



Seqwater

South West Pipeline and Wyaralong Tanks Project
Koala and Grey-headed flying-fox Species Impact
Management Plan

October 2018

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Appendix A – Koala and grey-headed flying-fox Management Framework

1. Introduction

1.1 Project Background

Seqwater is undertaking the South West Pipeline and Wyaralong Tanks Project works to future proof the Beaudesert Water Supply Zone (WSZ) for a 30-year horizon. The township of Beaudesert is currently supplied with bulk water from the Beaudesert water treatment plant, which draws raw water from the Logan River. Ammonia events and high turbidity during wet weather events have previously required the plant to temporarily cease production.

The Beaudesert Township water demand is too large to service via water tankers during loss of supply and it is not connected to the South East Queensland Water Grid and will not meet levels of service into the future.

Growth in the area, including from the Bromelton State Development Area (SDA) and Gleneagle is projected to exceed supply in the coming years. Nearby developments in the South Logan area, in particular the Yarrabilba and Flagstone Priority Development Areas (PDAs) are also increasing demand which is currently supplied by the Southern Regional Water Pipeline (SRWP).

To improve the reliability of water supply within the Beaudesert Water Supply Zone, Seqwater is proposing the development of the South West Pipeline (approximately 27 km) running from the existing Beaudesert WTP site northwards to the new Wyaralong tanks located on the northern banks of the Logan River at Bushland Road, Riverbend. To complete the project and secure a water supply connection into the South East Queensland Water Grid, Seqwater is proposing to develop the Flagstone connection pipeline (approximately 3.5 km), running north from the Wyaralong tanks to the existing Logan City Council (LCC) Network near the intersection of Teviot Road and Glynton Road, Flagstone.

A secondary project will involve the construction and operation of a new water treatment plant (Wyaralong WTP) at the Wyaralong Tanks site. This project will be constructed six to eight years after the first project. For the purposes of this SIMP the impacts of the two projects are considered separately and only the South West Pipeline Project is assessed.

1.2 Project description

The Beaudesert South West Pipeline and Wyaralong Tanks Project (the Project) is comprised of three elements including the proposed Beaudesert South West pipeline route, Flagstone connection pipeline (the pipeline) and Wyaralong tanks (Figure 1). The Project connects the existing water supply network at Flagstone near South Maclean, to Beaudesert, traversing Riverbend within the Logan City Council Local Government Area (LGA) and Cedar Grove, Kagaru, Allenview, Woodhill, Gleneagle and Bromelton within Scenic Rim Regional Council LGA.

The Flagstone connection pipeline will be approximately 3.2 km and is intended to connect the Wyaralong Tanks to the existing infrastructure supplying the Logan City Council area and the Flagstone developments. This connection pipeline follows Bushland Road (currently not constructed) within road reserve in LCC. Bushland Road is required to facilitate construction of the tanks and to allow access to this property. The road is required to access the Wyaralong tanks construction.

Bushland road has to be vertically re-aligned to meet Q200 access requirements (cut and fill) and also to meet the correct high code gradients. The Bushland Road section of pipe needs to be laid at the correct levels in the newly formed road. Other stakeholders also propose to locate

services in the road including underground power (Energex , and wastewater (Logan Water Infrastructure Alliance).

The Wyaralong tanks element includes a transfer pumping station, 2x18 ML transfer storage tanks (approximately 55 m in diameter), vehicle manoeuvring, on-site storage and plant.

The South West Pipeline crosses Logan River at the Cedar Grove Weir and travels south for 23 km along road reserve through rural-residential areas until 130 Bromelton House Road whereby it will be required to cross through private land to reach gazetted roads on the east side of the Logan River which it follows to the Beaudesert WTP.

1.3 Purpose of this report

This report has been prepared based on the proposed South West Pipeline and Wyaralong Tanks Project description and potential disturbance footprint. Previous ecological field surveys undertaken in March 2017, July 2018 and September 2018 identified that the koala and grey-headed flying-fox were the only two species listed under the *Environment Protection and Biodiversity Conservation Act 1999*, which are known to occur and have the potential to be significantly impacted by the Project.

The purpose of this report is to provide a Species Impact Management Plan (SIMP) for implementation by Seqwater to mitigate and manage impacts on the conservation significant koala *Phascolarctos cinereus* and grey-headed flying-fox *Pteropus poliocephalus*, which is known to be present within the northern section of the proposed South West Pipeline and Wyaralong Tanks Project Area.

This SIMP has been prepared to provide supporting information to a referral of the Project under the *Environment Protection and Biodiversity Conservation Act 1999*. The SIMP and other supporting documentation has been developed in order to support Seqwater in planning and implementing the detailed design, temporary and permanent construction and rehabilitation / landscape works, and preparing and obtaining the required environmental compliance and approvals.

The management measures within this report focus on the northern section of the proposed Project incorporating Bushland Road, the Wyaralong Tanks site and Lot 3 on SP201569 north of Cedar Grove Weir where habitat critical to the survival of the koala was identified.

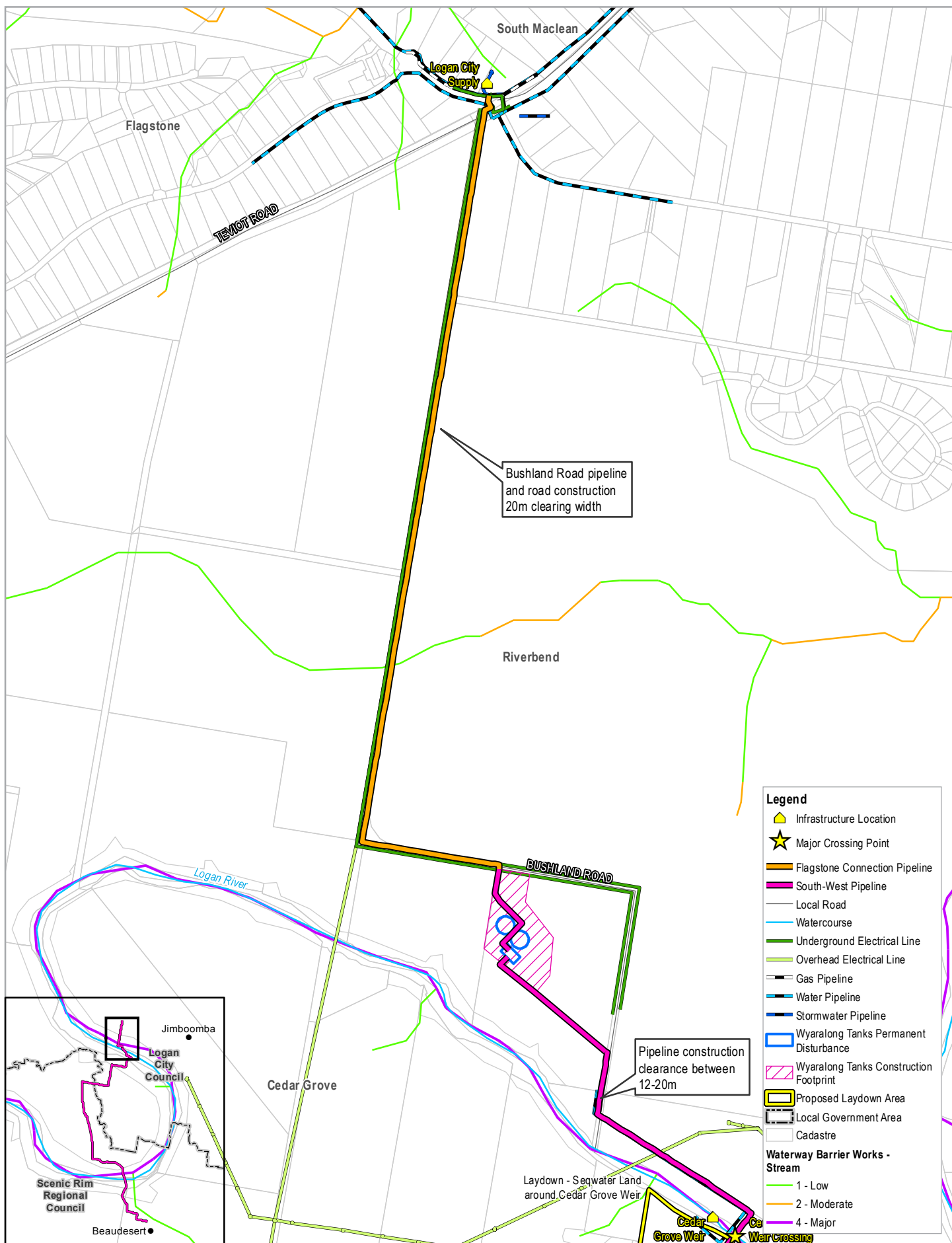
1.4 Limitations

This report has been prepared by GHD for Seqwater and may only be used and relied on by Seqwater for the purpose agreed between GHD and the Seqwater as set out in section 1.2 of this report.

GHD otherwise disclaims responsibility to any person other than Seqwater arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

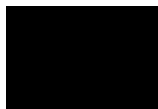
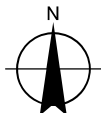
The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information provided or assumptions made by Seqwater and reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared. GHD disclaims liability arising from any of the assumptions being incorrect.



