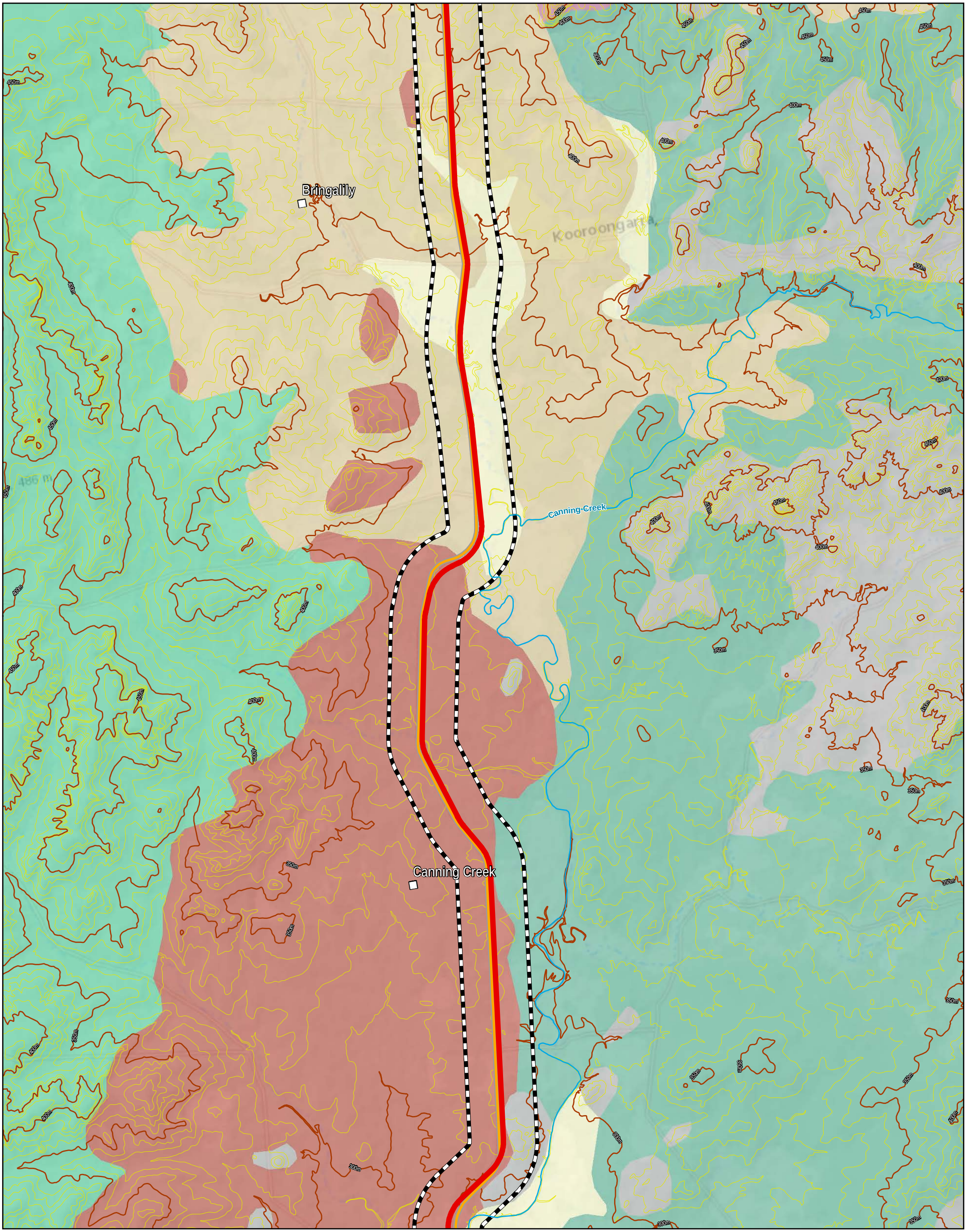

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0 0.8 1.6 2.4 3.2
Kms

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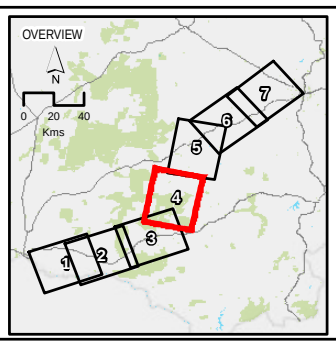
Legend

- Towns
- Conceptual Alignment
- Major Roads
- Contours (50m interval)
- Contours (10m interval)
- Study Area
- State Boundary

Rock Unit (DNRM regional geology)

