

# Waterway Development Guidelines

*for Greater Bendigo*

Protecting and enhancing  
our region's waterways

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## Acknowledgement of Country

The City of Greater Bendigo is on Dja Dja Wurrung and Taungurung Country. We acknowledge and extend our appreciation to the Dja Dja Wurrung and Taungurung People, the Traditional Owners of the land. We pay our respects to leaders and Elders past, present and emerging for they hold the memories, the traditions, the culture and the hopes of all Dja Dja Wurrung and Taungurung Peoples. We express our gratitude in the sharing of this land, our sorrow for the personal, spiritual and cultural costs of that sharing and our hope that we may walk forward together in harmony and in the spirit of healing.

This publication may be of assistance to you, but the City of Greater Bendigo and North Central Catchment Management Authority and its employees do not guarantee that the publication is without flaw of any kind, or is wholly appropriate for your particular purposes and therefore disclaims all liability for any error, loss or other consequence which may arise from you relying on information in this publication.

## What are the Waterway Development Guidelines for Greater Bendigo?

The City of Greater Bendigo region is home to a number of rivers, creeks, wetlands and lakes (waterways) that are valued for their cultural, recreational and environmental attributes.

The Waterway Development Guidelines (guidelines) provide information regarding development works near waterways in the City of Greater Bendigo region. They are designed to allow those looking to build and develop land (i.e. large developers or first home buyers) near waterways to understand how close their developments can go near waterways.

The guidelines provide an outline of why waterway setbacks are needed,

how they are determined and provides examples of development that are compliant and non-compliant with these guidelines.

These guidelines have been developed to protect the region's waterways and to ensure they can be enjoyed by future generations. Additionally, these guidelines are to be used by the City of Greater Bendigo and North Central CMA staff members to ensure that consistent decisions are being made.

## Waterway Setback Guidelines summary

The City of Greater Bendigo and the North Central Catchment Management Authority (NCCMA) have a statutory obligation to protect the region's waterways. Together with Traditional Owners and various community groups, they are caretakers of **waterway health** in the Greater Bendigo region.

These guidelines provide a strategic approach to the management of **waterway corridors** and **riparian zones** affected by development proposals in the region in order to ensure that waterway health and public access are protected and enhanced.

Waterway corridors comprise the actual waterway, riparian zones and adjacent areas for vegetation management and

access. The setbacks define the area of land set aside to protect the riparian zone and adjacent buffer areas. These guidelines outline the **objectives** and **guiding principles** that are applied to determine the **setback width for infill** and **greenfield developments**.

**Setback implementation mechanisms** range from reserve creation to the implementation of planning permit conditions, building envelopes, easements or restrictions on title.

The standard setback width for infill developments has been determined as:  $\geq 30\text{m}$  from **top of bank**.

The infill width may be increased or decreased depending on existing **characteristics** or planning constraints.

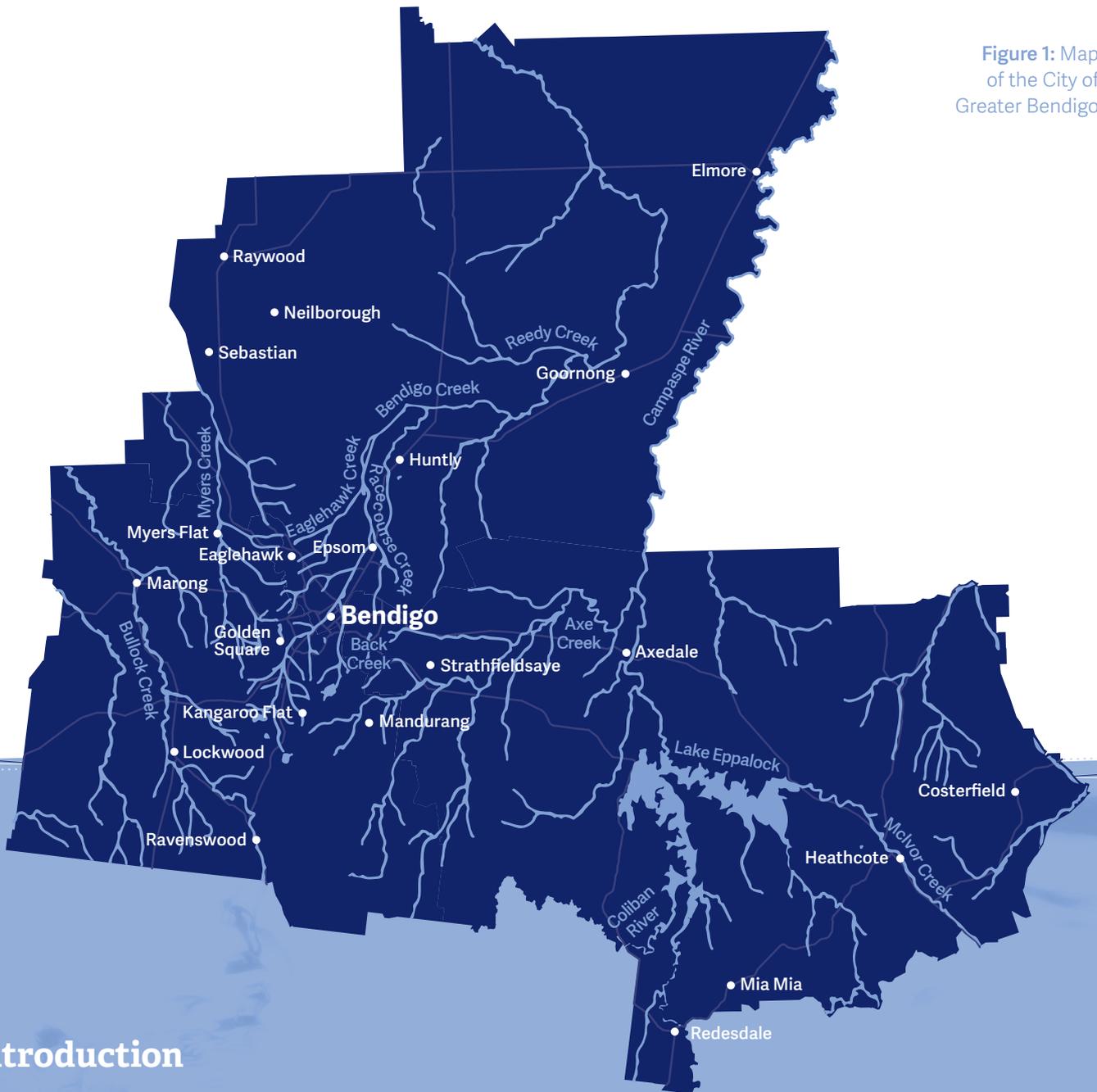
The standard setback width for greenfield developments has been determined as:  $\geq 30\text{m}$  from **top of bank**.

