceptability. There is also a risk that a TAFE or commercial zoned development in this area would lead to future restrictions on employment opportunities in the RJP.

- Co-location of a bio-hub with low pressure bio-gas at the Casino Food Co-Op and surrounds precinct should be assessed under a PHA to demonstrate cumulative risk from the RJP area is acceptable.
- The current rural buffer to the south of the railway line should be retained.

8. AREA 3 JOHNSTON STREET INDUSTRIAL AREA AND SURROUNDS PRECINCT

8.1. Background

Area 3 is located on the eastern side of Casino and comprises land bounded by the Sewerage Treatment Plant (STP) to the north and Bruxner Highway (Johnston Street) to the south.

To aid discussion Area 3 is divided into four quadrants (see Figure 8.1):

- STP – the existing STP
- Primex – the area currently occupied by Primex a sustainable farming and primary industries expo held annually in Casino (Development Area 3a)
- STP Residue – the area to the east of the STP comprising the part of Lot 320 that is available for industrial development, excluding the proposed new STP (Development Area 3b)
- Arthur Street – the lots with capacity for new or changed industrial development between Lot 320 and the Bruxner Highway (Johnson Street). The area includes existing industrial development around Cassino Drive (Development Area 3c).

Figure 8.2 shows the proposed development.

Figure 8.1: Area 3 descriptors

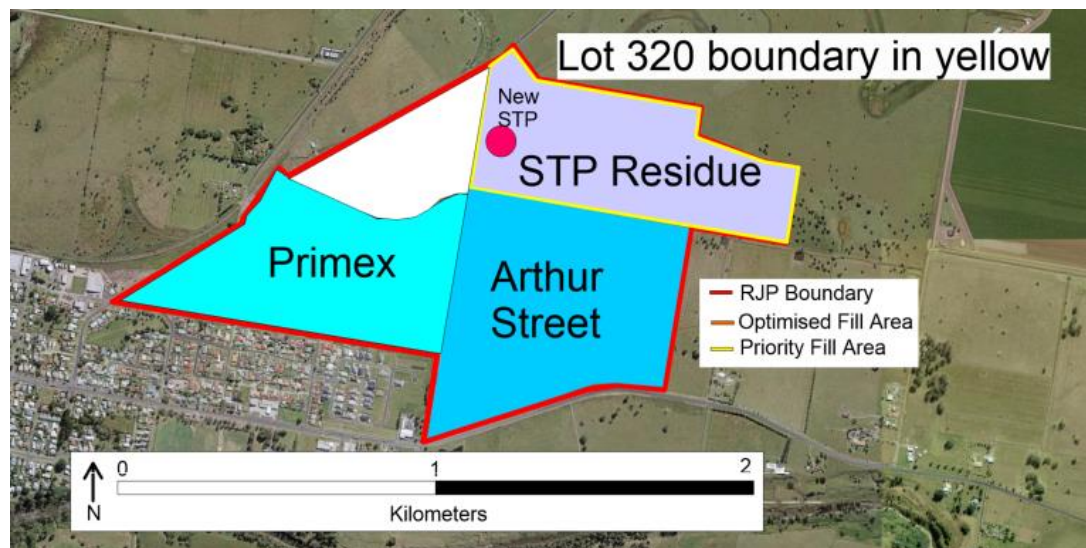
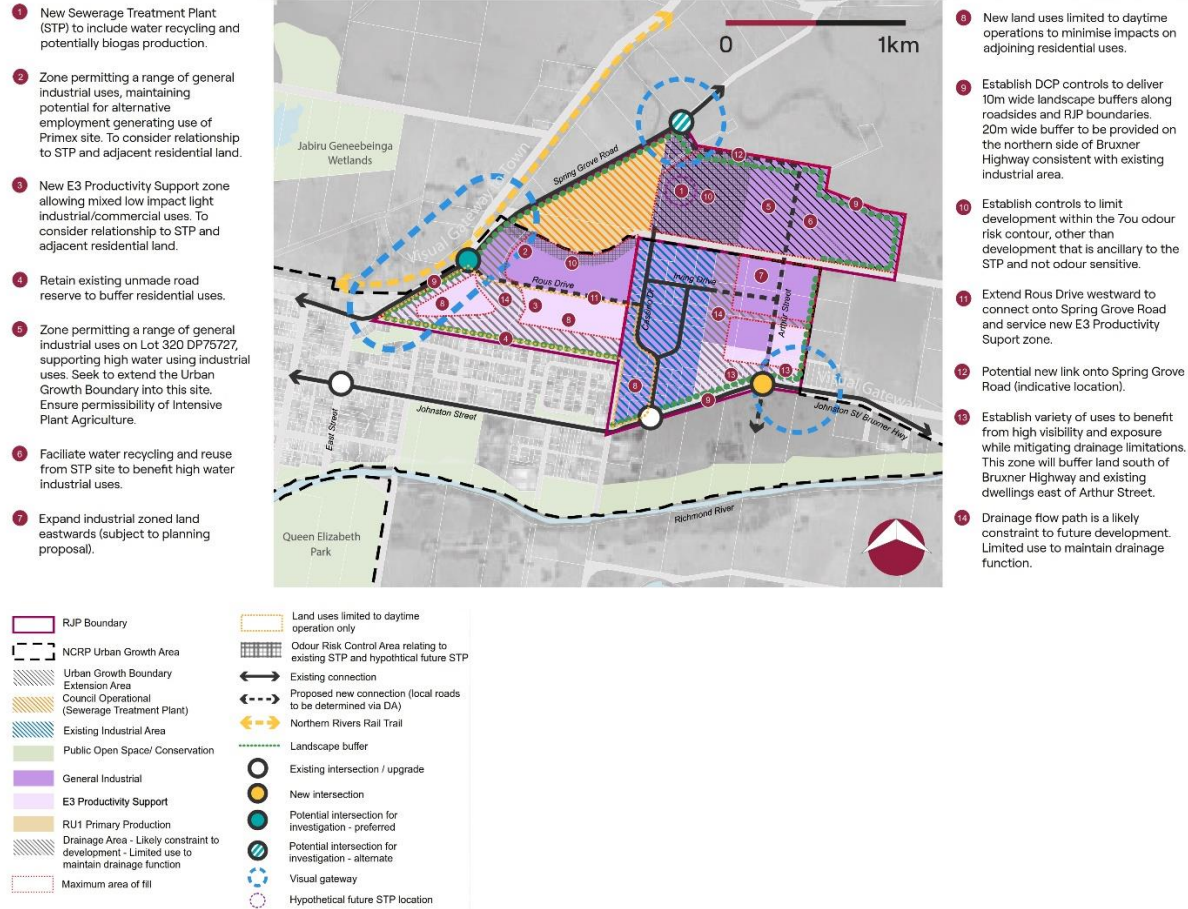