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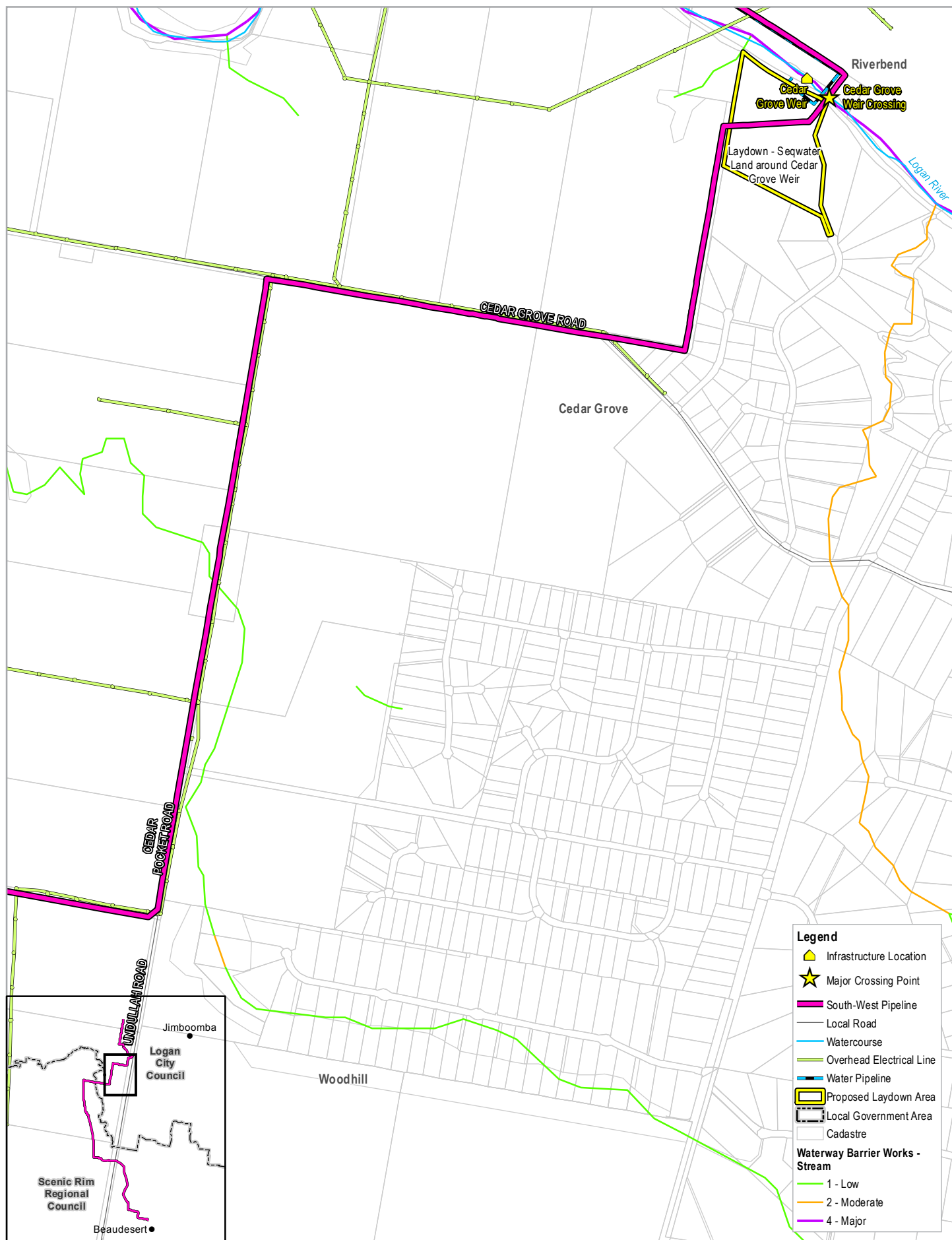


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LOCALITY

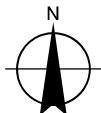
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FIGURE 1a



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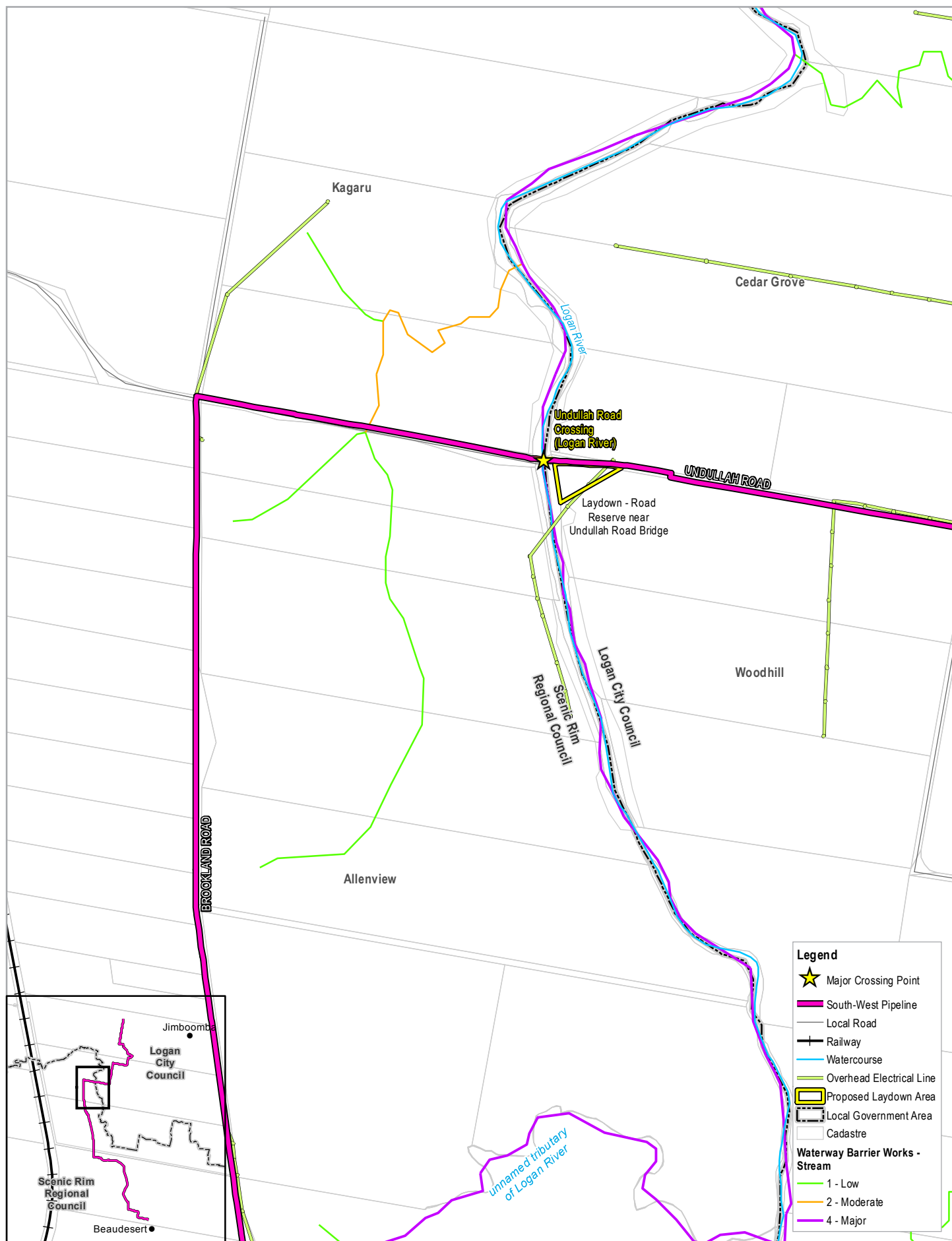


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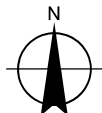
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FIGURE 1b



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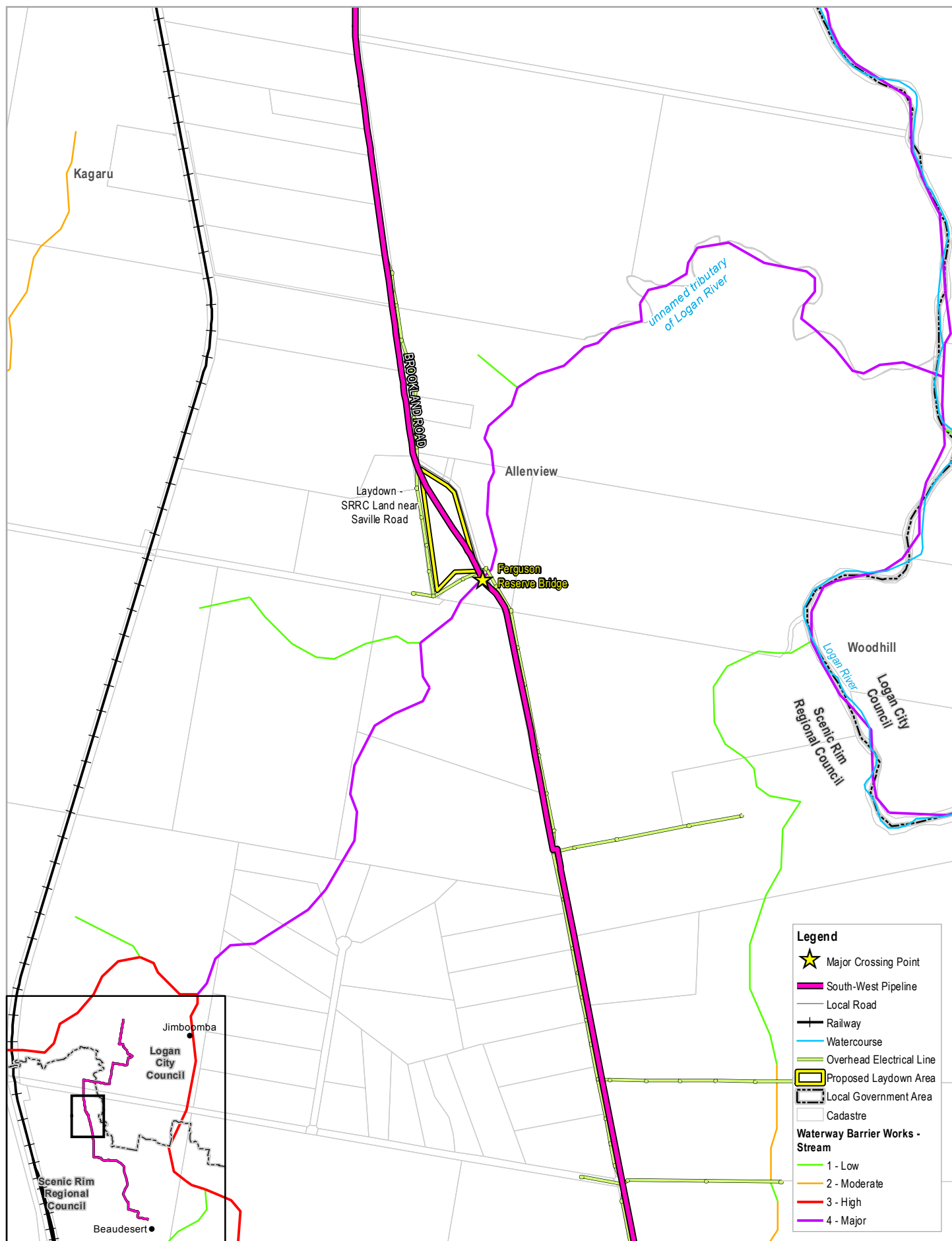