Moreton Region - Regional surface geology 1978

- Kumbarilla beds (JKk)
- MG-TQs (TQs)
- MG-Ts (Ts)
- Marburg Subgroup (Jbm)
- PRg-MG (PRg)
- Qa-QLD (Qa)
- Texas beds (Ctx)
- Walloon Subgroup (Jw)



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Border to Gowrie Project

Geology and Terrain

PROJECT ID: 60492124
CREATED BY: JR
LAST MODIFIED: JR - 2/02/2018
VERSION: 3

Figure **5.1**
(4 of 7)

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Condamine River (North Branch)
Pampas
Condamine River
Yandilla
Millmerran
Clontarf
600m
550m
500m
450m
400m

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- Walloon Subgroup (Jw)

OVERVIEW
0 20 40
Kms
1 2 3 4 5 6 7

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A3 size

Pittsworth

Brookstead

Pampas

Mount Tyson

Condamine River (North Branch)

Condamine River

Condamine River (North Branch)

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OVERVIEW

0 20 40
Kms

1 2 3 4 5 6 7

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Figure **5.1** (6 of 7)

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Gowrie
Charlton
Oakey
Wellcamp
Westbrook
Athol
Umbiram
Southbrook
Pittsworth

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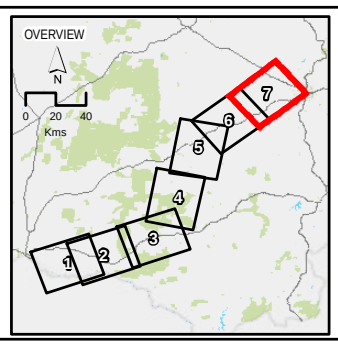

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Figure **5.1** (7 of 7)

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Contaminated Land and Unexploded Ordnance

A desktop review of land uses and known contaminated areas has been conducted for the Study Area to identify potential sources of contamination. The Border to Gowrie Conceptual Alignment consists of brownfield and greenfield components. Existing rail corridors that would be utilised by brownfield components of the Conceptual Alignment has the potential to be contaminated due to historical operation and maintenance activities.

In addition, railway yards (operating a railway yard including goods-handling yards, workshops and maintenance areas) are listed in Schedule 3 of the *Environmental Protection Act 1994* as a notifiable activity and therefore are potentially contaminated sites. A review of aerial photography and land use mapping (Queensland Land Use Mapping Program, February 2016) within the Study Area has identified the following land uses that warrant further review of potential contamination in future project stages:

- Mining, e.g. the Commodore Mine at Millmerran
- Intensive animal husbandry, e.g. feedlots, poultry farms, piggeries etc.
- Agricultural land
- Waste treatment and disposal facilities
- Manufacturing and industrial uses.

An assessment of the Department of Defence unexploded ordnance (UXO) mapping concludes that the Study Area does not extend through any areas of UXO potential.

Visual Amenity

The Study Area encompasses various visual environments, from flat open rural country, with essentially uninterrupted vistas extending across agricultural plains, to undulating terrain, dense vegetation and regional settlements.

The current landscape of the study area is mostly cleared rural land subject to a range of agricultural activities with production from irrigated agriculture and cropping. Open agricultural fields and scattered farmsteads are a dominant feature in views across the landscape. Other notable features in the landscape include major roads, disused rail corridor and the operational Millmerran Power Station and mine operations.