Figure 8.2: Area 3



8.2. Developments and features

8.2.1. General

The area and proposed developments are summarised in Table 8.1.

Table 8.1: Area development options

| Area | Development options |
|--|---|
| STP | Operational STP, expansion / replacement on adjacent site included for consideration. |
| Primex (Area 3a) | Industrial adjacent to STP. Low impact, light industrial or commercial use as a buffer to residences to the south. |
| STP Residual (Area 3b) | In the northeast of Area 3. Proposed for general industrial with a focus on high water usages that can leverage of STP and options for reuse/recycling. |
| Arthur Street (including Cassino Drive and Irving Drive) (Area 3c) | Existing industrial uses, options to expand area to Arthur Street or change developments. |

8.2.2. STP proposal

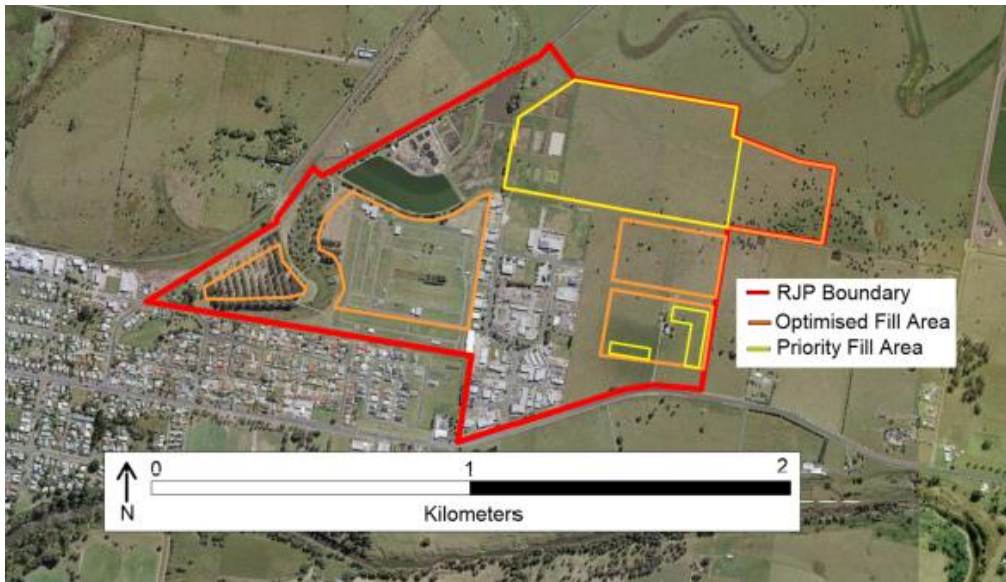
The draft structure plan includes an option to relocate the STP east onto land adjacent to the existing STP. As there is no fixed decision, timeline or indication of future equipment, the draft structure plan should make provision for continued operation of the current facility with a relocated STP at a future date. The future STP may include bio-gas generation and use.

8.2.3. Flooding

The results of the Flood Impact Assessment (FIA) Stage 4 Report [11] were incorporated into the development area.

Figure 8.3 shows the optimised areas for fill and a proposal for a first stage prioritised fill.

Figure 8.3: Area 3 FIA fill areas



Land outside of the optimised fill area may be considered for uses related to industrial development (e.g. parking, display area, bioretention basins). Industrial zones are retained in non-fill areas noting there will need to be restrictions in the type of land use.

Development assessment in this report follows the recommendation in the FIA that the 1% Annual Exceedance Probability (AEP) plus a Risk-Based Freeboard (RBF) is used for commercial/industrial activities which include storage of hazardous materials to manage the risk of flooding to an acceptable level.

The assessment of the area is based on restricting development that store hazardous materials to the optimised fill areas.

8.3. STP

The current Casino STP operates in the northwest of the area. Council is considering relocating the facility to an area immediately to the east of the existing site (Figure 8.1).

Based on the list of chemicals used on the current site provided by the council (Table 8.2), the only potential offsite safety risk from the STP chemicals is accidental mixing of sodium hypochlorite with acid to produce chlorine (a toxic gas). The consequence is likely to be localised with limited potential for offsite impact. The risks of mixing incompatible chemicals should be managed by design and operating procedures.

Table 8.2: STP Chemicals

| Chemical name | Common name | Hazard potential |
|-----------------------------|-------------|--|
| Aluminium Sulphate (liquid) | Liquid Alum | Not classified as a dangerous good, localised occupational health and safety risks. No land use safety considerations. |

| Chemical name | Common name | Hazard potential |
|---------------------|-----------------|--|
| Magnafloc LT20 | Polymer | Not classified as a dangerous good, localised occupational health and safety risks. No land use safety considerations. |
| Sodium Hypochlorite | Liquid Chlorine | Incompatible with a range of materials. Potential to generate chlorine if mixed with acid. |
| Sodium Carbonate | Soda Ash | Not classified as a dangerous good, localised occupational health and safety risks. No land use safety considerations. |
| Sodium Chloride | Salt | None. |

The RVDCP buffer distances are provided in Table 8.3.

Table 8.3: Recommended minimum buffers sewerage works

| Facility | Residential and urban development | Rural settlement | Educational facilities and pre-school | Rural tourist accommodation |
|----------------|-----------------------------------|------------------|---------------------------------------|-----------------------------|
| Sewerage works | 400 m | 400 m | 400 m | 400 m |

As the risks associated with the types and quantities of chemicals can typically be managed to acceptable levels and that there are no RVDCP buffer distances for industrial developments, there are no land use safety restrictions on industrial development up to the STP boundary.

A new STP may include a bio-gas power generation facility. The proposed plan should include a 100m buffer to accommodate fire and explosion risks associated with a bio-gas facility at an STP.

8.4. Primex

8.4.1. Background

Primex is a sustainable farming and primary industries expo held annually in Casino at the site marked in Figure 8.2.

The area is being considered for:

- general industrial (E4) activities; and
- productivity support (E3).