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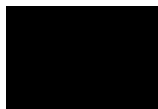
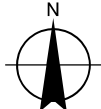
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FIGURE 1c



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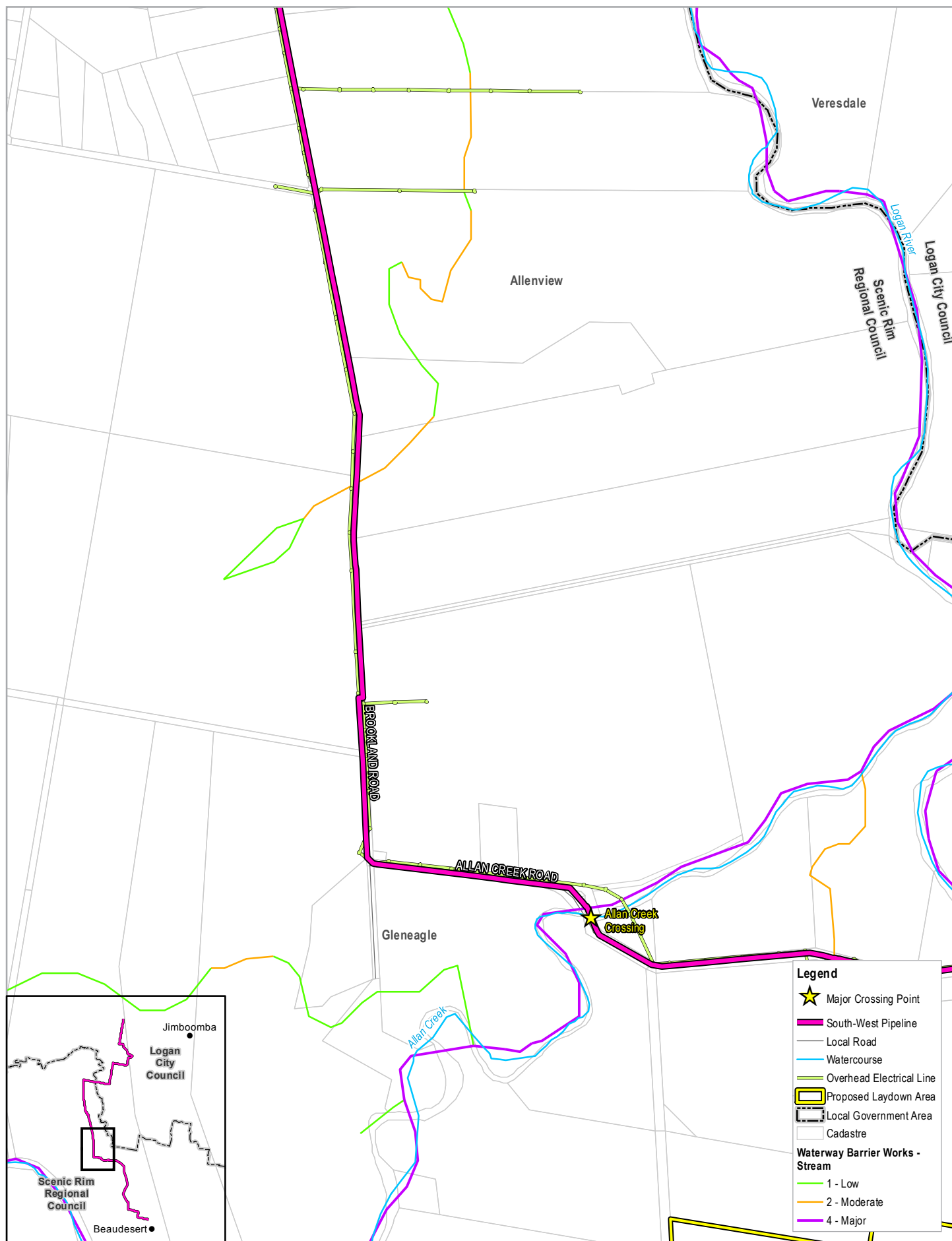


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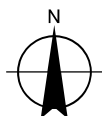
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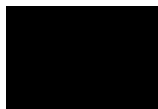
FIGURE 1d



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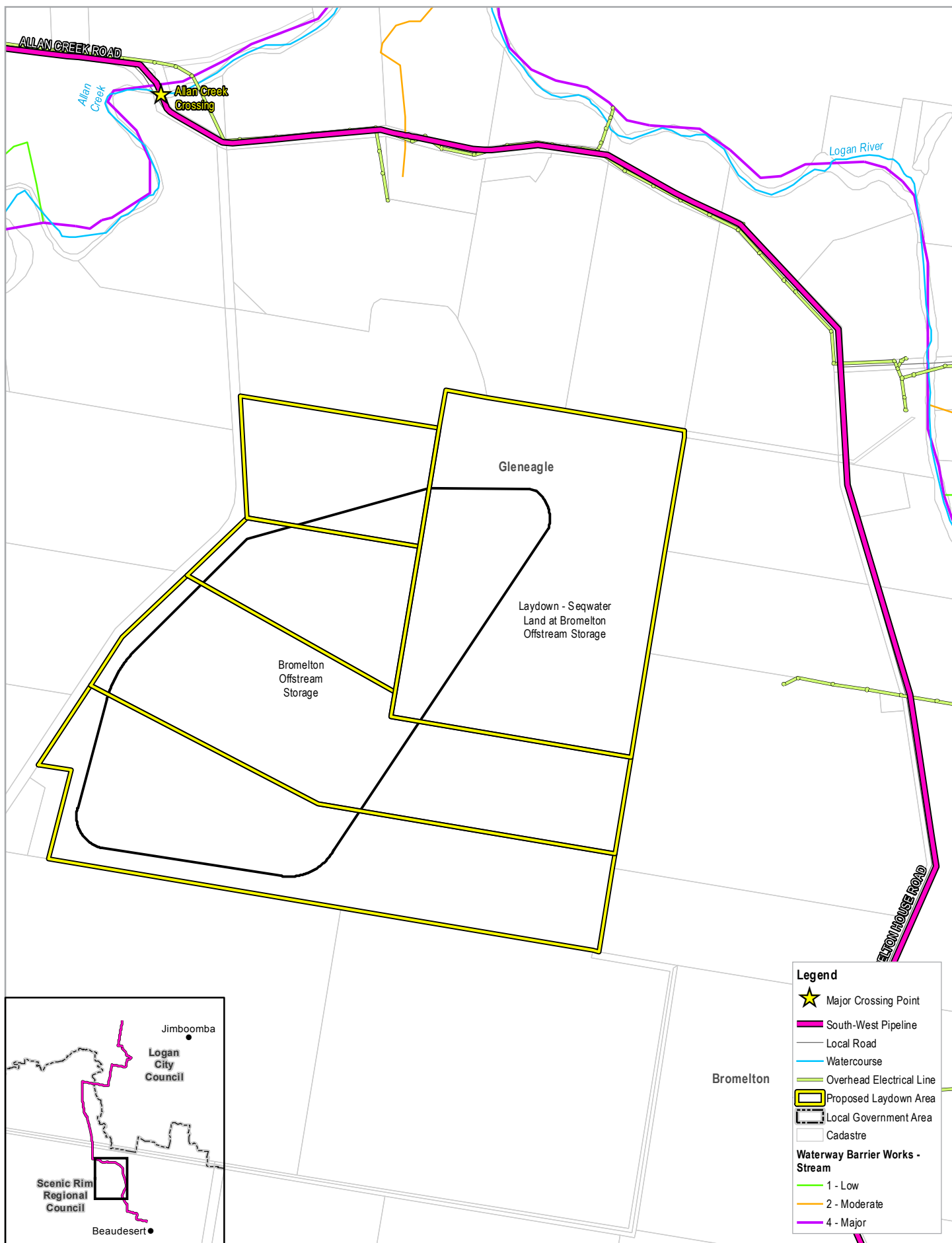


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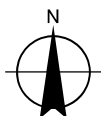
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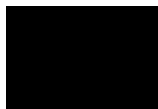
FIGURE 1e