The infill width may be increased or decreased depending on existing **characteristics** or planning constraints.

There are permitted works and activities within the setback area, for examples cycle/pathways and detention basins. However, other elements like roads cannot be built within the setback. Setback areas also need to be protected from prohibited uses during construction activities on adjacent land.

Please refer to the guidelines for detailed information.

Figure 1: Map of the City of Greater Bendigo



## Introduction

The City of Greater Bendigo is home to a number of important rivers, creeks, wetlands and lakes (waterways) such as the Campaspe and Coliban Rivers, Bendigo and Bullock Creeks and Lake Eppalock and its smaller tributaries like Axe Creek, Back Creek, Eaglehawk Creek, Mclvor Creek, Myers Creek, Racecourse Creek and Reedy Creek.

As well as functioning as a connected system for the flow and drainage of water in the landscape, waterways and their surrounds are a major environmental and recreational asset which often hold particularly high levels

of cultural heritage significance. Waterway corridors are important reserves of biodiversity and provide valuable habitat for native fish, birds, amphibians and mammals.

Due to their very nature of providing vital water in the dry wider central Victorian landscape the richness of the natural environment along waterways offers unique opportunities in regards to passive recreation and contact with nature; a vitally important ingredient to the physical and mental health of the Greater Bendigo community.

The linear nature of waterways creates important links for animal and human movement through the urbanised, rural and natural landscapes within the broader Greater Bendigo region.

Waterways in the region have faced numerous threats since European settlement/colonisation. As a result, many of our streams are in poor or very poor condition and require careful management, particularly as urban development spreads.

Urbanisation represents both a challenge and an opportunity to improve waterway health and community wellbeing. The preservation, rehabilitation and restoration of riparian zones and streamside reserves in urban areas is essential for fulfilling the waterway health objectives as defined in the 2021-27 North Central Regional Catchment Strategy, the Greater Bendigo Planning Scheme and several of City of Greater Bendigo strategies.



Crusoe Reservoir and No. 7 Park, Kangaroo Flat

## Waterway health

The term *waterway health* refers to a balanced and manageable status of a waterway across environmental, social and infrastructure quality indicators.

Healthy waterways provide intrinsic natural amenity, deliver biosystem services, feature biodiverse riparian zones and contribute to community wellbeing. Waterways often hold particularly high levels of cultural heritage significance.

Even in degraded creek or river systems, waterway health can be restored through targeted management and riparian restoration. Protection of waterways through setbacks are not based on the current status of a waterway, but on the potential of a future restored system.

## Purpose of the guidelines

The City of Greater Bendigo and the North Central Catchment Management Authority (CMA), together with Traditional Owners and various community-based groups, are caretakers of waterway health in the Greater Bendigo region and have an obligation to protect the region's waterways

Population growth and urbanisation requires that appropriate provisions be made to ensure our waterways are protected and remain resilient under the pressures of urban development.

The Waterway Development Guidelines aim to create waterway corridors that protect, enhance and restore natural assets, allow management of waterways and its riparian zones and connect the community to the natural environment.

