Western Victoria Transmission Network Project

Preliminary EES Information Sheet for Existing Conditions

Surface Water

Introduction

This document provides a summary of the existing surface water conditions identified within the Western Victoria Transmission Network Project (WVTNP) area of interest (AOI). Identifying the existing surface water features within the AOI is an important step towards understanding the potential impacts, interactions and considerations for the project.

The existing surface water conditions have been identified by qualified, independent technical specialists and include waterway characteristics and values, stream flows, water quality, waterway health, flooding conditions, surface water uses and protected environmental values. A review of surface water and flooding datasets, catchment management information and water users and licences, has been undertaken, and relevant legislation, policy and guidelines have been considered. Field surveys and investigations will be undertaken to gather more information, where required, about existing conditions and potential project impacts. The findings will be updated and included in the surface water impact assessment for the Environment Effects Statement (EES).

Community and stakeholder feedback

The community has provided important input about existing conditions including:

- Significance of surface waterbodies including Hepburn Lagoon, Merrimu Reservoir, Pykes Creek Reservoir and the Lerderderg River.
- Flooding potential of waterways at the western end of the AOI.
- Water quality and biodiversity values in rivers and creeks.

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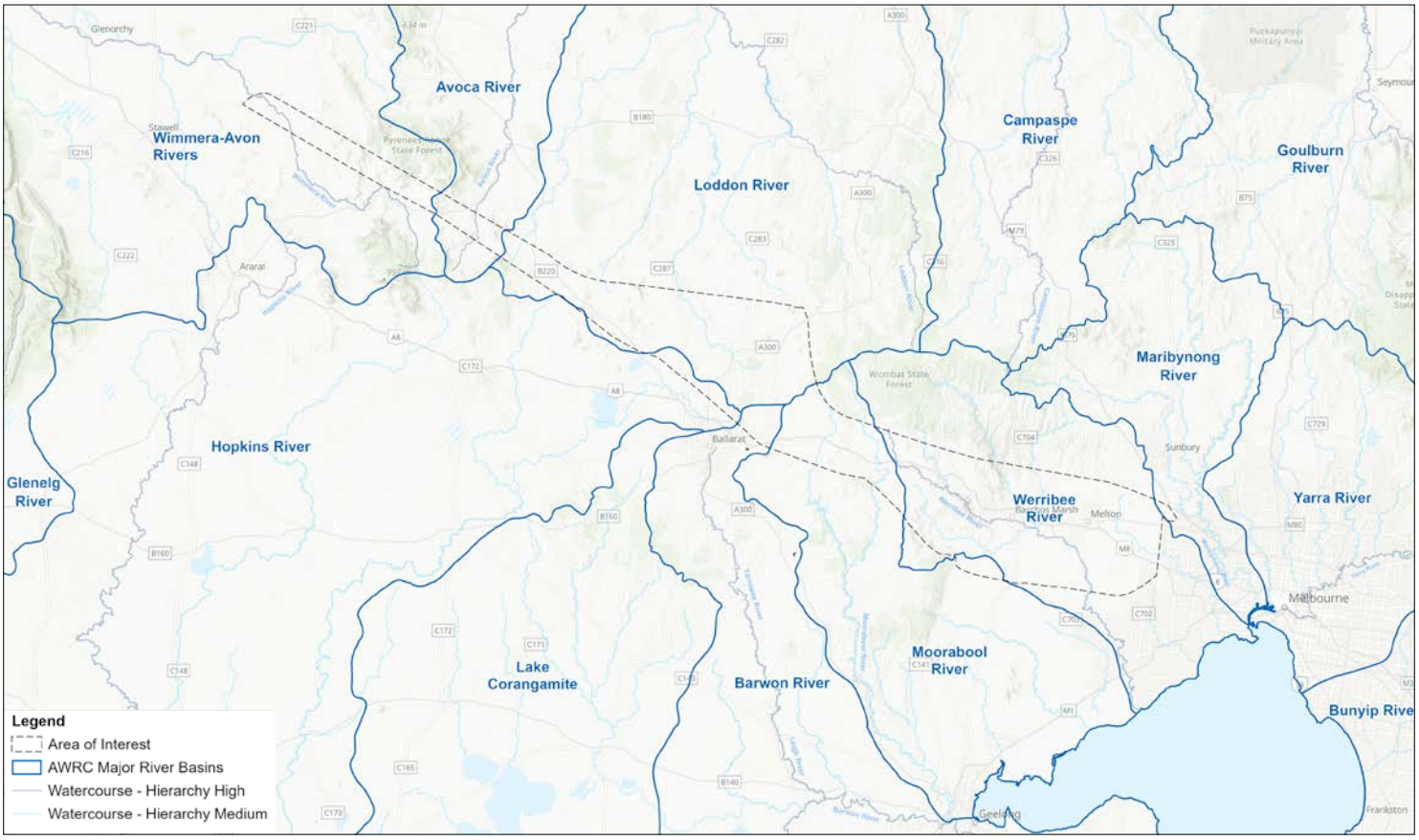