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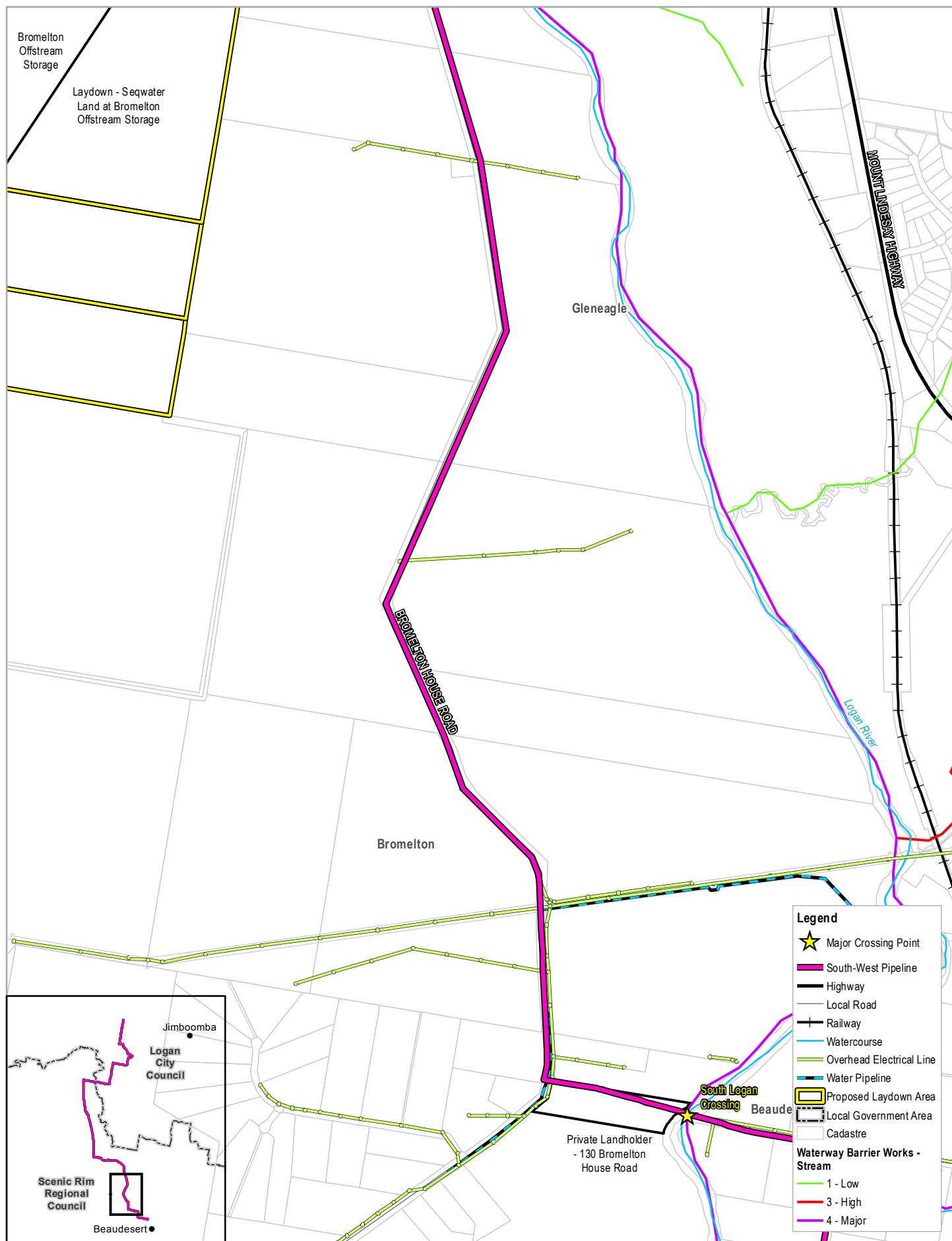


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LOCALITY

FIGURE 1f

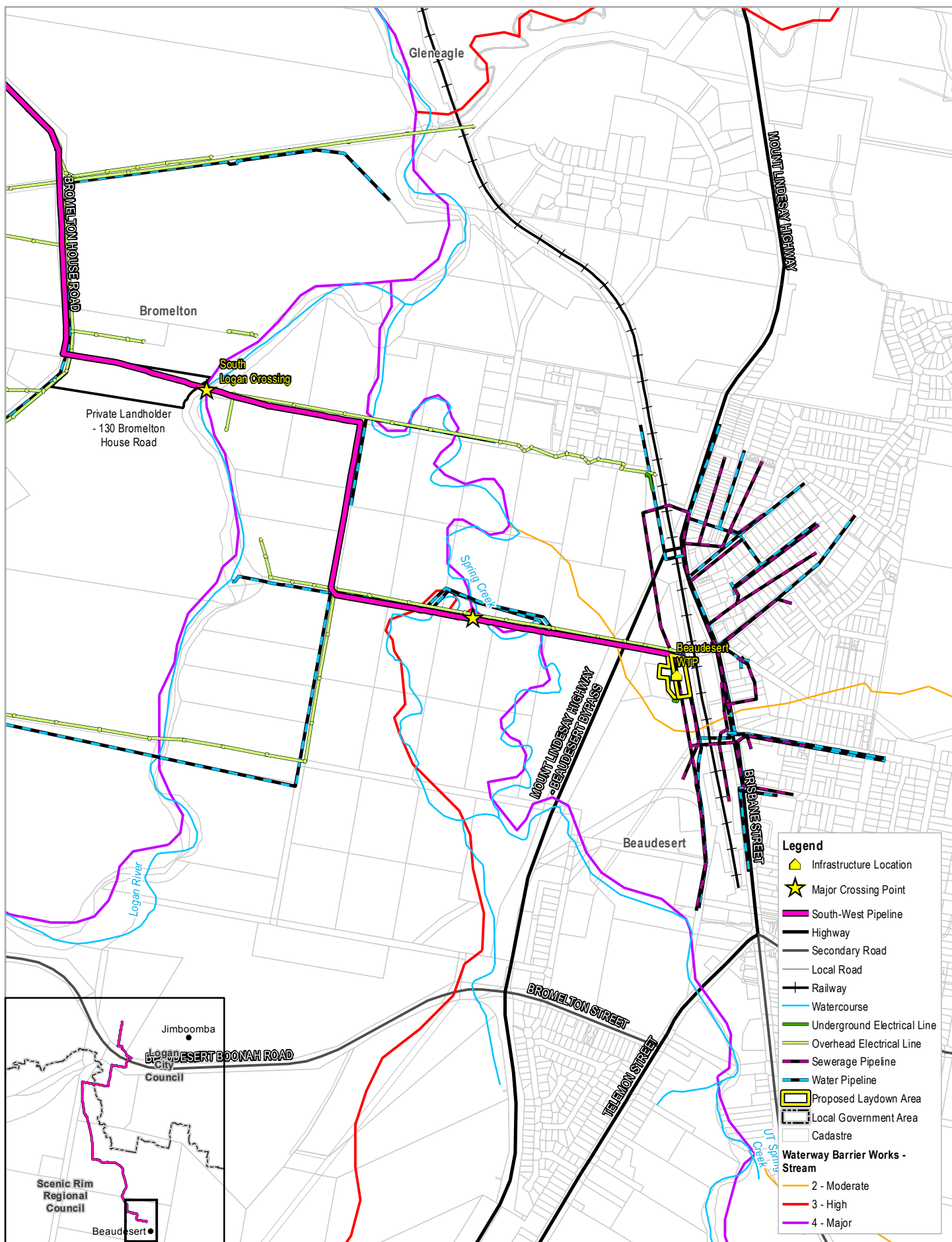


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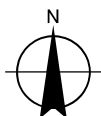
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FIGURE 1g



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LOCALITY

FIGURE 1h

2. Conservation significant species

2.1 Koala

2.1.1 Koala profile

The koala (*Phascolarctos cinereus*) is listed as vulnerable under the EPBC Act and NC Act. The species has a specialist diet, feeding on leaves of mature food trees including members of the genus *Eucalyptus*, *Corymbia*, *Angophora* and *Lophostomen* and less frequently feeding on *Melaleuca* and *Leptospermum* spp. (Martin and Handasyde, 1999; Moore and Foley, 2000). The species is reliant on access to well-connected patches of eucalypt woodland and has experienced significant declines from within south-east Queensland in recent decades (DERM, 2009). The decline is due predominantly to habitat loss and secondary impacts such as increasing mortality due to collisions with motor vehicles and dog attacks (Phillips, 2000; Dique *et al.*, 2004).

