Guide to Watercourse Protection

Background

Native forest operations in Queensland are regulated to prevent and minimise watercourse disturbance such as:

- Sedimentation.
- High turbidity.
- Degradation of watercourses.
- Vegetation and soil disturbance.
- Offsite impacts on flora, fauna, ecosystems, and the community.

Watercourses are protected under a range of environmental legislation including (not limited to):

- *Environmental Protection Act 1994 (Qld)*
- *Environment Protection and Biodiversity Conservation Act 1999 (Cwlth) [EPBC]*
- *Water Act 2000 (Qld)*
- *Environmental Protection (Water Policy) 2009 (Qld)*
- *Code of practice for native forest timber production on Queensland's State forest estate 2020.*

Watercourse protection includes managing forests sustainably for certification standards including:

- Maintaining biodiversity
- Forest ecosystem health
- Soil and water resources.

The QPWS Code

The Code of practice for native forest timber production on Queensland's State forest estate 2020 (QPWS Code) is the core watercourse protection document for native forest operations in Queensland.

The QPWS Code refers to various operational schedules that are relevant to watercourse protection.

Schedule 3: Watercourse protection is the primary schedule referenced here**.**

All page references used throughout this document are for the QPWS Code

Acknowledgments
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Understanding Watercourse Management

Watercourse protection is a keystone - it is required to protect and manage other ecosystem elements including soil and vegetation.

The QPWS Code is based on the concept of a Watercourse Protection Zone (WPZ) for the following watercourses:

- Streams
- Gullies (U-shape and V-shape)
- Waterways
- Water features

Objectives

The objectives of the watercourse protection guide are to:

- Minimise harvest impact on watercourses by providing reduced access to vegetation buffers and filters on identified watercourses
- Maintain water quality
- Reduce the risk of harvesting activity causing elevated erosion
- Provide clarification and examples on the interpretation of the QPWS Code
- Provide a central supporting document for industry

Working Near a Watercourse?

Follow the 4 Steps outlined in The QPWS Code to apply the Watercourse Protection Zone

Found on page 27

1. Classify the watercourse type

2. Find minimum protection

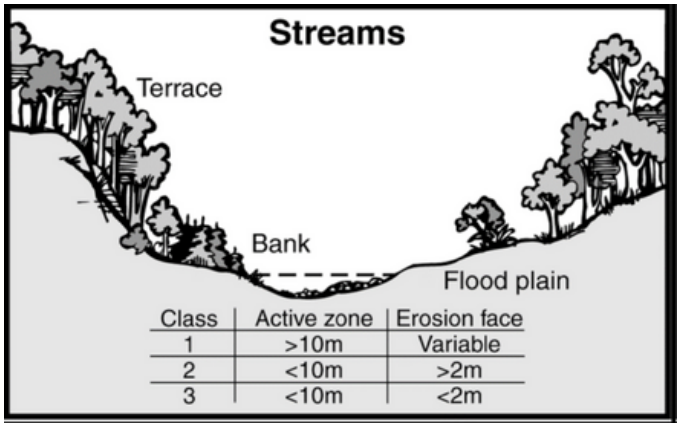
3. Consider the situation (current and future)

4. Apply protection

Step 1
Classify the Watercourse Type

Streams [pg 29]
Rivers and creeks with distinct beds and banks, a channel or braided channel. Terraces, flood plains, and chains of waterholes may also be present.

- Stream 1: greater than 10m active zone
- Stream 2: less than 10m active zone



Class	Active zone	Erosion face
1	>10m	Variable
2	<10m	>2m
3	<10m	<2m

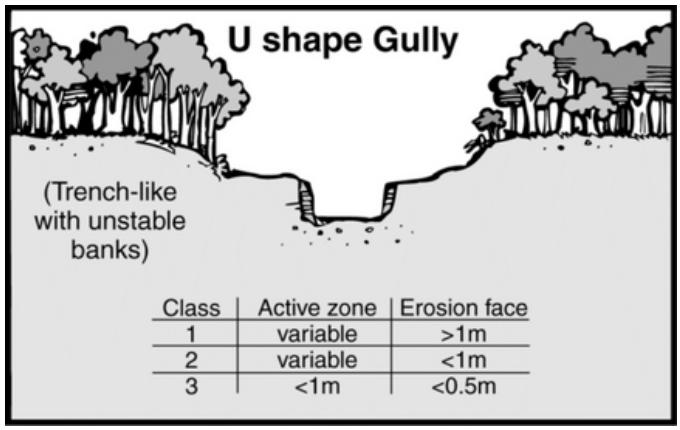
- Vegetation characteristics present
- Flow may be permanent, semi-permanent, intermittent, or limited to periods after heavy rain


State of Queensland, 2022

Classifying waterways can be open to interpretation

U-Shaped Gullies [pg 29]
U-shape gully bed and banks are clearly defined with at least one steep bank and clear evidence of soil erosion.