The guidelines provide a strategic approach to the management of waterway corridors and riparian zones affected by development proposals in the region. They define the minimum standards for waterway setback widths and outline the infrastructure and activities permitted within the setback zone. The guidelines will provide consistency and transparency in the planning permit process for referral authorities, the general public and developers.

These guidelines do not remove the requirement for detailed environmental assessment of waterways and their surrounding environments as part of the planning permit process.

## Statutory and strategic framework

The City of Greater Bendigo and the North Central CMA are two of the primary caretakers for waterway health in the Greater Bendigo region. The North Central Catchment Management Authority, as a statutory referral authority, has a responsibility to ensure development does not adversely affect the health of waterways.

The City of Greater Bendigo is the responsible authority for implementing the statutory planning framework (Greater Bendigo Planning Scheme) and for guiding the City's development as outlined in its strategic documents. For details on the statutory and strategic framework refer to **Strategies informing these guidelines** on page 15.

## What are waterway corridors and how do they relate to waterway setbacks?

### What is a waterway corridor?

A waterway corridor is the area taken up by the waterway itself, its riparian zones and public open space. It is a continuous area of land necessary to protect waterway function, and to preserve a robust waterway system that can mitigate and recover from detrimental processes such as floods. These corridors establish the optimum balance between river health, biodiversity, public open space requirements, asset protection and developable land requirements.

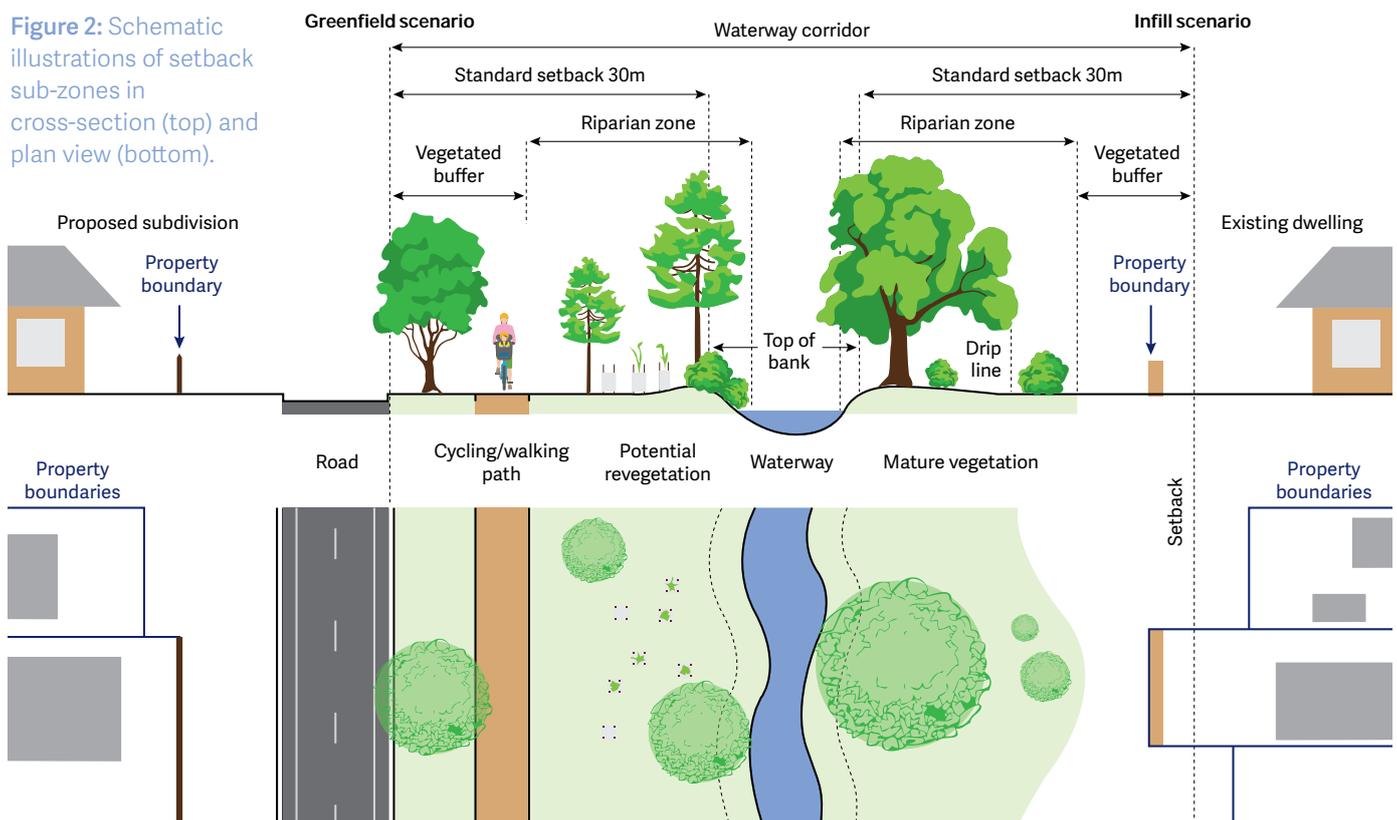
Waterway corridors are essential to waterway ecology, riparian zone health and environmental functions. They also provide public open space corridors which encourage human interaction with nature, particularly in urban environments, seen in Figure 2.