5.1.2. Water

5.1.2.1. Surface Water Quality

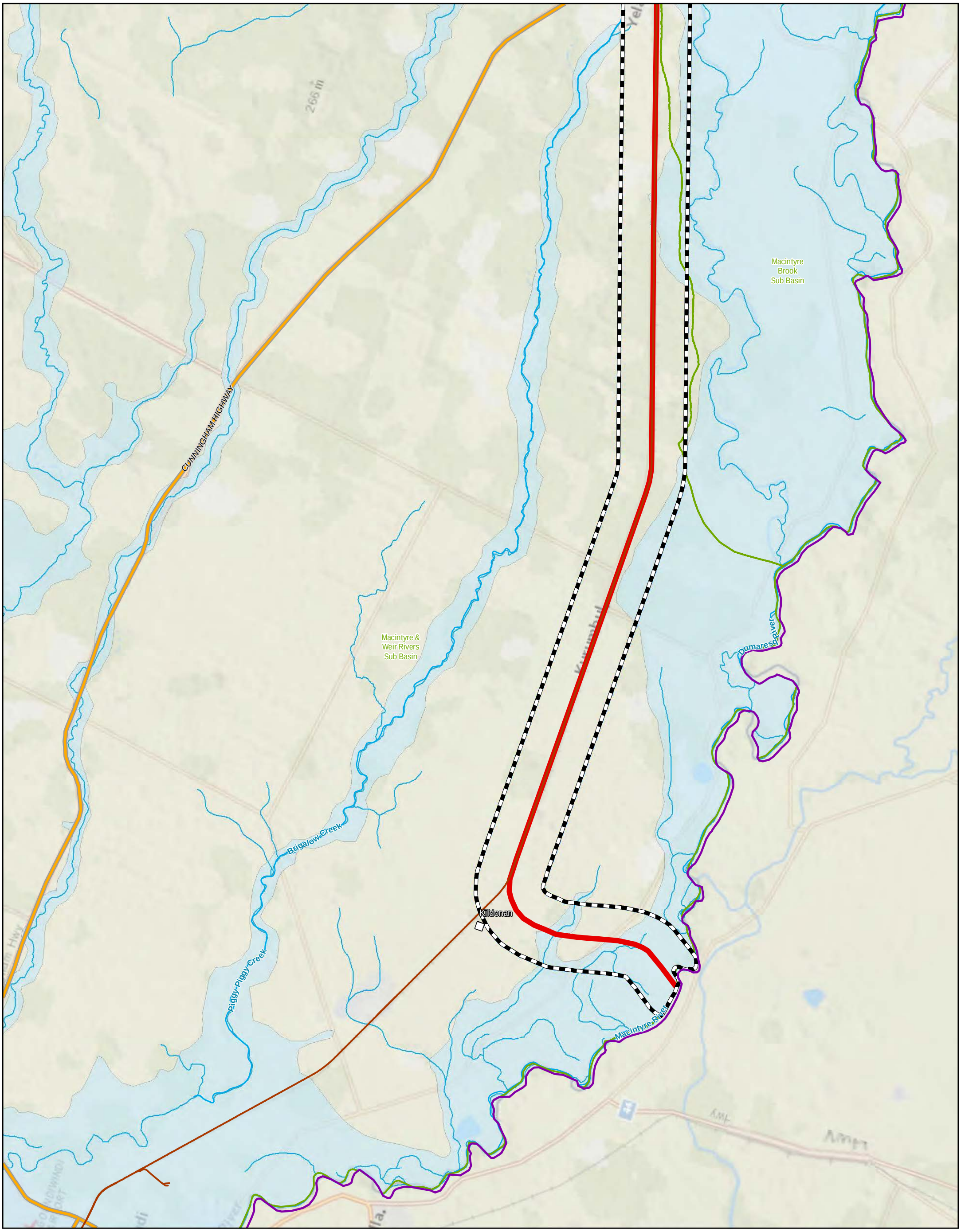
The Conceptual Alignment and the wider Study Area span three catchments. Between the QLD/NSW border and Yelarbon, the Study Area is located within the Macintyre River catchment and from Yelarbon to Millwood the Study Area is located in the Macintyre Brook catchment of the Border Rivers drainage basin. North of Millwood the Study Area is located within the Condamine River catchment of the Balonne-Condamine drainage basin.

The Conceptual Alignment crosses 16 major waterways, 69 minor waterways and their associated floodplains. The major waterway crossings include the Macintyre River, Condamine River, Cattle Creek, Westbrook Creek and Dry Creek.

Water quality data is gathered in the Balonne-Condamine river basin for a range of water quality markers including total nitrogen, total phosphorus, total suspended solids and many other chemicals, such as cadmium, copper, the herbicides atrazine and diuron, and the insecticide Dieldrin (DERM, 2011). In the upper Condamine river basin nutrient levels have generally been within the adopted guidelines at the nutrient monitoring sites. Electrical conductivity (EC) measured on the Condamine River at Chinchilla Weir has provided results ranging from 800 µS/cm during low flows to 100 to 180 µS/cm during high flows. These results indicate that the Condamine River is relatively saline compared to other rivers in QLD (Welsh W, 2014).

Sites in Border Rivers river basin in QLD (not all within the subregion) are monitored on a monthly basis by the NSW Office of Water on behalf of Dumaresq Barwon Border Rivers Commission for electrical conductivity, nutrients, turbidity, total suspended solids and water temperature (Welsh W, 2014). Data collected in 2012 showed Macintyre Brook had salinity levels above the guidelines for protection of aquatic ecosystems in upland streams (DBBRC, 2012).

Figure 5-2 shows the catchments and key watercourses within the Study Area.