Gullies can be ongoing or broken.



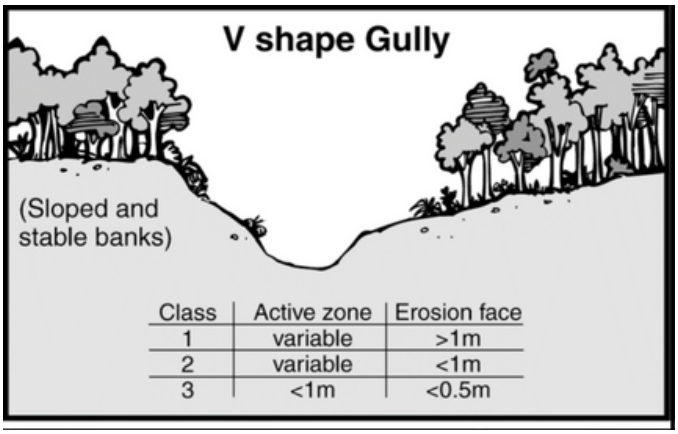
Class	Active zone	Erosion face
1	variable	>1m
2	variable	<1m
3	<1m	<0.5m

- Typically more trench-like
- Undercutting may be visible
- Often unstable
- Topsoil and subsoil are equally prone to erosion
- Impacts a larger surface area
- Vegetation is less likely on banks
- Greater restrictions on forest operations

V-Shaped Gullies [pg 29]

V-shaped gullies have clearly defined beds with at least one steep bank and clear evidence of soil erosion.

Gullies can be ongoing or broken.



Class	Active zone	Erosion face
1	variable	>1m
2	variable	<1m
3	<1m	<0.5m

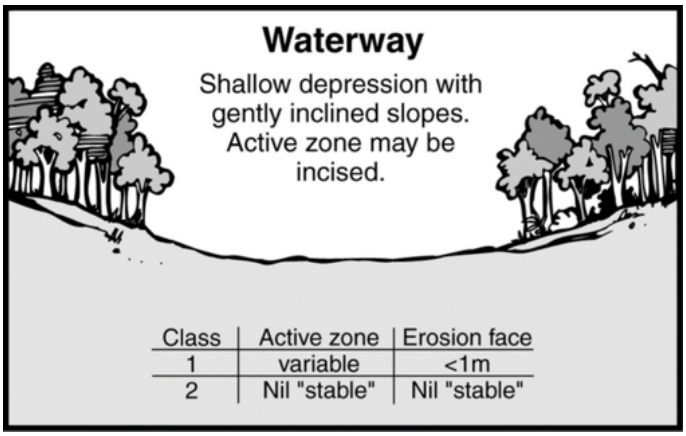
- Typically more stable and not undercut
- Topsoil is more prone to erosion than subsoil
- Slumping can be present
- Higher water velocity in 'v'
- More likely to have vegetation
- More forest operations allowed

Remember:
Watercourse classifications can change.

Waterways [pg 29]

Dish-shaped, gently inclined, shallow, and open depressions.

May be difficult to see due to seasonally waterlogged.



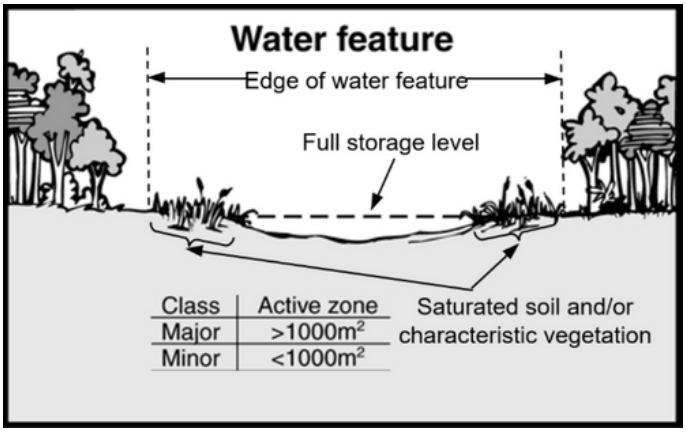
Class	Active zone	Erosion face
1	variable	<1m
2	Nil "stable"	Nil "stable"

- Active zone is vegetated
- Seasonally waterlogged
- Often holds water after rain

Water Features [pg 30]

Natural or artificial waterholes, impoundments, wetlands, springs or soaks. There are two water feature classes.