The size of the waterway corridor must reflect its core functions, including:

- Waterway management
- Protection and enhancement of biodiversity (aquatic and terrestrial)
- Access for maintenance purposes
- Access by residents for passive recreation and nature observation
- Vegetation management in close proximity to dwellings and drainage infrastructure

Waterway corridors should, if possible, be public open space. However, depending on the mechanism of protection (see Principles underlying the guidelines, page 9), the waterway corridor can extend into private property. The waterway corridor should also support a level of passive recreational use or some stormwater treatment elements.

**Figure 2:** Schematic illustrations of setback sub-zones in cross-section (top) and plan view (bottom).





Kennington Reservoir

## What is a setback?

A waterway setback is the area between the top of bank of the waterway and edge of the developable land. The dimensions of the waterway setback are determined through the planning permit and referral process.

A waterway setback relates to building and works restrictions, which are designed to protect waterway corridors.

The width of waterway setbacks required to meet the objectives of the corridors (see **Principles underlying the guidelines**, page 9) varies depending on the type of waterway (physical morphology, vegetation type, geologic setting etc.).

The minimum waterway setback widths specified in these guidelines are based on the best available science, are compatible with current legislation and are comparable to waterway corridor management in other jurisdictions such as metropolitan Melbourne.

The approach to calculating the waterway setback width at a location considers site specific factors such as environmental values, management access, recreational uses and/or landscape characteristics.

## How are setbacks created?

Waterway setbacks are created through the modification of title boundaries during the subdivision process or through conditions on planning permits which reserve the waterway corridor for specified purposes.

The City of Greater Bendigo is the responsible authority under the Greater Bendigo Planning Scheme. The North Central CMA is a statutory referral agency in this process and provides comments on planning permit applications as referred by the City of Greater Bendigo and has the power under the *Planning and Environment Act 1987* to require setbacks, reserves and/or easements for the purpose of drainage and waterway management.

The State Planning Policy Framework (Clause 14.02) identifies the minimum development setback to protect waterway corridors as 30 metres. However, a range of factors may require development to be located further from the waterway than specified by the minimum setback width (e.g. flood protection or the presence of highly sensitive flora and fauna). These factors are listed later in the document (see **Principles underlying the guidelines**, page 9).

In addition to the width of waterway setbacks, these guidelines also specify any controlled activities and infrastructure that can occur within the waterway corridors, which are described later (see **Waterway setbacks**, page 10).

## Waterway management

The riparian zone is important for channel bed and bank stability, water quality, and aquatic and riparian biodiversity. Assigning a waterway setback preserves areas of the riparian zone that protect or enhance native vegetation, river health and biodiversity. They also provide the potential for future stream and riparian remediation works to be undertaken as we strive for a more resilient natural environment.

## Riparian zones

### The role of functioning riparian zones

A riparian zone is the area between land and a river or stream that serve to moderate processes between the catchment and the waterway.

The makeup of riparian zones can vary considerably, and they represent an important transition zone between terrestrial and aquatic environments. They act as a buffer between processes occurring within the catchment and the adjacent waterways and often provide a barrier between urban developments and waterways. Vegetated riparian zones provide a range of waterway health functions, including:

- Provision of food and habitat for aquatic and terrestrial fauna
- Corridors for fauna movement along the waterway
- Refuge for fauna in developed landscapes and enhancing links between remaining habitats that would otherwise remain fragmented
- Stabilisation of channel banks against erosion
- Carbon sequestration and the improvement of soil condition
- Maintenance and improved water quality through filtering and nutrient cycling within the riparian zone and vegetated buffer zone
- Shading and maintenance of natural temperatures within waterways
- Reducing sediments and pollutants that reach waterways through overland flow
- A buffer between processes occurring in the catchment and the waterway
- Increased refuge for flora and fauna against climate change
- Recruiting large woody debris into the stream and for riparian habitat over the long-term
- Opportunities for human interaction with nature

Riparian zones often have more fertile soils, higher moisture levels and contain different plant species compared to nearby terrestrial habitats.



Due to these factors, riparian zones provide special chemical, physical and biological functions and provide a diverse range of habitats for aquatic and terrestrial organisms. These vital functions further highlight the important role they provide in maintaining healthy waterways and the need for their continued protection.