Productivity support will allow for mixed low impact light industrial/commercial uses.

8.4.2. Considerations

The FIA optimised fill areas are shown inside the red dashed areas in Figure 8.2. Developments that store hazardous materials are restricted to the optimised fill areas.

Other considerations in the area are:

- a 50m buffer on the northern boundary to the existing STP
- the northern section of the Primex site is proposed for general industrial uses; and
- the southern section of the site area is proposed for productivity support, limited to daytime operations to minimise impacts on adjoining residential uses.

8.4.3. Assessment

General industrial uses in the optimised fill areas may store and handle flammable or combustible materials with the potential for fires to occur. Quantities of toxic material are typically limited to below the Resilience SEPP thresholds and do not present an offsite risk. Buffers of 25–50 m would be sufficient to manage the risk from fires in a warehouse.

Light industry/commercial developments below the Resilience SEPP screening would not be potentially hazardous. Such development would not require buffers to residential areas.

8.4.4. Planning implications

There will be a requirement to limit developments in the light industry/commercial area to below the Resilience SEPP screening levels. Development of general industry in the northern section of the Primex site that does not include storage of toxic material above the Resilience SEPP screening threshold is likely to be acceptable.

DCP controls to provide landscape buffers combined with assessment against the Resilience SEPP will manage the risk of land use safety conflict whilst enabling a development.

8.5. STP Residue

8.5.1. Background

The area to the east of the STP is referred to as the STP residue area. The area is the part of Lot 320 that is available for industrial development, excluding the area for the proposed new STP.

8.5.2. Considerations

The whole area will be filled under the optimised and prioritised fill option.

The proposed character of the area is to permit a range of industrial uses with a focus on high water uses supported by water recycling and/or reuse from the STP.

If the STP includes a bio-gas facility, then a 100m buffer from the STP biogas facilities should be provided to manage potential land use safety conflict.

8.5.3. Assessment

General industrial uses in the optimised fill area may store and handle flammable or combustible materials with the potential for fires to occur. Quantities of toxic material are typically limited to below the Resilience SEPP thresholds and do not present an offsite risk. Buffers of 25–50 m would be sufficient to manage the risk from fires in a warehouse.

8.5.4. Planning implications

Development of general industry in the STP residue area that does not include storage of toxic material above the Resilience SEPP screening threshold is likely to be acceptable.

DCP controls to provide landscape buffers combined with assessment against the Resilience SEPP will manage the risk of land use safety conflict whilst enabling development.

8.6. Arthur street

The area between Lot 320 and the Bruxner Highway is referred to as the Arthur Street area in this report. The western part of the area includes over 40 businesses operating adjacent to Cassino Drive and Irving Drive. A review of the industries indicates there are no industries that would present a land use safety conflict.

The area east of the current industrial area has the opportunity to be developed for general industry (E4) centred around Arthur Street. The areas identified for optimised filling are shown on Figure 8.3 with a subdivision of areas that are identified as prioritised for filling in the first stage of development.

The general character for the Arthur Street area is expansion of industrial land eastward subject to planning proposals with unfilled areas in the south providing a buffer to the highway and residential areas.

8.6.1. Assessment

General industries may store and handle flammable or combustible materials with the potential for fires to occur. Quantities of toxic material are typically limited to below the Resilience SEPP thresholds and do not present an offsite risk. Buffers of 25–50 m would be sufficient to manage the risk from fires in storage locations.

8.6.2. Planning implications

DCP controls to provide landscape buffers combined with assessment against the Resilience SEPP will manage the risk of land use safety conflict whilst enabling a development.

9. RISK SOURCES OUTSIDE THE RJP

Two sources of risk outside of the RJP were considered:

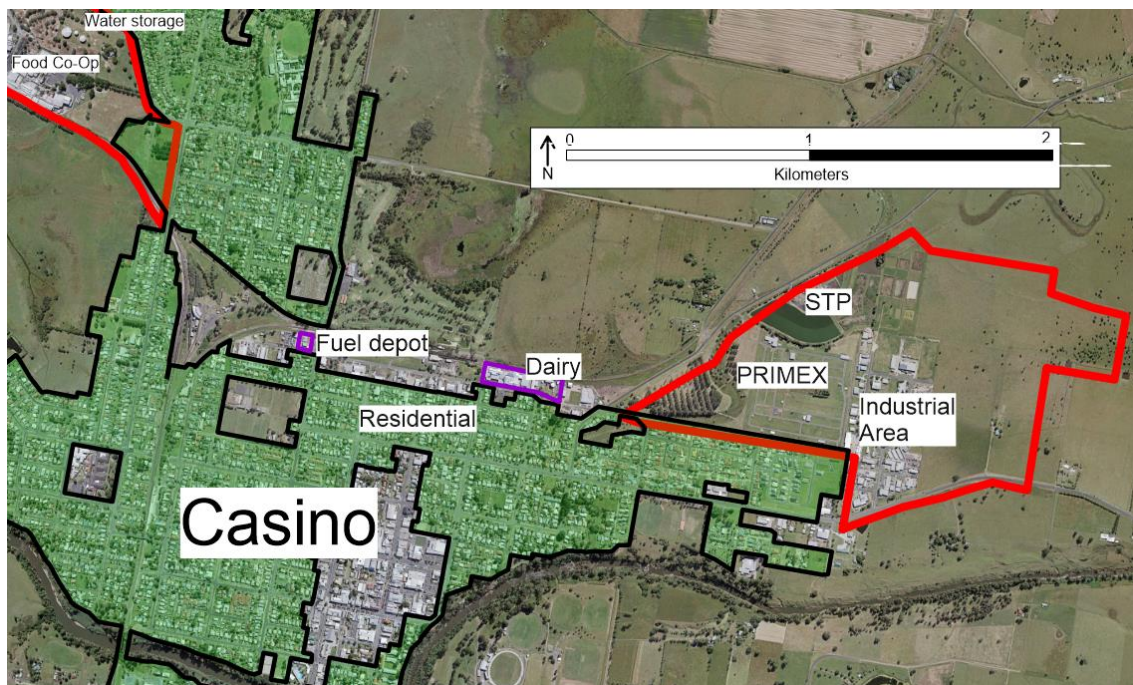
- fuel depot (bulk storage of petrol or diesel)
- dairy (potential for cryogenic storage or bulk LNG) (assessed on pre-flood operations).

The offsite consequences for a fuel depot supplied by road tanker are likely to be limited to 50–100 m. Given the separation distance to the nearest RJP area is approximately 1 km, it is unlikely that there will be a cumulative risk impact.

The dairy stores and handles dangerous goods (toxic and flammable) with the potential for offsite impact. There is the potential that residential areas to the south and east of the dairy could see an increase in cumulative risk if the Primex site was developed with potentially hazardous industries.

Cumulative risk from the dairy operations should be considered in any assessment of risk from developments in the Primex site.

Figure 9.1: Risk sources outside of RJP



10. RECOMMENDATIONS AND CONCLUSION

This report has been prepared to inform the master planning process for the Richmond Valley RJP. The findings and recommendations have been developed where possible in collaboration with other disciplines. It is acknowledged that some of the recommendations in this report may not be included in the Master Plan, such as where they are out of scope for the RJP, conflict with other elements of the project or are proposed to be managed via an alternate mechanism.

10.1. Recommendations

To manage land use safety conflict, whilst maximising opportunities for employment, this report recommends that:

- The risk-based land use safety planning framework relating to potentially hazardous developments detailed in the Resilience SEPP, Ref [1], should be applied in the RJP.
- Development of a Major Hazard Facility (MHF) may technically be acceptable in the RJP, however there is the potential for land use safety conflict within and external to the area. MHFs require specific detailed assessment to prevent land use safety conflict, they are unlikely to result in efficient use of land and are advised against in the RJP.

Categories of development (based on Resilience SEPP screening levels) are related to the areas in the RJP listed in Table 10.1. The table demonstrates that the RJP can support a range of developments with commentary on the likelihood of acceptability in the area.

The term 'advise against' reflects the fact that while a development may be able to demonstrate compliance, and hence would be permissible under the Resilience SEPP, it:

- is likely to require detailed assessment
- may lead to future land use conflict or sterilisation of land
- is not compatible with a streamlined planning process.

In all cases, a Preliminary Hazard Assessment (PHA) is required if the Resilience SEPP threshold is exceeded. This will include consideration of individual dwellings as well as areas zoned residential.