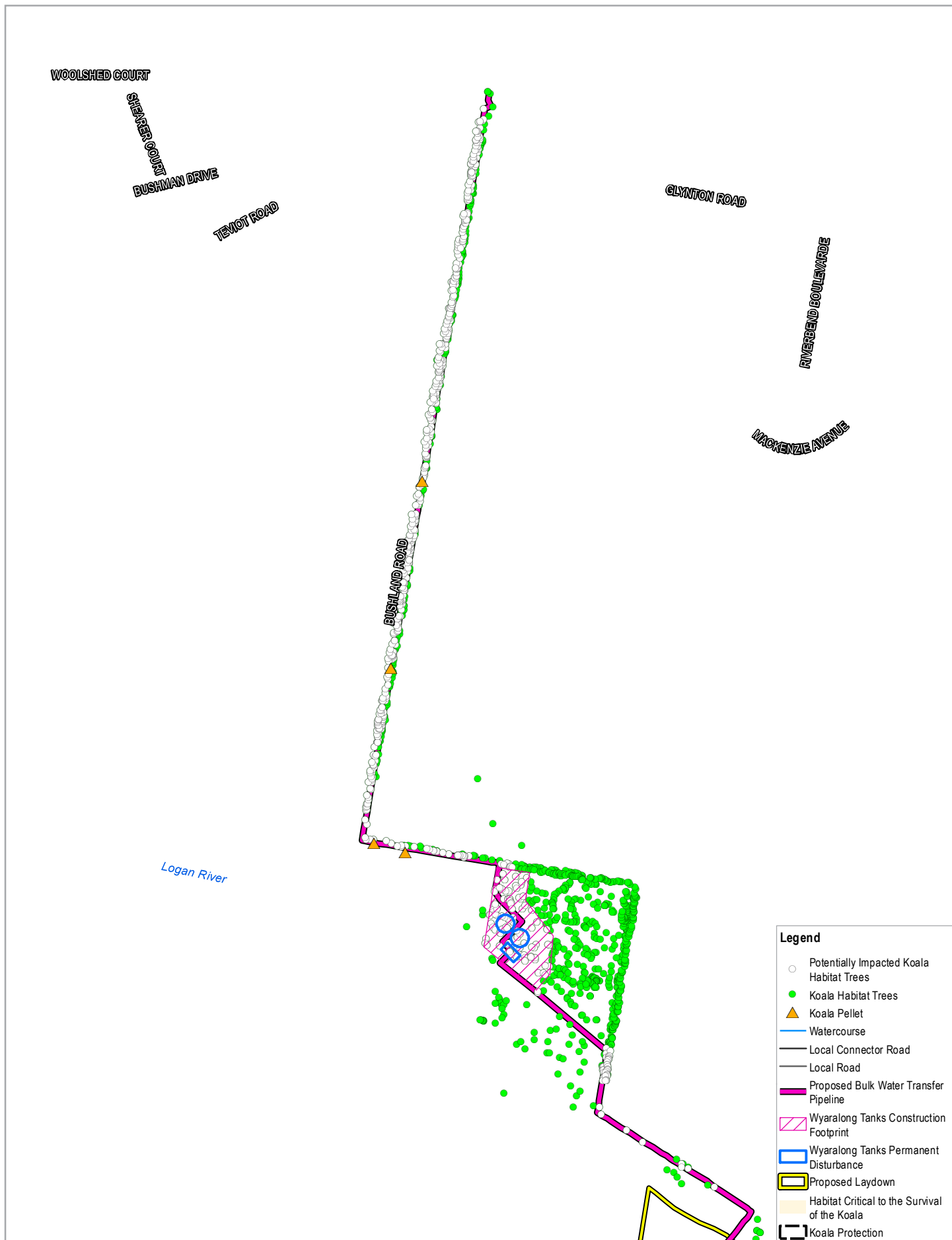
2.1.2 Koala habitat values

Mapped State Planning Policy (SPP) koala habitat occurs within the northern half of the project area (Figure 3). This includes areas of medium and high value bushland koala habitat, mapped along Bushland Road at the northern extent of the project area and areas of low value rehabilitation koala habitat, mapped on the site of the Wyaralong Tanks and immediately north and south of the Logan River. Approximately 911 non-juvenile koala habitat trees occur within the South West Pipeline and Wyaralong Tanks Project area, of which 674 are within habitat identified as critical to the survival of the koala in remnant woodland vegetation along Bushland Road at the northern extent of the project area and in regrowth woodland on the Wyaralong Tanks site. While koala habitat values within the project area are highest in areas north of Cedar Grove weir, isolated pockets of koala food trees provide limited koala habitat in the southern half of the project area. Patches of mature habitat trees that occur in the southern half of the project area fringe the roadside at locations along Cedar Grove Road, Undullah Road, Brookland Road, Allan Creek Road and Bromelton House Road. Roadside koala habitat trees in the southern half of the project area (i.e. all areas south of Cedar Grove weir) are expected to have low levels of koala utilisation given the fragmented nature of habitat within the region and absence of larger nearby bushland remnants. Isolated koala habitat trees were also recorded within the proposed laydown area east of Brabazon Road.

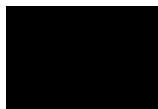
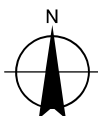
2.1.3 Koala occurrence

Koalas were confirmed present from faecal pellets, recorded from four locations along Bushland Road at the north of the project area. These coincided with areas of medium and high value koala bushland habitat in the SPP koala mapping. Spot assessment surveys undertaken at those locations indicated low levels of utilisation by koalas with faecal pellets found beneath only four of 1947 koala trees surveyed within the Project footprint. The low levels of koala utilisation were not unexpected. Koala habitats have been extensively cleared from the surrounding landscape. Much of the Logan River and adjacent floodplain to a distance of 1 km either side of the river has been historically cleared of native vegetation. As a result, the Logan River stands out in the Logan SPP koala map as an area of reduced koala habitat value, with most areas adjacent to the Logan River mapped as low value rehabilitation. Nevertheless, small pockets of koala habitat persist within the landscape, and the koala has the potential to occur in other areas throughout the Project area where mature koala food trees (i.e. *Eucalyptus*, *Corymbia*, *Angophora* and *Lophostemon* species) occur. No evidence of koalas was detected within regrowth woodland on the Wyaralong Tanks site. However, suitable habitat is present and the species is likely to occur. No evidence of koalas was detected south of the Logan River.

The species is expected to have limited occurrence in that area given the highly fragmented nature of the landscape.



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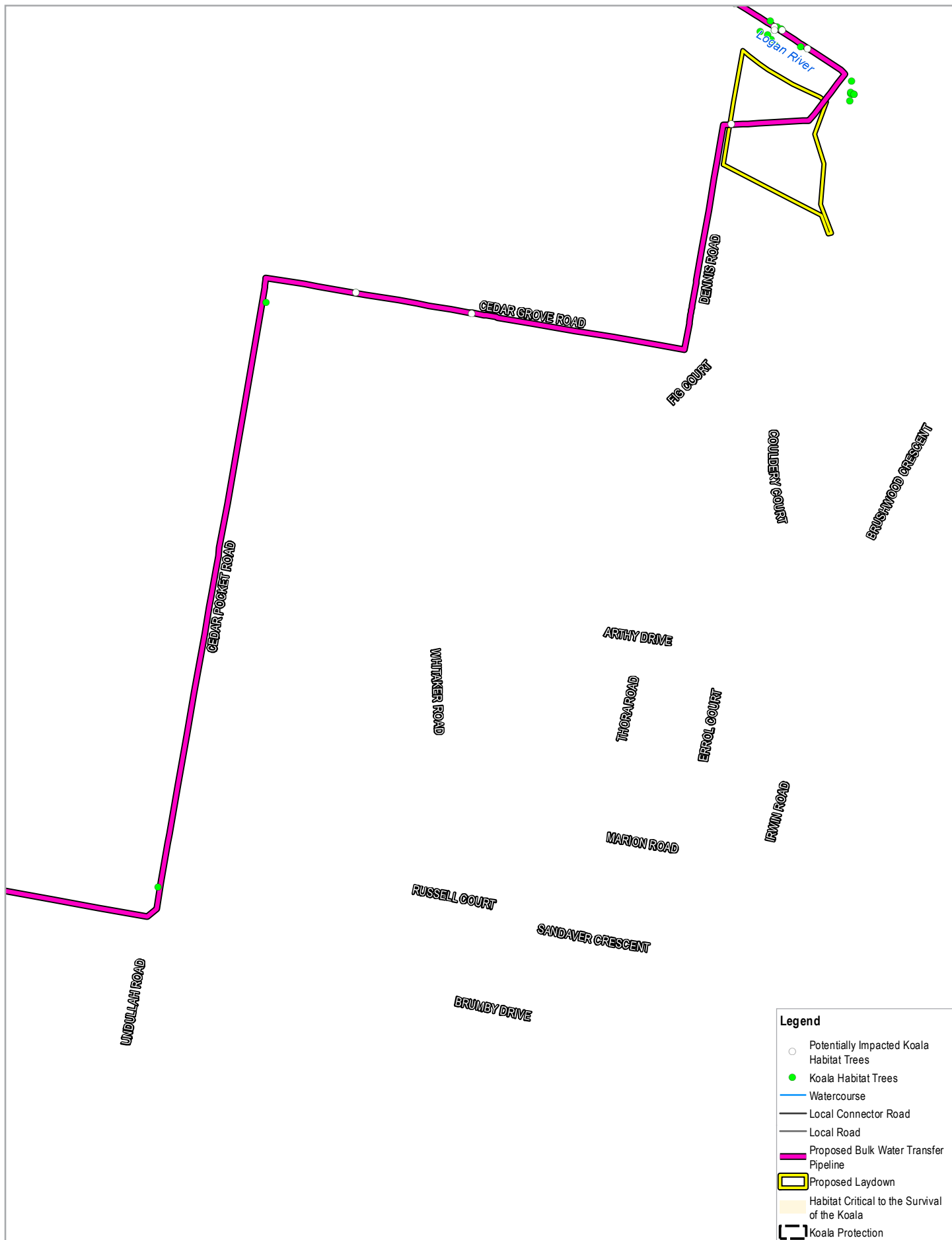


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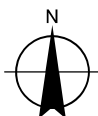
DISTRIBUTION OF KOALA HABITAT WITHIN THE PROJECT AREA

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FIGURE 2a



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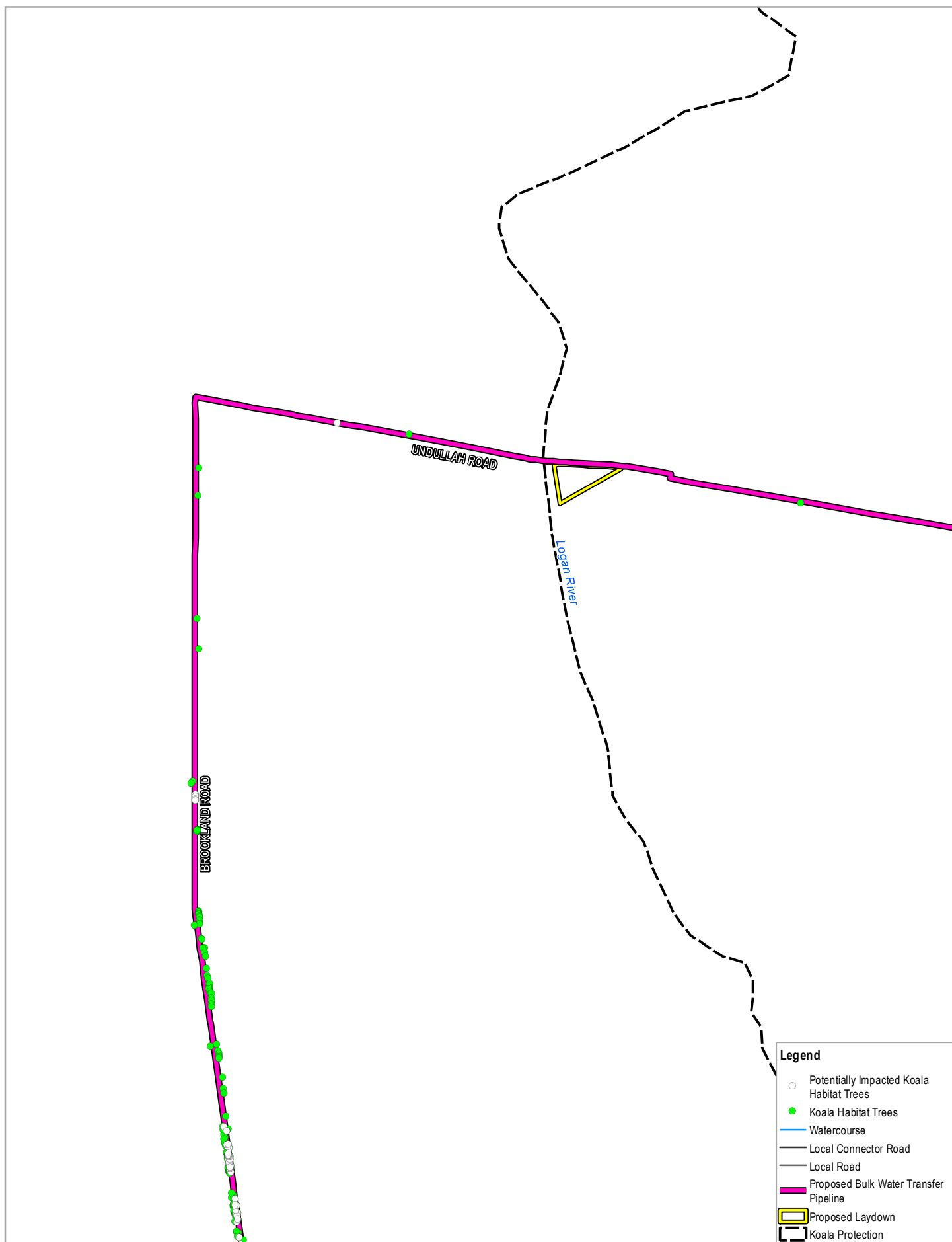