### Threats to waterways and riparian zones

Waterways and riparian zones face a range of threats to their important environmental function in urban environments. These threats highlight the importance of protecting and enhancing waterways and riparian zones where possible. Examples include:

- Vegetation removal for the construction of dwellings and infrastructure (roads, paths etc.). This represents the greatest risk to riparian zones and is the main cause for habitat fragmentation along waterway corridors
- Stormwater outlets, which during construction impact the root zone of vegetation, leading to a reduction in water quality and the health of riparian vegetation. If not installed correctly, stormwater outlets can also lead to increased stream erosion
- Inappropriate development can impose additional maintenance obligations on land managers (e.g. lopping overhanging branches) and therefore result in damage to the riparian zone even after the building/works are complete
- Encroachment of building and works, including impervious fencing which can affect vegetation root structure and limit the natural regeneration and spread of vegetation
- Exotic species, which in urban areas can proliferate due to the proximity of gardens and disturbed areas, leading to a change in the structure and function of riparian zones. This can cause waterways to become strangled by exotic vegetation
- Aesthetic perceptions of riparian zones as messy, leading to clearing or transformation with exotic vegetation or engineering. This can increase runoff and sedimentation, increase stream temperatures and destroy habitat
- Changes to waterway hydrology because of damming, concrete lining, and increased stormwater flows, leading to unnatural flow regimes, erosion, reduced water quality and a shift in the makeup of riparian vegetation community structure

## Objectives for determining setbacks and functional requirements

The objectives for waterway setbacks within the City of Greater Bendigo local government area are:

- To protect, enhance or restore waterway health and biodiversity
- To enable complementary use of waterways for recreational purposes and infrastructure (if appropriate) while maintaining primary waterway health, flood protection and biodiversity functions
- To provide effective flood protection
- To secure access for maintenance and future works to be undertaken
- To minimise the potential for conflict between protecting mature riparian vegetation and adjacent assets and properties



Bendigo Creek

## Guiding principles

The development of these guidelines is underpinned by the following:

- The minimum required waterway setback widths will be sufficient to minimise flood risk and reduce the potential for flood damage and allow for stream/floodplain interactions to occur
- The minimum waterway setback widths are required to maintain and improve waterway corridor health and are based on the best available science and riparian management practice in Australia
- The corridor provides sufficient width for planned and potential public open space functions and development
- The corridor provides sufficient space for vegetation management and maintenance access

Additionally, there are a range of considerations that support the guiding principles:

- The minimum required waterway setback varies dependent on the waterway type, level of development, location, social and environmental importance and development type (in line with strategic planning decision making process). This ensures that waterway corridors are at an appropriate spatial scale for the size and importance of a waterway in any given location
- Waterways do not need to have 'permanent' or 'flowing' water to be considered waterways under the *Water Act 1989*. Therefore, intermittent waterways are also considered 'waterways' for the purpose of these guidelines
- The minimum waterway setback widths also consider the scale of vegetation required to provide robust and self-sustaining riparian vegetation communities over the long-term. Narrow waterway corridors require high levels of maintenance, are prone to weed invasion and do not provide the minimum spacing requirements for riparian trees
- The waterway setbacks will be no wider than necessary to accomplish the stated purpose

## Waterway setbacks

Waterway setbacks will be applicable to all designated waterways, which can be named or unnamed, permanent or seasonal, and range in size from a river to a natural depression. Designated waterways are declared under Section 188 of the *Water Act 1989*. The status of designated waterways is not static and can change following a waterway determination by the relevant rural water authority.

For further information on designated waterways please contact the North Central CMA floodplain team. An example of a waterway setback can be seen in Figure 3.