Major River Basins (Data source: BASIN100, 2021; Waterways Centreline, 2021)

About surface water

Surface water is rainfall that has been converted to runoff as the ground becomes saturated. Surface water drains from catchments via watercourses, flowing from higher elevations towards ocean outlets or terminal lakes and wetlands. Surface water can also interact with groundwater, for example a groundwater spring can provide a source for a stream and groundwater can replenish surface water where the watertable connects with the surface water.

Protected environmental values

Waterways and wetlands have important environmental values that are protected. An 'environmental value' is defined in the *Environment Protection Act 2017* Environment Reference Standard as a use, attribute or function of the environment that Victorians value. The protected environmental values applicable to the AOI include:

- Water dependent ecosystems and species.
- Human consumption after appropriate treatment.
- Agriculture and irrigation.
- Human consumption of aquatic food.
- Aquaculture.
- Industrial and commercial.
- Water-based recreation.
- Traditional Owner cultural values.

Watercourses

The AOI traverses eight major water courses, which from west to east are:

- Wimmera-Avon River
- Avoca River
- Loddon River
- Hopkins River (small area along the southern boundary)
- Barwon River (small area along the southern boundary)
- Moorabool River
- Werribee River
- Maribyrnong River

Major watercourses are associated with areas susceptible to flooding (peak flood level with a 1% annual exceedance probability or 1-in-100-year probability) across the AOI. In the western section of the AOI, flood areas can extend to 500m wide, with the most significant flood extents associated with Six Mile Creek and the Wimmera River in the far west of the AOI. Around Bacchus Marsh, where the Parwan Creek, Cockatoo Creek and Werribee River meet, flood extents are over 1km wide.

Wetlands

The AOI includes 568 current wetlands mapped by the Department of Environment, Land, Water and Planning (DELWP):

- 74 permanent and 65 temporary freshwater lakes.
- 18 permanent and 47 temporary freshwater swamps.
- Two permanent and 79 temporary freshwater marshes and meadows.
- 283 unknown wetland types (generally farm dams and water impoundments).

There are no Ramsar wetlands within or adjacent to the AOI. Areas of the Lerderderg River within the AOI are listed in the Directory of Important Wetlands in Australia (DIWA)[1]. Other DIWA listed wetlands in the vicinity of the AOI include Lake Wendouree in central Ballarat and Merin Merin Swamp located 7km north of Clunes.

Waterway management

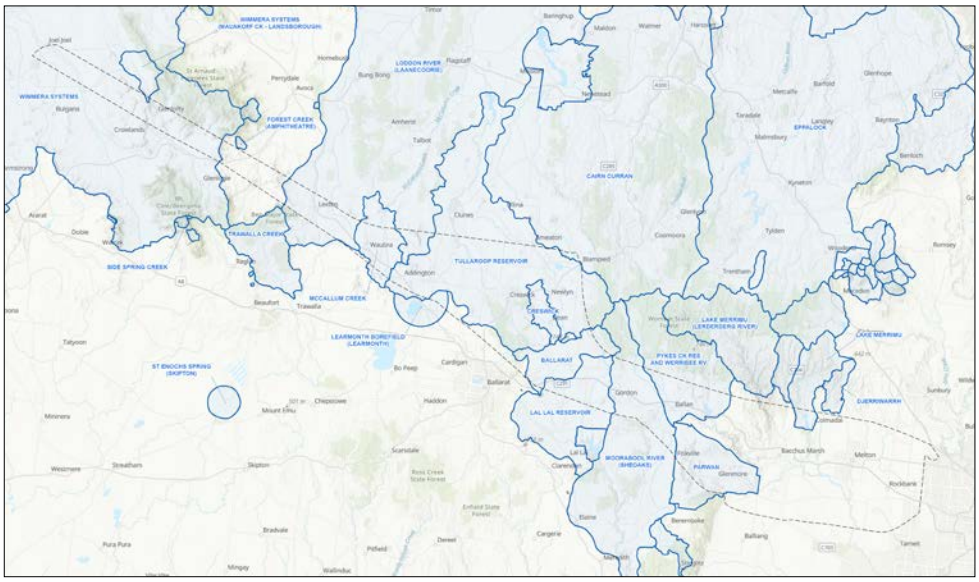
There are five catchment management authorities (CMAs) in the AOI which from west to east are:

- Wimmera
- Glenelg Hopkins
- North Central
- Corangamite
- Port Phillip and Westernport

The CMAs are responsible for regional waterway strategies which identify priority waterways for management to improve or maintain their condition. Under the *Water Act 1989* the designated waterway management authorities are the CMAs, except in the Port Phillip and Westernport catchment where Melbourne Water is the authority. Designated waterways require a 'works on a waterway permit' for activities such as waterway crossings to ensure the works do not adversely affect the health of those waterways.

Declared Water Supply Catchment Areas

Water catchments in Victoria which supply water for domestic, stock, irrigation or other purposes may be protected under the Catchment and Land Protection Act 1994 as Declared Special Water Supply Catchment Areas[2].



Declared Water Supply Catchment Areas (Data source: Declared water supply catchments, 2018)

Western section of AOI – Bulgana to North Ballarat

The western section of the AOI crosses the Wimmera River and Avoca River, both high priority waterways for the Wimmera and the North Central CMAs. There are no waterways within this area recognised as priority reaches by the Glenelg Hopkins or Corangamite CMAs.

The Wimmera River is recognised in the Wimmera Waterway Strategy[3] as having high 'rare or threatened species or communities' and/or 'naturalness' values. Avoca River is recognised as a priority river due to its important community values and because it is a 'representative river' for west Victorian dissected uplands. Hepburn Lagoon, a volcanic caldera (crater lake) is located in the centre of the AOI. Birch Creek, located within the agricultural region around Newlyn, is recognised by the North Central CMA as a priority river or stream due to the need to improve highly threatened or rare water dependent species within the creek. According to the Index of Stream Condition[4] (an assessment and scoring method for the condition and values of all waterways in Victoria), the overall condition of the Avoca River and Birch Creek is moderate and poor respectively.

Water is valued for recreational activities in this section of the AOI including:

- Wimmera-Avon: swimming, fishing, boating, water skiing and jet skiing, as well as aesthetic enjoyment during picnics, bush walking or camping.
- Avoca and Loddon: fishing, swimming, camping, boating and bush walking.
- Hopkins: camping and fishing.
- Barwon: swimming, fishing, kayaking, non-motor boating, picnic sites, lookouts and walking.
- Bet Bet Creek, Birch's Creek, Bullarook Creek, Creswick Creek, Hepburn Lagoon, Langdons Creek and Newlyn Reservoir are listed as angling waters.
- Hepburn Lagoon and Newlyn Reservoir are trout fisheries and are stocked with brown trout and rainbow trout.

Water quality impacts on water uses, recreational activities and environmental values such as flora and fauna species. Water quality in the Wimmera, Avoca, Loddon, Barwon and Hopkins catchments is currently impacted by excessive salinity, turbidity, nutrients and pathogens due to historic mining, land clearing and agricultural land use. High salinity is often the result of saline groundwater entering into freshwater creeks. More information is available in the Preliminary EES Information Sheet for Existing Conditions: Groundwater.

Major storage reservoirs in the western section of the AOI include:

- Loddon River basin: Lexton Reservoir (120 ML), Newlyn Reservoir (500 ML), Cosgrove Reservoir (680 ML) and Russells Reservoir (72 ML).
- Barwon River basin: White Swan Reservoir (14,107 ML), Gong Gong Reservoir (1,902 ML) and Kirk Reservoir (400 ML).

Key water uses are urban water supply, industry, stock and domestic and irrigation (licensed). There are also a number of industrial or commercial licences for surface waters in this area.

Eastern section of the AOI - Ballarat to North Sydenham

The eastern section of the AOI lies mostly within the largely rural upper reaches of the Werribee and Moorabool River valleys, but also passes through the southernmost end of the Loddon Basin, through the northern most end of the Barwon Basin and the Maribyrnong basin. Major waterways in this section include the Lerderderg River, Kororoit Creek, and the Moorabool River. Upper reaches, particularly in the Werribee catchment, retain significant environmental values while other parts of the catchments have been impacted by land clearing, waterway regulation and extraction, and urban growth. Many of the upstream reaches and tributaries in the catchment are naturally ephemeral, or flow only after rainfall. The Werribee River carries larger and more regular flows, with highly regulated flow regimes due to water diversions for irrigation and domestic purposes.