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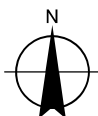
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FIGURE 2b



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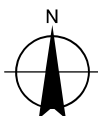
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FIGURE 2c



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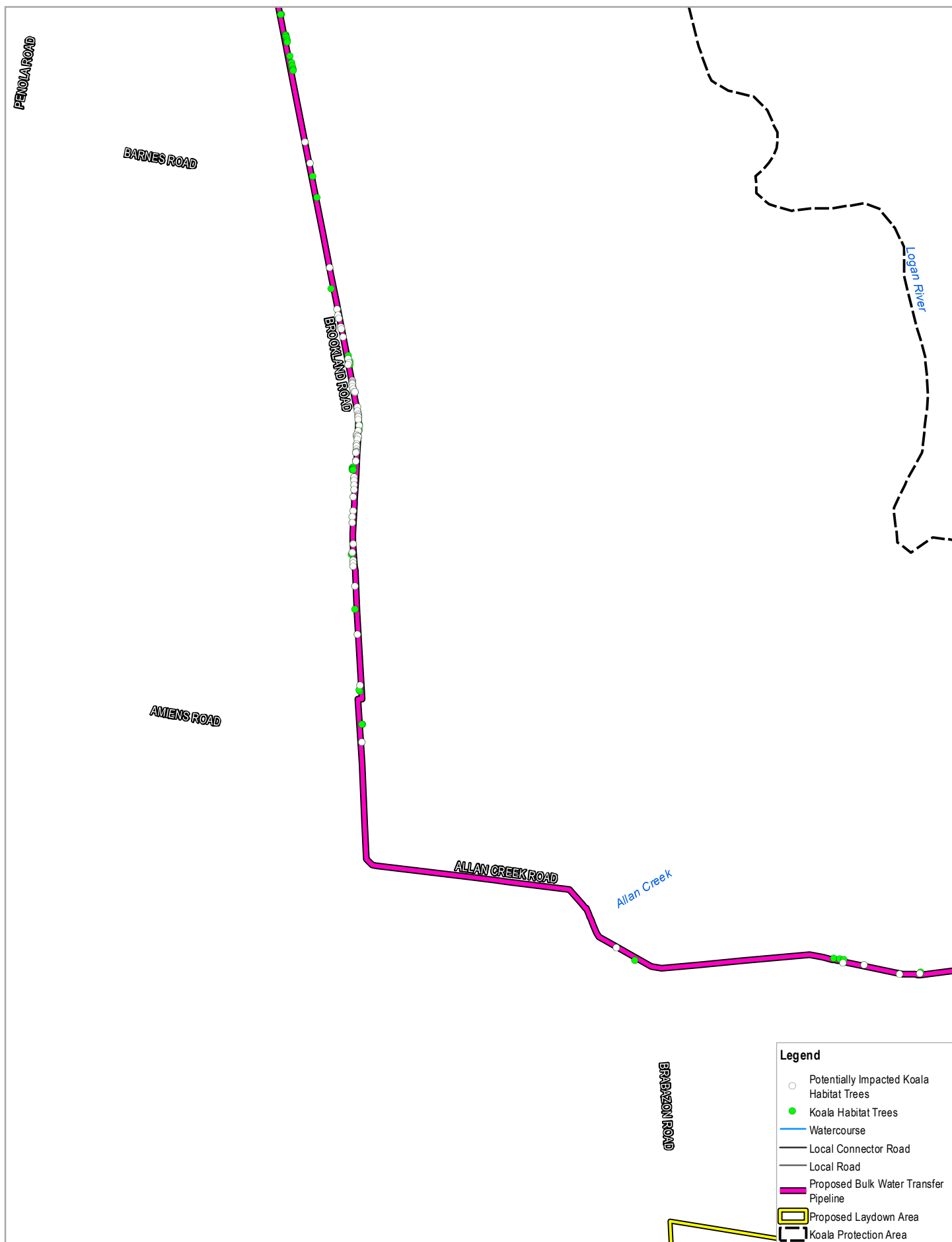


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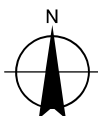
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FIGURE 2d



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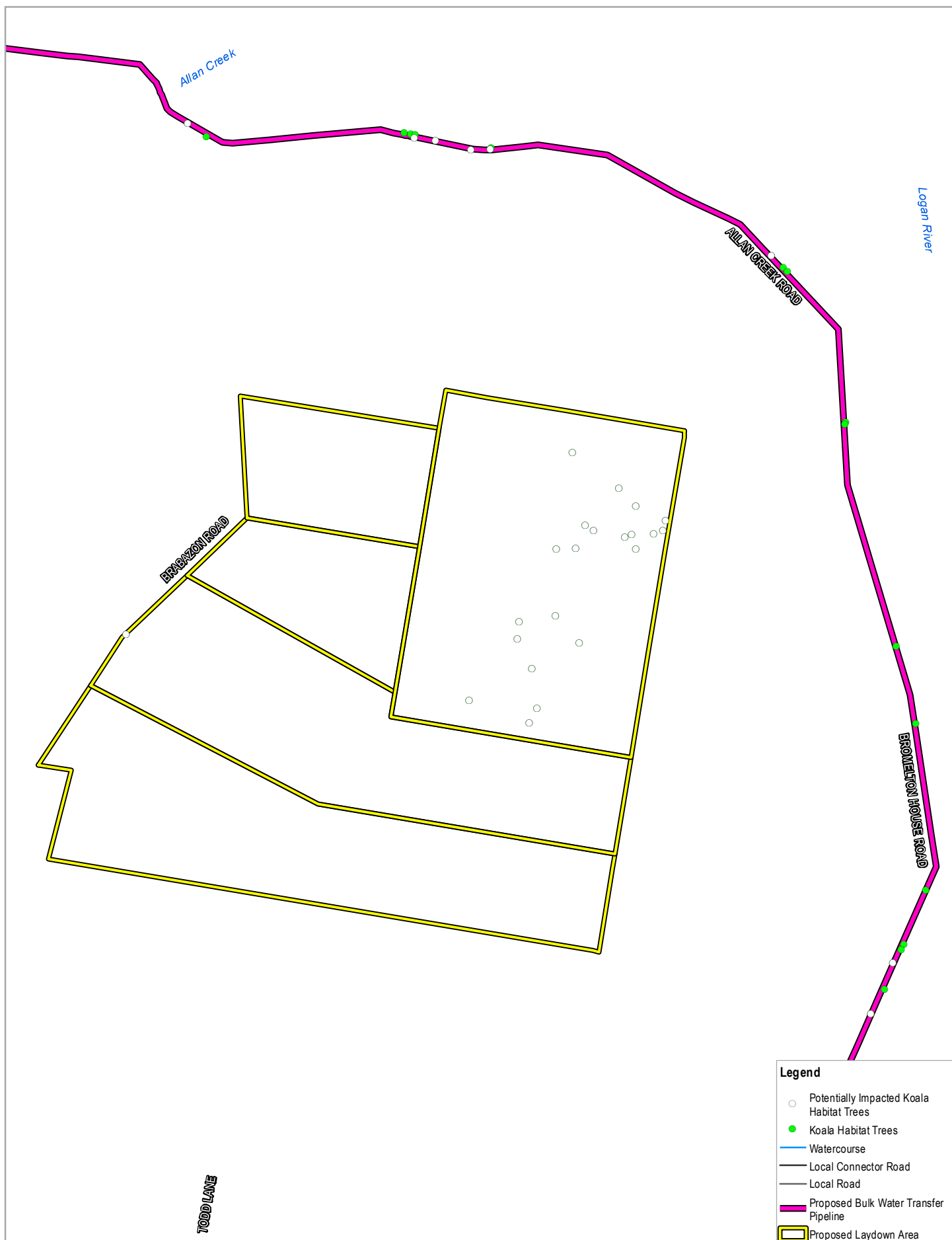


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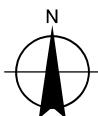
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FIGURE 2e