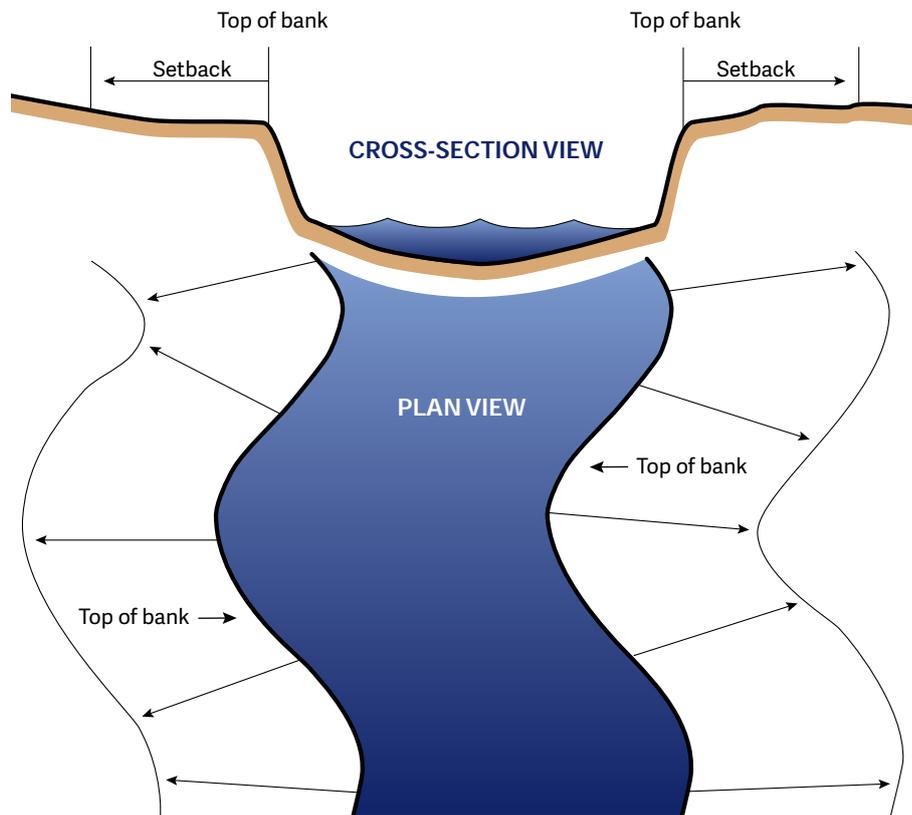


Figure 3: Visual representation of waterway setbacks on both sides of a waterway.

### Waterway setbacks implementation mechanisms

A waterway setback can be implemented through the following planning mechanisms. The type of mechanism used will vary on a case-by-case basis.

**Reserve creation** relates to the formal transfer of land from private ownership to government ownership, thereby creating a setback between the waterway and private property. Reserve creation only occurs as part of the subdivision process and is not relevant to all subdivisions.

Reserve creation is the preferred mechanism for creating setbacks as this permanently sets aside the land in public ownership and allows for broad-based management of water health in perpetuity.

**Building envelopes** set design parameters for development on a lot and restrict where dwellings and/or outbuildings can be placed.

**Planning permit conditions** can be used to apply waterway setback requirements that must be adhered to in order to fulfil the conditions of a planning permit.

**Easements** apply to an area of land, or part of an allotment, reserved by law

to allow provision of common state or municipal controlled infrastructure for a specific purpose. Waterway easements can be used to limit development near waterways and may allow the land to be used for water treatment or pathways. Easement creation only occurs as part of the subdivision process and is not relevant to all subdivisions.

**Restriction on title** regarding permitted works and buildings can create setback distances and these restrictions are not lost through a transfer of title. Restriction on title are primarily used for subdivision or when creating new lots after rezoning.

### Determining waterway setback width

The setback widths in these guidelines have been defined following a comprehensive review of waterway management science in Australia and worldwide<sup>1-6</sup>. For the purpose of the guidelines, development scenarios are split into two types:

1. Infill developments
2. Greenfield developments

These development types have different characteristics and are assessed separately. Further explanation is provided on the following pages.

The reference point for measuring setbacks is generally the top of bank (break of slope from the waterway bank to surrounding land) of the waterway, shown in Figure 4 (below). In some cases, top of bank may not be easily defined, and an alternative reference point will be required. The North Central CMA will provide further direction on how to determine and locate the reference point at specific sites as required.

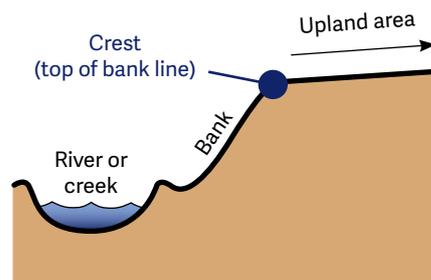


Figure 4: Visual representation of the top of bank of a waterway

## Standard setback widths for infill developments

Infill developments can often be complex and constrained by planning controls and available space. These considerations have been taken into account when developing these guidelines. The State Planning Policy Framework (Clause 14.02), the Greater Bendigo Public Space Plan and the Bendigo Local Floodplain Development Plan all recommend a minimum 30-metre building setback from waterways is required. Furthermore, scientific literature identifies that for riparian zones to be effective and provide their environmental benefits, a 30-metre vegetated buffer is required<sup>1-3</sup>.

### The starting point for an infill setback is 30 metres

The waterway setbacks widths presented within these guidelines are the standard widths to be adopted for all future infill developments. However, there can be circumstances where the minimum standard waterway setback width is not appropriate and specific investigations are required. The setback may need to be greater or narrower to account for localised specific site values, characteristics and/or constraints.

The preference of the City of Greater Bendigo and North Central CMA is for the corridor width to remain as consistent as possible, avoiding narrow sections that create barriers to fauna movement, negatively affect waterway function or reduces access to public open space. However, the creation

of variations is intended to provide some flexibility when designing the layout of infill developments around the waterway corridor. The following points outline examples of how setback distances may be varied from the standard 30 metres.