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0 0.8 1.6 2.4 3.2
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Legend

- Towns
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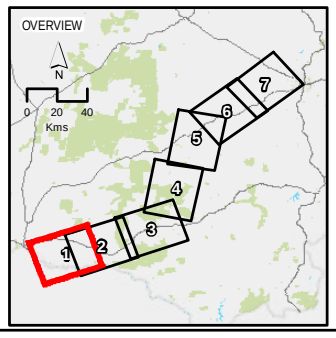
- Drainage sub basins
- Floodplain Assessment Overlay



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Waterways, Drainage sub-basins, Floodplan assessment overlay - DNRM 2017
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Border to Gowrie Project

Catchments, waterways and flooding

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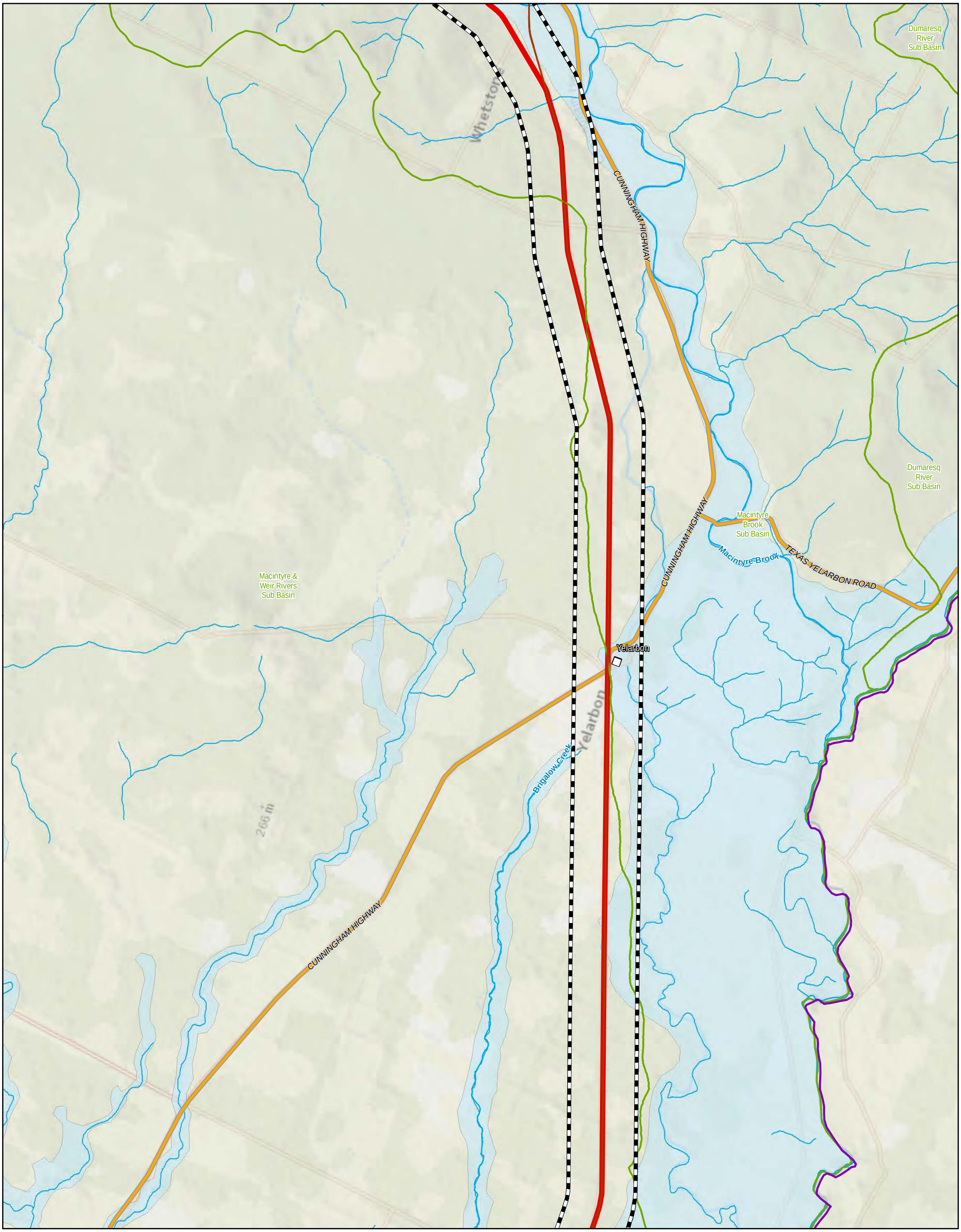