- Major Water Feature area greater than 1,000m2
- Minor Water Feature area less than 1,000m2

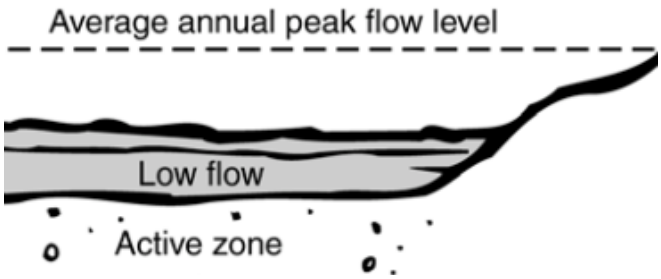


- Water feature is measured from the beds and banks or the full storage level
- Vegetation and flora and fauna debris present in absence of surface water
- Seepage, soaks, and springs eviden
- Soil conditions show prolonged water saturation
- May need to refer to S.3.3.1 Wetlands

Average Annual Peak Flow [pg 86]

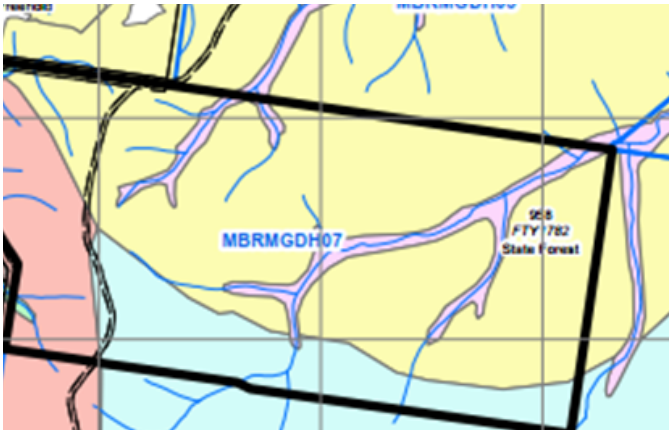
Watercourses can be measured against the average annual peak flow, meaning the highest peak and the average watercourse flow.

The peak flow level may be visible by benches, laminations, scour or deposition, or the interface between annual and perennial vegetation.



Mapped Watercourses

Where known, watercourses are demonstrated on Operational Harvest Plans (OHPs). DAF uses spatial layers to identify and display known watercourses on maps. Note: There can be errors in watercourse locations. Always inspect on the ground to find watercourses.



Marking Watercourses

Where tree marking occurs, trees located within or bordering the watercourse protection zone (WPZ) will be marked with red paint (or marked otherwise).

Key Indicators of Watercourses [pg 87]

Use the following key indicators to assist with classifying watercourses.

Active zones – deposited material including silt, stone and scouring.

Characteristic vegetation on stream bank – tea trees, river red gum, forest red gum, yapunyah.

Characteristic vegetation on stream bed – dead aquatic vegetation, water couch, rushes and sedges.

Other characteristics - springs, damp soil/mud, soaks, evidence of animal traffic.

Step 2
Find the Minimum Watercourse Protection Zone (WPZ)

Protect watercourses by applying **Watercourse Protection Zones** (WPZ).

A WPZ is a protected and/or minimal impact zone adjacent to a classified watercourse. The watercourse does not have to carry water on a permanent basis to become a WPZ.

A WPZ consists of a **buffer** and a **filter.** **Min Setback + (Buffer + Filter) = WPZ.**

The WPZ is taken from the **minimum setback** - this is minimum exclusion from the defining bank.