#### Setback width: $\geq$ 30m

##### Typical characteristics to increase setbacks above 30 metres:

- The site contains high-value geomorphic or geological features or assemblages that may be negatively affected by setting inadequate waterway corridor widths (e.g. backwaters, rocky outcrops or escarpments)
- A site has been determined by the North Central CMA to contain significant local or regional waterway values
- The site has existing large areas of existing riparian vegetation, which acts as habitat for high-value plants or animals
- There are large trees (20 metres+ height) which provide significant habitat value, but can represent a risk to property by falling or limb failure
- The site acts as a habitat corridor or has the potential to connect to other remnants of riparian vegetation nearby
- Where built assets require protection from potential future channel migration (especially important in areas with highly erodible soils)

- There is the presence of highly erodible soils
- The site is in a potable water supply catchment area and has the potential to negatively impact the quantity and quality of water
- Protection of sites or features of cultural heritage
- A waterway reach requires greater levels of protection to ensure significant upstream or downstream values are protected
- Along rivers or major waterways (e.g. Campaspe River)
- There are additional open space requirements (e.g. for a local parkland)

#### Setback width: < 30m

##### Typical characteristics to reduce setbacks to below 30 metres:

- Planning constraints including established development setbacks
- Existing physical/practical constraints such as:
  - roads occurring between property and the waterway
  - the dimensions of a lot or street block
  - intensity of the development
- Proximity of adjacent, existing structures to waterway taken into consideration

Each application will be assessed on a case-by-case basis by the City of Greater Bendigo and the North Central CMA.

### Infill development case studies

Case studies for infill and greenfield subdivisions have been developed to provide examples of compliant and non-compliant developments. Two case studies for each development type are provided and they outline the aspects of the developments that are consistent with these guidelines and those that are not. The case studies should help explain how the guidelines are to be viewed for each development type.

#### Example 1 - compliant

The construction of a dwelling in Example 1 provides an example where an appropriate setback was used for an infill development. The dwelling is next to Back Creek and the area is subject to flooding.

Nearby dwellings and associated outbuildings are within 10 metres of Back Creek and there are large mature riparian trees (20 metres in height) lining the waterway. The characteristics of this development that are compliant with these guidelines include:

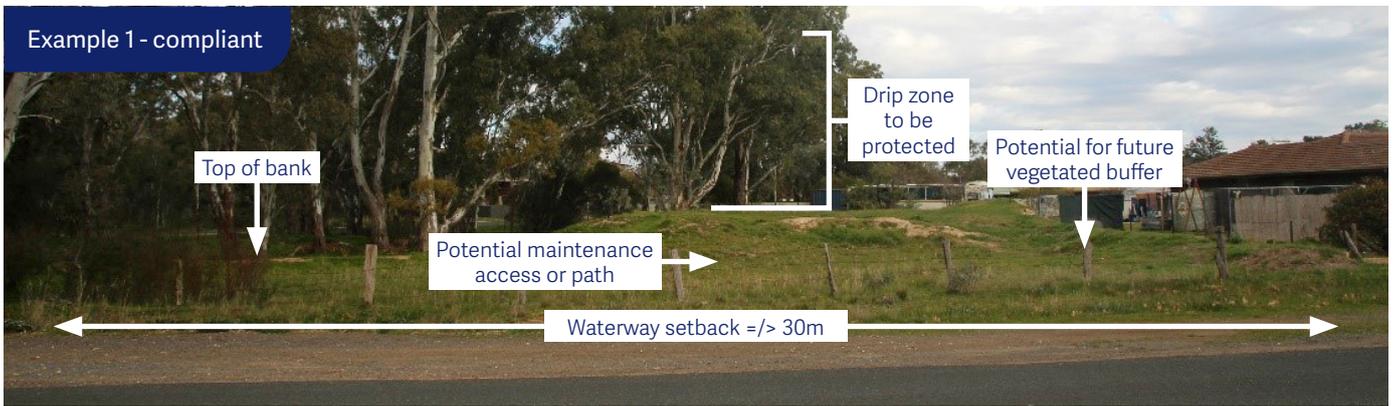
- Setback 30 metres from the top bank of Back Creek
- Setback outside the drip line of large mature trees
- Allow the creation of large open space (waterway reserve) that can be utilised in the future

#### Example 2 - non-compliant

A two-lot subdivision in Kangaroo Flat provides an example of where appropriate setbacks have not been achieved and are non-compliant with

these guidelines. This subdivision is adjacent to Bendigo Creek and nearby dwellings and outbuildings are within 10 metres of the creek and there are large mature riparian trees (20 metres in height). The following characteristics outline why this development is not compliant with these guidelines:

- The plan approved a dwelling to be constructed within 15 metres from the top bank of Bendigo Creek
- Development is within the drip line of large riparian trees
- There is limited space for future rehabilitation or revegetation along Bendigo Creek
- There is limited space for safe public access



## Standard setback widths for greenfield developments

An appropriate waterway setback will provide a balance between achieving waterway health and biodiversity objectives, providing for recreational and visual amenity, connectivity and maximising developable land. The following outlines waterway characteristics to help determine an appropriate setback distance. These characteristics will be assessed on a case-by-case basis and the characteristics below will inform the outcome.