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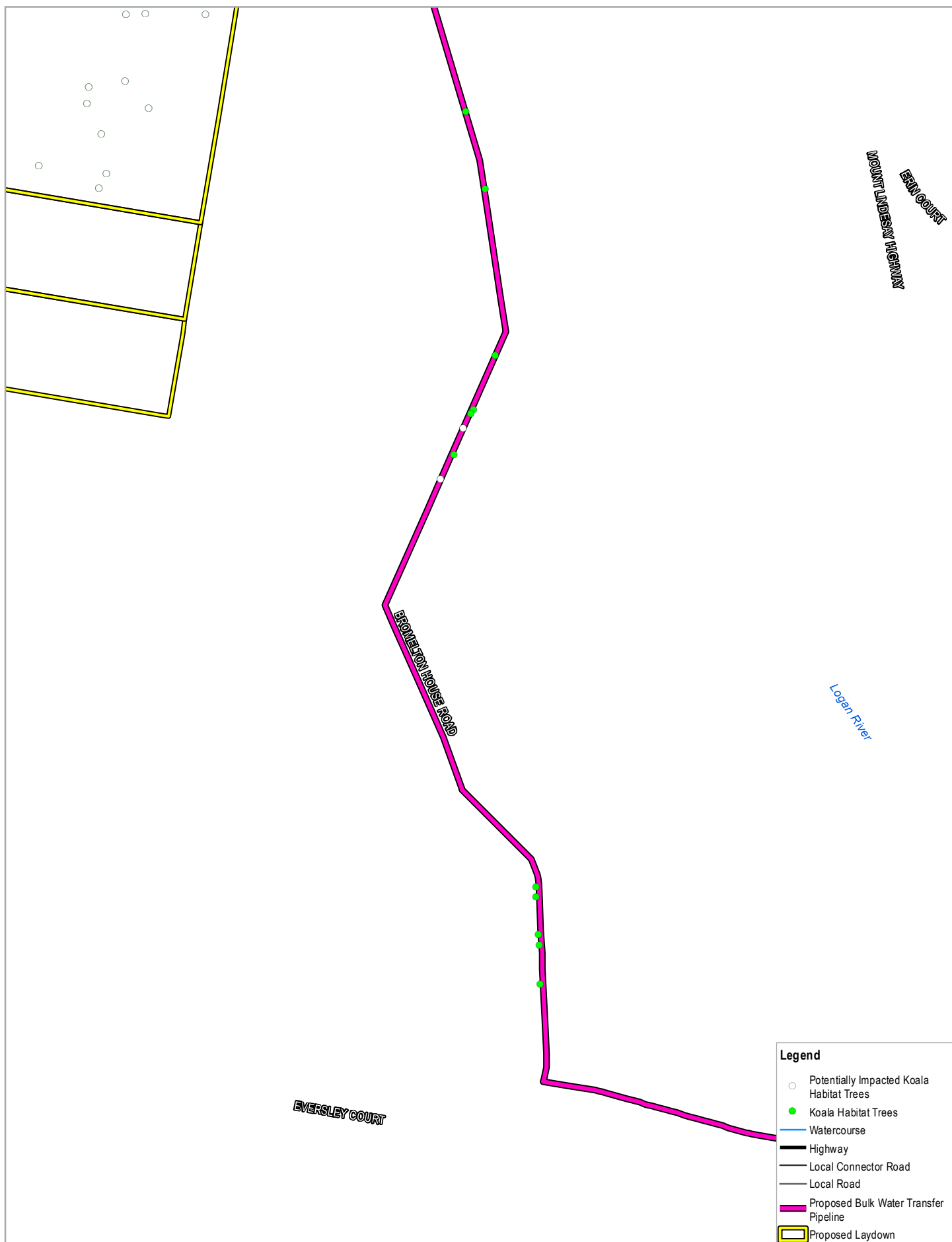


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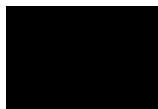
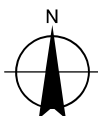
DISTRIBUTION OF KOALA HABITAT WITHIN THE PROJECT AREA

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FIGURE 2f



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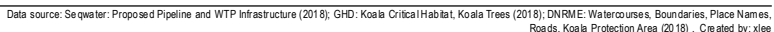


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FIGURE 2g



2.2 Grey-headed flying-fox

2.2.1 Grey-headed flying-fox profile

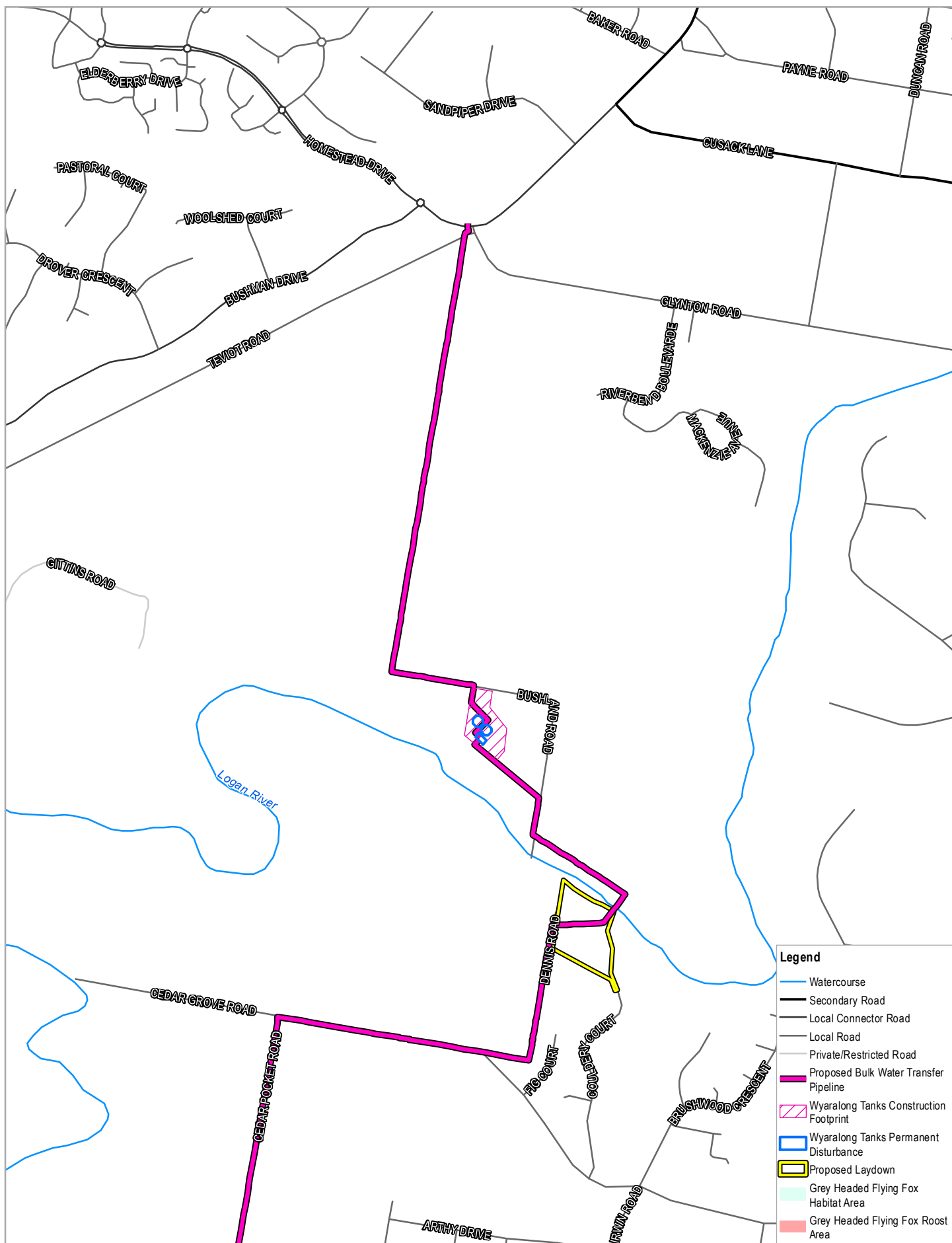
The grey-headed flying-fox is a canopy-feeding frugivore and nectarivore, which utilises vegetation communities including rainforests, open forests, closed and open woodlands, *Melaleuca* swamps and *Banksia* woodlands (Eby, 1998). The species roosts in colonies within rainforest, *Melaleuca* and areas of closed Eucalypt forest (Eby, 1998). The species feeds on nectar and pollen from a range of tree species predominantly including *Eucalyptus*, *Angophora*, *Corymbia*, *Lophostomen*, *Melaleuca* and *Banksia* (Duncan *et al.*, 1999). The species has no adaptations to tolerate seasonal food shortages and migrates regionally to take advantage of seasonal food supplies (Eby, 1991; Eby and Lunney, 2002). Within south-east Queensland and northern New South Wales, winter foraging habitat for the grey-headed flying-fox is particularly scarce, having experienced substantial reductions due to regional habitat loss (Eby and Law, 2008). Important winter and spring foraging resources include woodland communities containing *Eucalyptus tereticornis*, *E. albens*, *E. crebra*, *E. fibrosa*, *E. melliodora*, *E. paniculata*, *E. pilularis*, *E. robusta*, *E. siderophloia*, *Banksia integrifolia*, *Castanospermum australe*, *Corymbia citriodora*, *C. citriodora*, *C. eximia*, *C. maculata* (south from Nowra), *Grevillea robusta* and *Melaleuca quinquenervia* (DECCW, 2009).

2.2.2 Grey-headed flying-fox habitat values

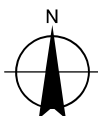
Remnant eucalypt woodland that occurs in the northern extent of the project area represents suitable foraging habitat for the grey-headed flying-fox. Roosting colonies of the grey-headed flying-fox are mapped within the region at Cedar Vale, Cedar Grove and Beaudesert (DEHP, 2016; Scenic Rim Regional Council [SRRC], no date). A flying fox camp was present (at the time of the survey) at Cedar Grove, approximately 600 m east of the alignment. While flying foxes observed at the time of survey were black flying foxes (*Pteropus alecto*), the grey-headed flying-fox is likely to also utilise this roosting camp. A second flying-fox camp is mapped off Homestead Drive approximately 750 m north-west of the northern end of Bushland Road. No Nationally Important Flying-Fox Camps are mapped in proximity to the project area. The nearest Nationally Important flying fox camp is located south of Canungra, approximately 27 km south-east of the project area.

2.2.3 Grey-headed flying-fox occurrence

No flying fox roosts currently occur within the project area. However, much of the eucalypt woodland vegetation within the north of the project area would represent suitable foraging habitat for the grey-headed flying-fox, with this species having been previously recorded within the region. While no individuals were observed during field surveys, the species forages widely throughout the region and is likely to forage on woodland habitat within the project area due to the proximity to roosting camps within the surrounding area.



Paper Size ISO A4
0 200 400 600 800
Metres
Map Projection: Universal Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56



Seqwater
South West Pipeline and Wyaralong Tanks
Species Impact Management Plan
**DISTRIBUTION OF GREY
HEADED FLYING FOX
WITHIN THE PROJECT AREA**

Project No. 41-31901
Revision No. 0
Date 26/09/2018

FIGURE 3

3. Significant Impact Assessment

The Ecological Report (GHD, 2018), found that koala habitat values vary substantially within the project area. Habitats in the northern half of the project area (north of the Logan River) represent habitat critical to the survival of the species, while the southern half of the project area (all areas south of the Cedar Grove Weir, Logan River) have limited value for koalas (Figure 2).

Roosting habitats for the Grey-headed flying-fox are a critical resource for the species, providing locally important breeding, roosting and nursery sites upon which thousands of individuals depend (Tidemann *et al.* 1999). No existing roosting sites occur within or immediately adjacent to the project area. The nearest roosting site is located at Cedar Grove, approximately 600 m east of the project alignment. The project will therefore have no impact on roosting habitat (Figure 3).