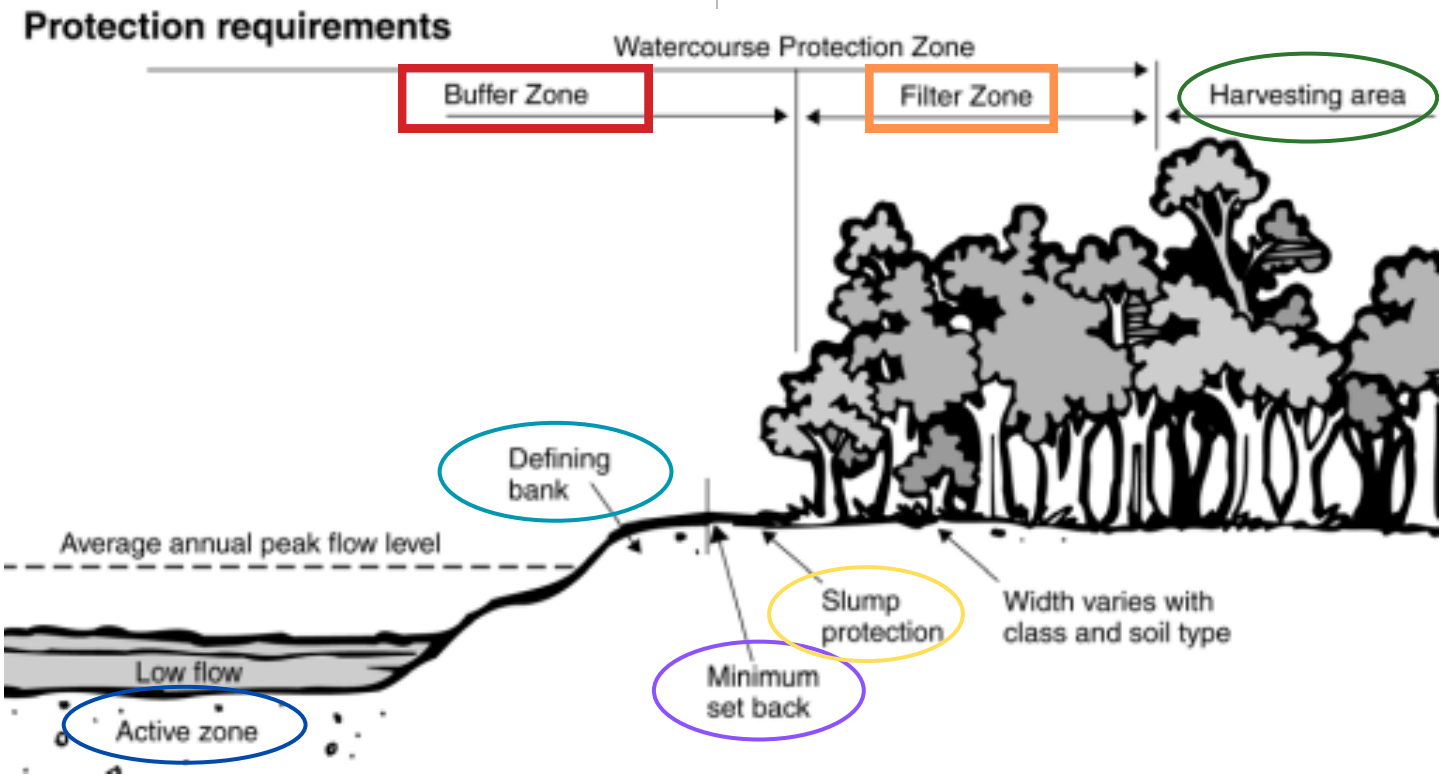
The **defining bank** is the bank or, if no bank is present, the active flood plain point.

The Buffer [pg 27]

The buffer is essentially an exclusion zone designed to fully protect the vegetation, beds, and banks of the watercourse.

The buffer:

- Is a no harvest, no disturbance zone
- Includes setback and slump protection
- Can only be accessed via a designated crossing [pg 54]
- Does not permit machines working adjacent and alongside a watercourse bank
- Has other activities allowed on V-shaped gullies and waterways [pg 35]



The Filter [pg 27]

The filter allows limited harvest/ operation opportunities by rubber tyre machines.

The filter aims to fulfill a filter function, meaning minimal disturbance and avoidance of compaction and erosion.