Part of the Lerderderg River within the AOI is listed on the Directory of Important Wetlands in Australia (DIWA)[5] and is also listed under the *Heritage Rivers Act 1992*. The DIWA listing primarily applies to the section of the river located in the Lerderderg State Park. The river is recognised under the *Heritage Rivers Act 1992* for the geological and geomorphological significance associated with the Lerderderg Gorge, scenic landscapes along the river and open and riparian forests. The Werribee River and Lerderderg River within the State Park have significant environmental value including supporting riparian habitat, nationally significant fish, threatened species and platypuses. The Lerderderg River also has a large number of tributaries, including Goodmans Creek which diverts water to Merrimu Reservoir.

This section of the AOI crosses the Moorabool River West Branch and Moorabool River East Branch, both high priority waterways with a moderate Index of Stream Condition score. The Moorabool River has a number of identified environmental values, include native fish, platypuses, known rare and threatened species, significant ecological vegetation classes and aquatic invertebrate communities. Moorabool River is highly regulated and contains a number of water storages, including Lal Lal Reservoir, which provide water for Ballarat as well as Geelong and Meredith. The Moorabool River and creeks also flow into the Moorabool Reservoir.

Water is valued for recreational activities in this section of the AOI including:

- Moorabool: swimming, fishing, kayaking and aesthetic enjoyment during camping and fishing.
- Werribee: aesthetic enjoyment during bushwalking, picnicking and walking, swimming, boating and fishing.
- Maribyrnong: swimming, boating, walking and fishing.

Existing water quality issues in the eastern section of the AOI include salinity, sediment, nutrient runoff and pathogens from stock access, as well as stormwater runoff in urban areas.

Major water storage reservoirs in this area include:

- Loddon: Deans Reservoir (104 ML).
- Barwon: Pincotts Reservoir (218 ML).
- Moorabool: Moorabool Reservoir (6,192 ML), Bostock Reservoir (7,360 ML) and Wilson Reservoir (1,010 ML).
- Werribee: Merrimu Reservoir (32,516 ML), Pykes Creek Reservoir (22,119 ML) and Melton Reservoir (14,360 ML).

The Werribee River provides critical water supply for the Werribee and the Bacchus Marsh irrigation districts, private diverters, and rural and urban areas. Melton Reservoir provides storage for irrigation water for the Werribee Irrigation District. Wilson Reservoir is connected to Ballarat's drinking water supply. Fishing occurs across many of the reservoirs and rivers within the AOI, with native and salmonid fisheries present, as well as commercial eel fishing in some areas. Bostock Reservoir is noted for its economic value, including a trout fishery and other angling.

Considerations for the project

A range of considerations have been identified for further investigation and management which will be addressed in the surface water impact assessment including:

- Potential impact on waterways from permanent or temporary waterway crossings including erosion, habitat, barriers to fish movement, flow changes and soil disturbance.
- Potential impact on water quality from construction activities including vegetation clearance and displaced subsoil.
- Potential impact on surface water hydrology including drainage lines, localised flooding, and runoff volumes.
- Potential for increased sediment loads or release of contaminants due to construction.
- Increased impervious areas associated with buildings, tower footings and access roads.
- Potential impact on storage volumes in floodplains.
- Towers located within potential flood areas may affect hydrological conditions and experience damage as a result of flooding.

Next steps

- Undertake an assessment of the potential impacts of the project through a flood behaviour review, field survey, runoff assessments, and identification of mitigation measures.
- Further landholder, community and stakeholder consultation.
- Prepare a surface water impact assessment, including proposed mitigation measures to manage any potential impacts. The impact assessment will inform the project design and be published as part of the EES. The EES will be an important source of information about potential project impacts for the community, landholders, decision-makers and as part of the approvals process.

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1. https://www.awe.gov.au/water/wetlands/publications/directory-important-wetlands-australia-third-edition
2. http://vro.agriculture.vic.gov.au/dpi/vro/vrosite.nsf/pages/landuse-water-supply-catchments
3. http://wcma.vic.gov.au/publications
4. https://www.water.vic.gov.au/water-reporting/third-index-of-stream-condition-report
5. https://www.awe.gov.au/water/wetlands/publications/directory-important-wetlands-australia-third-edition

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