### The minimum setback width for greenfield developments in the City of Greater Bendigo region is 30 metres but can be extended to a width in excess of 50 metres, if the local characteristics require

**Setback width:**  $\geq 30\text{m} - 50\text{m}$

#### Typical characteristics to increase setbacks above 30m:

- Waterway bordered by riparian vegetation in excess of 30m
- Waterway channel is natural
- Waterway corridor acts as a habitat corridor
- Presence of shared pathways along the waterway
- Presence of water sensitive urban design infrastructure
- Cultural heritage values
- Existing riparian vegetation features tree species that could place the adjacent properties at risk of damage from falling trees, when mature
- Potential to provide connectivity to other vegetated reaches along the waterway

**Setback Width:**  $\geq 50\text{m}$

#### Typical characteristics to increase setback above 50m:

- Cultural heritage values
- Domestic water supply storage
- High-value habitat corridor
- Habitat for high-value plants or animals
- Presence of rivers or major waterways (e.g. Campaspe River)

Other considerations may dictate a greater setback, for example if the 1% Annual Exceedance Probability (AEP) flood extent exceeds the standard waterway corridor width defined in these guidelines, then the setback will be defined by the flood extent.

It may be possible to adjust the setback line in order to create a variable setback width where the minimum setback is 20 metres from top of bank. The overall area set aside for the setback needs to result in an average setback width of 30 metres. This will only be considered provided environmental assets or built

assets/infrastructure are not at risk and there is no net loss in the total waterway corridor width and waterway functionality.

Interface between waterways and development is an important consideration in greenfield developments. It is imperative that developments are designed to ensure that houses are facing waterways and are not turning their backs on the waterways and are being screened off by impermeable fencing. Ideally new greenfield developments will have streets located between waterways and dwellings; outside the setback.



### Greenfield subdivision case studies

The Imagine Estate subdivision in Strathfieldsaye provides a good example of an appropriate waterway setback for a greenfield development and is consistent with these guidelines. The subdivision is a multi-stage development adjacent to Emu Creek and Sheepwash Creek, which has allowed native vegetation to be maintained, limited encroachment into the waterway and created an open space that allows the public to interact with the waterway corridor.

The characteristics of this development align with these guidelines due to:

- Houses are set back more than 30m from the top bank of the waterways
- Houses are facing the waterway and have a road between them and the waterway
- Houses are outside the flood extent
- Houses are built outside the impact area of mature riparian vegetation
- Pathways for the most part are set back a minimum of 10m from the top of bank of the waterways
- Effective urban design that embraces the natural environment and treats stormwater on site in a treatment wetland

#### Example 4 - non-compliant



#### Example 4 - non-compliant

A subdivision in Kangaroo Flat provides an example of where appropriate setbacks have not been achieved and would not be non-compliant with these guidelines. This subdivision is adjacent to Bendigo Creek and has allowed considerable encroachment into the waterway corridor.

This development was completed some time ago, it is not compliant with current best practice and these setbacks would not be supported today.

The following characteristics outline aspects of this development that are not compliant with these guidelines:

- As part of the subdivision, houses were permitted to be built within 10 metres of Bendigo Creek
- Houses were built within the impact area of mature riparian trees
- The pathway is within two metres of Bendigo Creek
- The road is within 10 metres of Bendigo Creek
- Limited space for future rehabilitation or revegetation along Bendigo Creek
- Limited opportunity for quality open space to be created for use by the public

## Permitted works, infrastructure and activities within the waterway setback zone

A number of works, infrastructure and activities are permissible within the waterway corridor provided they do not obstruct the primary waterway and riparian functions. These include:

**Cycleways and paths** no wider than 3 metres and in general no closer than 15 metres from the top of bank should not compromise existing mature riparian vegetation.

**Roads** cannot be built within the 30-metre waterway setback, the back of kerb can form the outer edge of the setback zone.

**Detention basins** can be no closer than 10 metres from the top bank of the waterway.

**Treatment wetlands** in modified waterways, can be situated in-stream. For non-modified waterways, treatment wetlands are allowed no closer than 10 metres from the top bank of the waterway.

**Stormwater outlet structures, crossings and essential services** can be in the waterway setback zone but must be designed to minimise environmental damage. These works will require a Works on Waterways permit.

## Prohibited use of setbacks

During development of infill and greenfield developments the setback area cannot be used for parking or storage and the condition of the setback area must be protected and maintained. The setback area cannot be used to store fill or spoil waste during the earthworks phase, nor any other activities that may degrade the condition of the environment. Failure to comply with these requirements may result in infringement notices and fines.

## References

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6. O'Toole, P., Chambers, J. M. & Bell, R. W. (2018) Understanding the characteristics of riparian zones in low relief, sandy catchments that affect their nutrient removal potential. *Agriculture Ecosystems & Environment* 258: 182-196.

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## Strategies informing these guidelines

- [Greater Bendigo Planning Scheme](#)
- [Bendigo Local Floodplain Development Plan, February 2018](#)
- [Greater Bendigo Public Space Plan, June 2019](#)
- [Greening Greater Bendigo, May 2020](#)
- [Greater Bendigo Draft Climate Change and Environment Strategy](#)
- [2021-27 North Central Regional Catchment Strategy](#)

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