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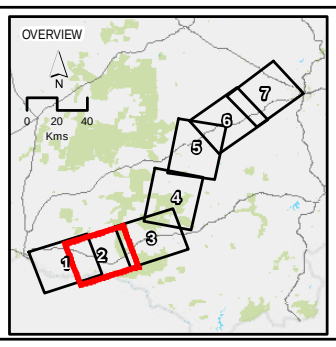
OVERVIEW



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Catchments, waterways and flooding

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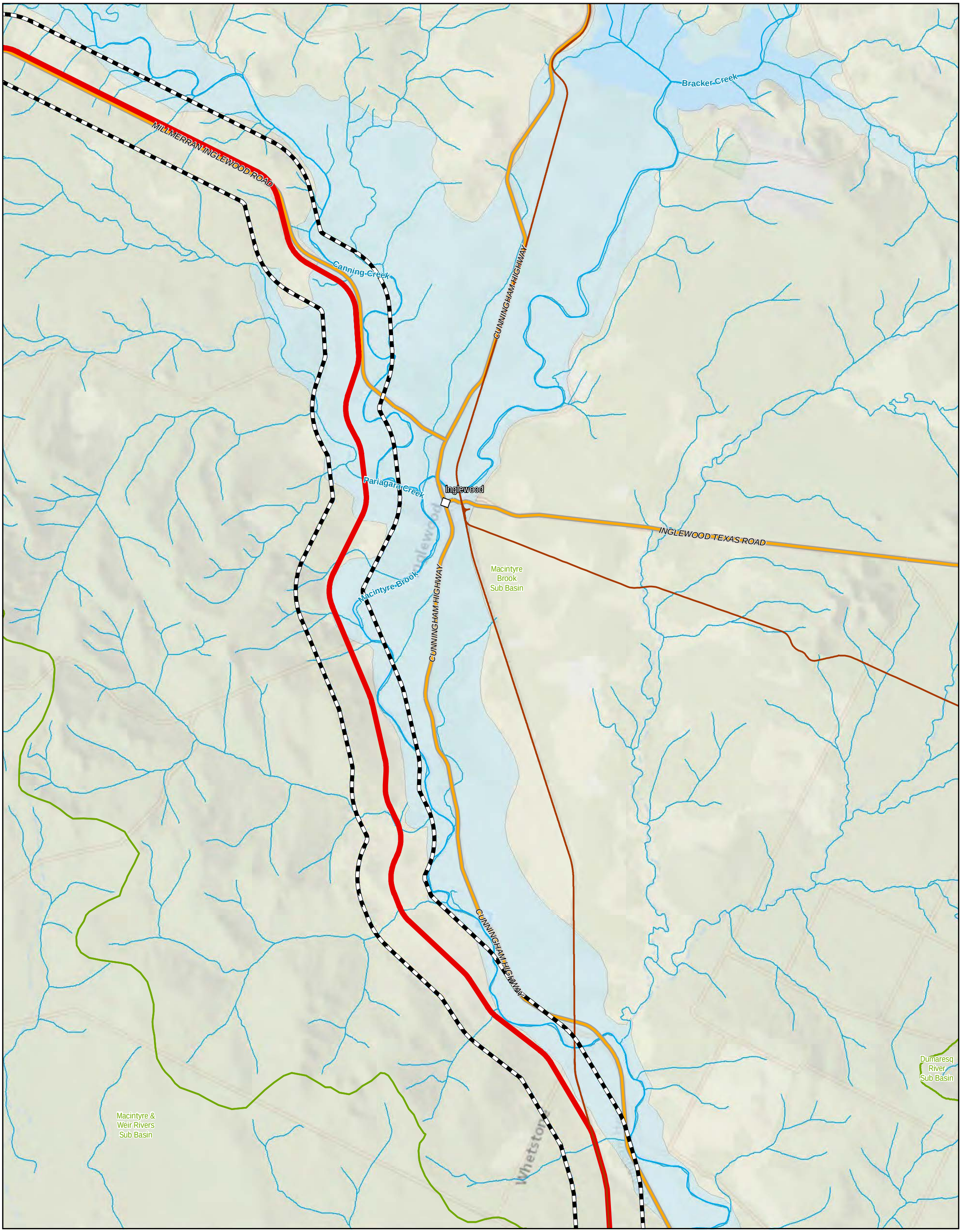

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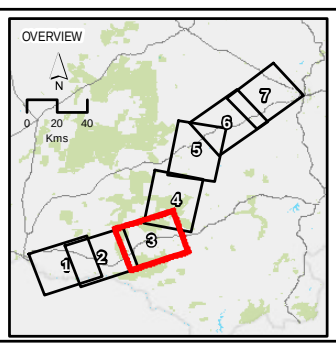

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