Table 10.1: Development by SEPP screening level

| Area | Potentially hazardous including toxic gas (below MHF notification quantities) | Potentially hazardous excluding toxic gas | Not potentially hazardous |
|--|---|---|---|
| Area 1: Nammoona | Likely to be acceptable for a typical installation. | Likely to be acceptable for a typical installation. | Likely to be acceptable for a typical installation. |
| Area 2: Casino Food Co-Op and surrounds precinct | Advise against | Likely to require detailed assessment including individual and societal risk. | May be acceptable subject to assessment of individual and societal risk for any increase in population. |
| Area 3: STP and STP Residue area (3b) | Likely to be acceptable for a typical development. | Likely to be acceptable for a typical development. | Likely to be acceptable for a typical development. |
| Area 3: Arthur Street area (3c) | Advise against | Likely to be acceptable for a typical development. | Likely to be acceptable for a typical development. |
| Area 3: Primex industrial area (3a) | Advise against | Likely to be acceptable for a typical development. | Likely to be acceptable for a typical development. |
| Area 3: Primex light industrial/commercial area (3a) | Advise against | Advise against | Likely to be acceptable for a typical development. |

The Richmond Valley Development Control Plan (RVDCP) Section I-11, Ref [3], details minimum separation distances between industries and a range of residential and social receptors.

Application of the RVDCP buffer distances may preclude developments that would otherwise meet the NSW HIPAP risk criteria, and it is therefore recommended that the proposed planning framework for the RJP includes an RJP specific DCP. The RJP DCP should provide a mechanism to capture specific buffer requirements and allow for evidence-based deviations from buffers set in the RVDCP.

10.2. Conclusion

This report concludes that, subject to the above recommendations, the assessed option for the Richmond Valley RJP can support a range of land uses that maximise the opportunity for employment across the three areas, whilst minimising the potential for land use safety conflict.

APPENDIX A. REFERENCES

- [1] NSW Department of Planning, “Resilience and Hazards SEPP,” 2021.
- [2] NSW Government, Work Health and Safety Regulation, 2017.
- [3] Richmond Valley Council, “Richmond Valley Development Control Plan (effective 2021)”.
- [4] NSW Department of Planning, “Hazardous and Offensive Development Application Guidelines - Applying SEPP 33,” 2011.
- [5] NSW Department of Planning, “Hazardous Industry Planning Advisory Paper No 4 - Risk Criteria for Land Use Safety Planning,” 2011.
- [6] NSW Department of Planning, Hazardous Industry Planning Advisory Paper No. 6 - Hazard Analysis, 2011.
- [7] NSW Department of Planning, “Hazardous Industry Planning Advisory Paper No 10 - Land Use Safety Planning,” 2011.
- [8] NSW Department of Planning, “Hazardous Industry Planning Advisory Paper No.12: Hazards Related Conditions of Consent,” 2011.
- [9] Competent Authorities Panel (CAP), “Australian Emergency Response Guide Book,” 2021.
- [10] NSW Government, Protection of the Environment Operations (General) Amendment (Thermal Energy from Waste) Regulation, 2022.
- [11] BMT, “Regional Jobs Precinct Flood Impact Assessment Stage 4 Final Report Revision 01,” 2023.