The South West Pipeline and Wyaralong Tanks Project will result in the direct clearance of 11.85 ha of habitat critical to the survival of the koala including 674 non-juvenile koala habitat trees. An additional 237 koala habitat trees will be cleared south of Cedar Grove Weir that is not habitat critical to the survival of the koala.

The impacts on koalas and grey-headed flying-fox associated with the works include:

- Loss and fragmentation of koala habitat
- Indirect disturbance to adjacent habitat areas
- Temporary or permanent disruption or barrier to koala movements
- Injury and mortality of individual koalas.

On balance, the project is considered **unlikely** to have a significant impact on habitat critical to the survival of the koala (GHD, 2018). As detailed in Section 8 of the Referral guidelines for the vulnerable koala (DotE, 2014), the potential for interference with the recovery of the species needs to be considered independent of the impact on habitat critical to the survival of the species.

Considering the nature and extent of the Project and the mitigation measures recommended for inclusion in the design and construction phases of the project, the proposed works in areas north and south of the project area (i.e. within habitat critical to the survival of the koala and areas of low koala habitat value) are not expected to substantially interfere with the recovery of the koala (GHD, 2018).

Assessment against the Matters of National Environmental Significance - Significant Impact Guidelines 1.1 (DotE, 2013) criteria undertaken in the Ecological Report (GHD, 2018), indicates that a significant impact on grey-headed flying-fox as a result of the proposed works is not likely to occur.

4. Koala Species Management Plan

4.1 Objectives

The key objectives of the SIMP in relation to the koala are:

- To assist in the long-term persistence of a healthy koala population in the Beaudesert and Greater Flagstone region; and
- To ensure the koala population is not significantly impacted by the South West Pipeline and Wyaralong Tanks project.

These objectives will be achieved by identifying all potential impacts and providing management strategies and actions that will provide a net benefit to the local koala population, and prevent death or injury to resident koalas during the vegetation clearing required for the construction and operation of the South West Pipeline and Wyaralong Tanks Project.

4.2 Potential impacts and threat management

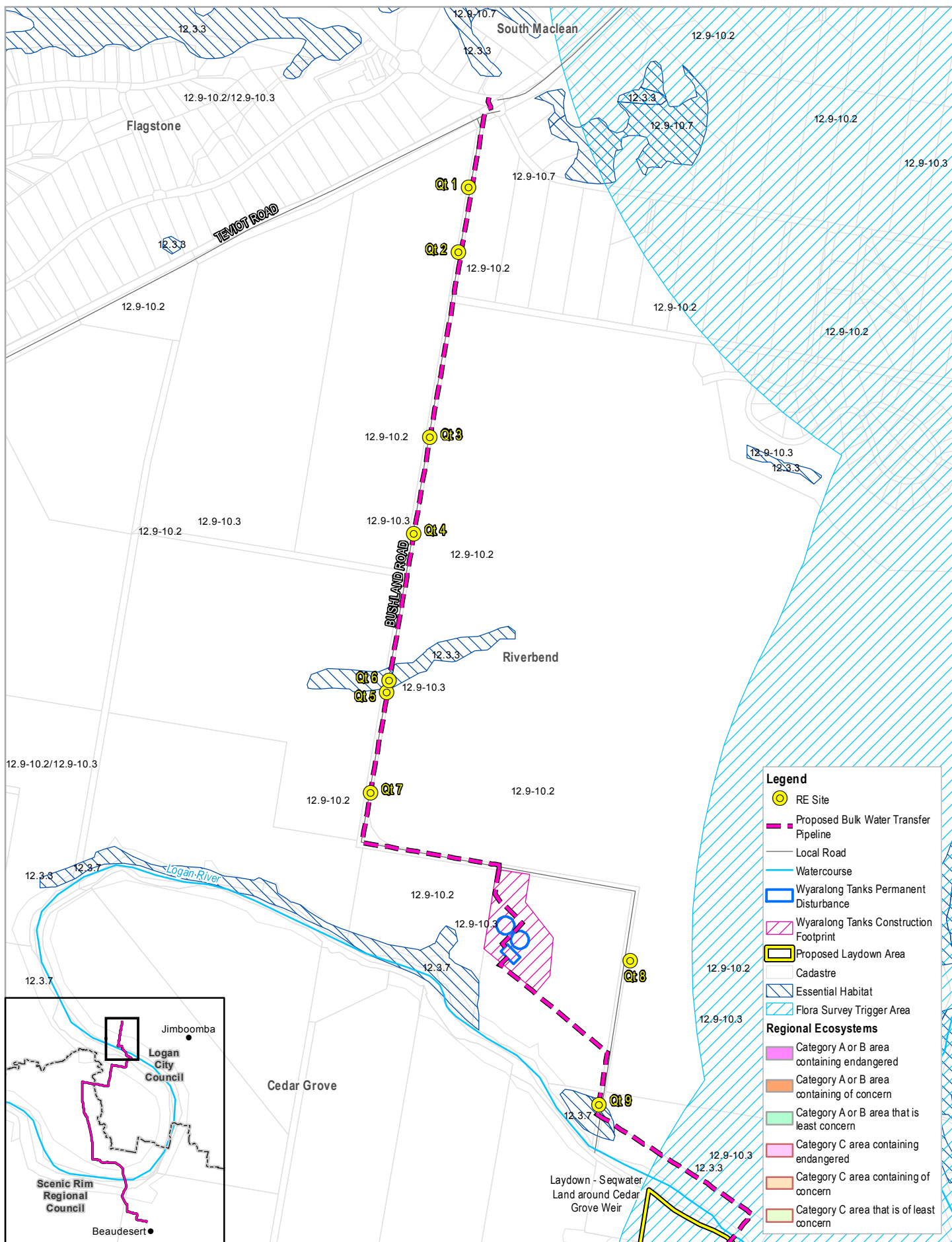
The South West Pipeline and Wyaralong Tanks Project will result in the removal of 11.85 ha of habitat critical to the survival of the koala. The following patches of mapped essential habitat for the koala can potentially be avoided (Figure 4):

- A small patch of mapped remnant woodland at the south-western corner of the Wyaralong Tanks site
- An isolated patch of mapped remnant woodland immediately north of the Logan River at the Cedar Grove Weir crossing.

Impacts associated with the Project must be minimised and mitigated. Both direct and indirect impacts, short-term and long-term in duration, may apply to the koala as a result of the construction and operation of the Project.

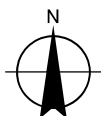
The potential impacts from the Project include:

- Loss and/or fragmentation of important refuge and feeding habitat
- Direct loss of breeding habitat or breeding places
- Death or injury to resident koala
- Increased risk of death and disease
- Increased risk of death or injury as a result of
 - Vehicle strike
 - Koalas entering the South West Pipeline and Wyaralong Tanks Project Area
 - A potential increase in pest animals that may prey on the koala
- Barrier to movement during construction of the Project
- Indirect degradation of habitat such as through introduction or spread of weeds, pests or disease, erosion of exposed surfaces, sediment deposition or modification of hydrological regime
- Increased edge-effects and disturbance of adjacent habitats.



Paper Size ISO A4
0 100 200 300 400
Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 56



Seqwater
South West Pipeline and Wyaralong Tanks
Species Impact Management Plan

REGIONAL ECOSYSTEMS AND ESSENTIAL HABITAT

Project No. 41-31901
Revision No. 0
Date 27/09/2018

FIGURE 4

4.3 Provide net benefit to koala

As habitat loss is one of the leading causes of declines in koala populations, the management of habitat loss is one requiring direct management by Seqwater. Rehabilitation of construction laydown areas is proposed to mitigate the loss of habitat.

Seqwater will be legally required to provide appropriate offsets for the clearing of significant vegetation for the Project in line with the obligations under State and Federal legislation. Seqwater intends to rehabilitate and restore an area of land surrounding the Wyaralong Dam to mitigate the loss of significant koala habitat as a result of the South West Pipeline Project. Offsets will be provided at a ratio of 3:1 in accordance with the State Government Supported Infrastructure koala Conservation Policy July 2017 and the Queensland Environmental Offset Policy.

An Offset Delivery Plan will be developed. Seqwater will preference the use of koala food tree species for direct seeding and planting within the conservation zone, for example, *Eucalyptus populnea*, *Eucalyptus tereticornis* and *Mountain Coolibah Eucalyptus orgadophila*.

4.4 Prevent death or injury to koala

In accordance with the Department of Environment and Heritage Protection (DEHP – now Department of Environment and Science (DES)) Koala Sensitive Design Guideline (2012), koala exclusion fencing is also proposed to be installed around the Wyaralong tanks site to prevent koala access to the site.

The construction of the pipeline along Bushland Road will require the clearing of koala habitat trees. As Bushland Road is currently unformed, part of the Project will result in the construction of the road. Fauna passage elements and protection measures will be incorporated into the road construction including fauna passage culverts/underpasses (DEHP, 2012) (Figure 5). Discussions are underway with Economic Development Queensland to investigate the installation of a locked gate on Bushland Road to restrict the number of vehicles accessing the road to those accessing the Wyaralong Tanks and one residential property.

All vegetation clearing undertaken as part of the Project will be undertaken in the presence of a licenced and experienced Koala Spotter, who will ensure that there are no koalas present within or immediately near any vegetation clearing activities be attempt to spot, capture or contain a koala at risk of harm from Project activities. The Spotter will be required to have appropriate equipment and cages and release all animals after capture unless requiring veterinary attention. The licenced Koala Spotter will be expected to operate in compliance with the requirements of the *Nature Conservation (Koala) Conservation Plan 2017*.

In the event a koala breaches a fenced area and wanders into a construction area, all activities in the vicinity of the koala will be suspended until the koala has moved independently out of the danger zone or is relocated to a safe area by a licenced and experienced Koala Spotter/Handler. Wherever practical, the animal will be encouraged to move of its own volition. However, under certain circumstances to prevent immediate or potential threats that may cause death or harm, it will be prudent to capture and relocate the threatened animal.

The Management Framework to reduce the risk of death and injury to koalas is provided in Appendix A.