Trees may be harvested in the filter using a walkover technique, and are subject to:

- Directional fall away from the filter zone
- No earth disturbance to extract the log
- Harvesting debris must be removed
- Log extraction machinery does not enter the filter to extract a log
- Crossing only at designated crossings (all machines)
- High saturated soil level

Slump Face (pg 32)

A **slump face** is a near vertical active erosion face in a stream or gully - protection is 3 times the size of the height of the slump. This needs to be considered in WPZ calculations.

Head Scarp [pg 32]

A **head scarp** is the head of a gully or nick point in a gully erosion face. This needs to be considered in WPZ calculations.

The head scarp protection zone is a no machine and no disturbance area. **This protection zone is added to the buffer and filter.**

General Harvesting Area

A **general harvesting area** permits opeations as it does not have a watercourse.

- Conduct operations adhering to other requirements of The QPWS Code
- No WPZ restrictions
- Avoid soil disturbance
- Avoid diverting water into the filter and buffer

Active Zone [pg 30]

When calculating the WPZ, consider the active zone:

- Erosion face (greater than 10cm)
- Scouring area greater than 1m wide

Step 3
Consider Your Situation (when applying the WPZ)

Assess your current and future situation and determine whether you're going to create disturbance during forest operations.

The watercourse type (step 1) determines the measurements of the WPZ (step 2).

***Remember**: the WPZ is Minimum Setback + (**buffer + filter**)*

Wetland Protection Requirements (pg 33)

In additional to the WPZ, if you are working around a wetland water feature you need to

- Retain all trees (<60cm) within the wetland, for a distance of 30m from defining bank (high water mark).
- Apply additional protection for high impact earthworks.

What is Disturbance On Watercourses?

- Pushing soil or debris into watercourses
- Felling trees into the WPZ and causing impact to the waterway and vegetation
- Not using the correct material to construct new road crossings, major and minor snig tracks
- Offsite impacts - sediment run off, dust, poor drainage, oil and fuel spills
- Not managing the surrounding area to avoid offsite impacts or erosion
- Leaving debris in the watercourse or within 2 metres.

Other Considerations

When determining whether you need to enter or apply a WPZ, consider:

- Are the trees marked within the WPZ?
- Is it a commercial/quality tree located within the WPZ?
- Can I fell the tree away from the WPZ?
- Do I need to cross the waterway or is there another way?
- Is it worth risking potential disturbance within the WPZ?

Think of **minimal impact,** what can I do to prevent impact on watercourses by using WPZs and therefore protecting soil and water?

Vegetation and soil are critical in maintaining a healthy and stable watercourse and environment.

Step 4
Apply Protection

Rules of Thumb

Rules For Applying the WPZ

- DAF apply highest level of soil erodability (High 5-7).
- WPZ is measured from the full storage level, or beds and banks.
- The defining bank will be the point where the forest ground falls away into the watercourse.
- If you apply a WPZ (filter and buffer) to one side of the waterway, then apply to both sides.
- Where gullies and waterways have slumps or head scarps, apply the greatest protection buffer.
- Streams only have slump protection.
- If the bank is unstable, apply U-shaped gully protection.
- Protection of U-shape gullies includes slump and erosion face height together.
- If the gully head scarp is less than 2m high, then the buffer is automatically 5m. For over 2m high, apply the calculation using the provided calculator (see "*WPZ Calculations Ready Reckoner*")
- Head scarp protection is additional to the WPZ.
- If tree marking occurs, red paint is used to mark WPZ.

Use the supporting documents developed by Timber Queensland to assist you in determining your WPZ requirements and calculations:

- Watercourse Protection Calculator
- WPZ Calculations Ready Reckoner

Rules For Machines

- Avoid excessive soil disturbance.
- Avoid diverting water into the WPZ.
- Target natural gaps during operations.
- Slope limits may exclude areas from the buffer and filter zone.
- Remove harvesting debris from buffer zone, with minimal disturbance.
- When working in the filter zone, fall trees away from the buffer zone.
- If there is erosion (active zone), don't disturb or cross.
- If crossing is allowed, use log corduroy.
- No tracked machines in the buffer or filter.
- Crossings must be minimum of 10m from head scarp protection zones.
- Felling can occur in filter zone, if minimal disturbance.

Minimum Distances From the WPZ for the Following:

- Landing and snig track drainage = 10m.
- Road drainage = 20m.
- Fuelling, fuel storage and waste disposal =40m [pg 36].

Remember, document your decisions and if you are unsure, always ASK!