APPENDIX B. LEGEND FOR FIGURES

| Area code | Description |
|-----------|---|
| AREA 1-1 | Retain existing rural zoning north of the approved intermodal terminal. |
| AREA 1-2 | Area of high environmental value to be conserved via C3 Environmental Management zoning with some expansion of C2 Environmental Conservation to protect Paperback Swap Forest and Swamp Oak. |
| AREA 1-3 | Extend Urban Growth Boundary to enable rezoning for industrial uses to support the approved freight rail terminal or as an alternative use if it is not developed. |
| AREA 1-4 | Maintain existing General Industrial zone to support ongoing operation, incremental expansion, and diversification of existing industrial uses. |
| AREA 1-5 | Establish Heavy Industrial zone in locations that can benefit from rail access and where air, noise and odour impacts are manageable. |
| AREA 1-6 | Establish DCP site planning controls that promote the strategic retention and enhancement of existing vegetation to establish 10 m wide landscape buffers along roadsides and RJP boundaries. 20 m buffers to be provided north of Stage 3 subdivision. |
| AREA 1-7 | Construct cell 6 of Council landfill site. |
| AREA 1-8 | Support the development of industrial uses in the Stage 3 Area that may benefit from accessibility to rail. |
| AREA 1-9 | Ongoing staging, delivery and curation of industrial uses in Stage 1 subdivision and later Stage 2 subdivision. |
| AREA 1-10 | Adjust urban growth boundary and reduction of NCRP Residential Investigation Area to manage impacts of industrial uses and avoid land use conflict with future residential lands. |
| AREA 1-11 | Support delivery of the approved freight rail terminal with increased land use diversity by establishing new general and heavy industrial zones. |
| AREA 1-12 | Monitor and upgrade Reynolds Road to Dargaville Drive as necessary to support intensification of industrial uses. |
| AREA 1-13 | Upgrade Reynolds Road beyond Dargaville Drive to approved freight rail by developer subject to delivery. |
| AREA 1-14 | Acquire or transfer dwelling rights from Lot 2 (DP739216) to minimise potential for noise related land use conflict on sensitive receivers. |
| AREA 1-15 | Monitor capacity of Reynolds Road/Summerland Way intersection and undertake upgrades if required to service the needs of intensifying industrial uses. |
| AREA 2-1 | Essential Energy Council and Dpt of Education's sites 'Opportunity sites' (available for specialist user that can't be accommodated elsewhere/unsolicited proposals). |
| AREA 2-2 | Maintain and enhance dense treed interface to Summerland Way and Hotham Street to buffer and screen land uses in the Area. |
| AREA 2-3 | Dpt of Education site potential catalyst site (e.g. vocational training, or specialised facility complementary to Co-Pp) to consider compatibility of land use interrelationship with Co-Op and adjacent residential. |
| AREA 2-4 | Consider increased height limits in light of historical approvals. |
| AREA 2-5 | Maintain existing General Industrial zone to support ongoing operation, incremental expansion and diversification of existing industrial uses. |

| Area code | Description |
|-----------|---|
| AREA 2-6 | Establish DCP site planning controls that promote the strategic retention and enhancement of existing vegetation to establish 10 m wide landscape buffers along roadsides and RJP boundaries. Buffer to extend along Hotham Street to minimise visual impact on nearby heritage (Casino Station Group). |
| AREA 2-7 | Retain existing reservoir site for infrastructure purposes. |
| AREA 3-1 | New Sewerage Treatment Plant (STP) to include water recycling and potentially biogas production. |
| AREA 3-2 | Zone permitting a range of general industrial uses, maintaining potential for alternative employment generating use of Primex site. To consider relationship to STP and adjacent residential land. |
| AREA 3-3 | New E3 Productivity Support Zone allowing mixed low impact light industrial/commercial uses to consider relationship to STP and adjacent residential land. |
| AREA 3-4 | Retain existing unmade road reserve to buffer residential uses. |
| AREA 3-5 | Rezone permitting a range of general industrial uses on Lot 320 DP75727 supporting high water using industrial uses. Seek to extent the Urban Growth Boundary into this site. Ensure permissibility of Intensive Plant Agriculture. |
| AREA 3-6 | Facilitate water recycling and reuse from STP site to benefit high water industrial uses. |
| AREA 3-7 | Expand industrial zoned land eastwards (subject to planning proposal). |
| AREA 3-8 | New land uses limited to daytime operations to minimise impacts on adjoining residential uses. |
| AREA 3-9 | Establish DCP site controls to deliver 10 m wide landscape buffers along roadsides and RJP boundaries. 20 m wide buffer to be provided on the northern side of Bruxner Highway consistent with existing industrial area. |
| AREA 3-10 | Establish controls to limit development within the 7ouder unit risk contour, other than development that is ancillary to the STP and not odour sensitive. |
| AREA 3-11 | Extend Rous Drive westward to connect onto Spring Grove Road and service new E3 Productivity Support zone. |
| AREA 3-12 | Potential new link onto Spring Grove Road (indicative location). |
| AREA 3-13 | Establish variety of land uses to benefit from high visibility exposure while mitigating drainage limitations. This zone will buffer land south of Bruxner Highway and existing dwellings east of Arthur Street. |
| AREA 3-14 | Drainage flow path is a likely constraint to future development. Limited use to maintain drainage function. |