

Drainage feature protections

This factsheet provides guidance for current Private Native Forestry (PNF) Plan holders and contractors on managing drainage features under the PNF Codes.

How do the PNF Codes protect drainage features?

The PNF Codes of Practice (PNF Codes) outline drainage feature protections to mitigate soil erosion and water pollution by limiting forestry operations in riparian zones. The drainage feature protections in the PNF Codes (Section 8.4) details the riparian exclusion zones that apply for each Code. These riparian exclusion zones and drainage protections apply based on the type and hierarchy of the drainage feature.

How are drainage features defined under the PNF Codes?

A drainage feature is a drainage depression, drainage line, stream, river or watercourse.

A drainage line is a channel down which surface water naturally concentrates and flows. Drainage lines exhibit one or more of the following features which distinguish them from drainage depressions:

- evidence of active erosion or deposition, e.g. gravel, pebble, rock, sand bed, scour hole or nick point and/or
- an incised channel more than 30 centimetres deep with clearly defined bed and banks and/or
- a permanent flow.

Deposition means the laying down of solid material which has been eroded and transported from a distant part of the land surface.

A stream, unmapped or mapped, is defined as an incised watercourse with a defined channel, bed and banks and minimum depth of 30 centimetres. Stream orders are determined according to the Strahler System (see Figure 1).

A prescribed stream is a stream listed in the Major Rivers database of the Assessment Methodology database available at the DPE webpage found at [Major Rivers Database | NSW Department of Planning & Environment](#)

What is Strahler stream order?

Catchments are comprised of a branching network of drainage features. Strahler stream order is a method to describe a stream's hierarchy in a catchment based on the confluence (joining) of streams. Higher stream orders are typically larger streams and therefore have greater protection under the PNF Codes.

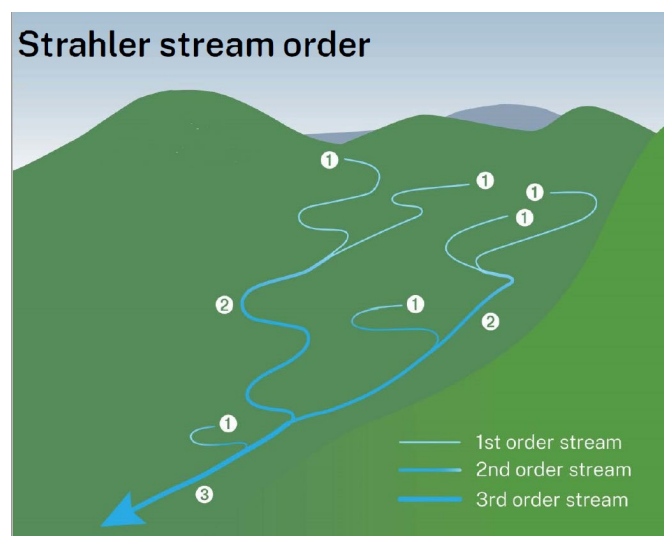


Figure 1: Strahler stream order.

How can I identify drainage features and stream order within my PNF Plan?

Upon approval of a PNF Plan, LLS will provide forest managers with relevant digital information including mapped drainage features.

Not all drainage features appear on maps, and as such, you should be aware of unmapped drainage features in your PNF Plan area and apply the relevant riparian exclusion zones as per the PNF Code.

What is a Riparian Exclusion Zone?

Riparian exclusion zones are areas adjacent to drainage features where forestry operations are not permitted (see Figure 2). Riparian exclusion zones extend from the banks of the drainage feature out to the distance specified in the PNF Codes.

All forestry operations are excluded from riparian exclusion zones, except where specifically permitted for drainage feature crossings and road construction or maintenance.

Harvesting machinery must not enter riparian exclusion zones, except at designated crossings or where otherwise allowed by the PNF Codes (for example, see 'Accidental felling' on this page).

How do I apply riparian exclusion zones to my forest?

Marking riparian exclusion zones

Riparian exclusion zones must be clearly marked on your Forest Management Plan Map and communicated to all people involved in the forestry operation. It is recommended riparian exclusion zones are clearly marked in the forest ahead of forestry operations and remains visible throughout the operation.

Measuring riparian exclusion zones

Riparian exclusion zones are measured from the top of the defined bank of the drainage line or stream or where there is no defined bank, from the edge of the channel of the drainage feature for the distance specified in the PNF Code.

Directional felling

Trees must not be felled into a riparian exclusion zone, unless it is accidentally felled. Where harvesting is occurring in or adjacent to riparian exclusion zones, all tree felling must employ directional felling to minimise disturbance to drainage features (see Figure 2).

Accidental felling

If a tree is accidentally felled into a riparian exclusion zone, the tree may only be removed if:

- disturbance to soil, groundcover and native vegetation is limited to the minimum extent necessary,
- harvesting machinery is limited to the outer 5 metres of the riparian exclusion zone,
- harvesting machinery that enters the riparian exclusion zone to retrieve the tree or part of the tree uses walkover techniques, and
- following the tree's removal, any soil disturbance or furrows are treated to prevent concentration of water flow or soil movement to help restore the natural pattern of overland flow and protect soil from accelerated erosion, and

Any removal of an accidentally felled tree must be recorded in the Forest Management Plan within 10 days.

Roads and crossings

New roads and crossings may be constructed and old roads and crossings re-opened within riparian exclusion zones provided that:

- the road or crossing is identified in the Forest Management Plan;
- the road prism or crossing intersects with the riparian exclusion zone at right angles or as close to right angles as is practicable;
- clearing and disturbance within the riparian exclusion zone are minimised; and
- any other necessary permits have been obtained.

Please note: the PNF Codes include prescriptions for the construction and maintenance of roads, road drainage, and roads crossing drainage features.

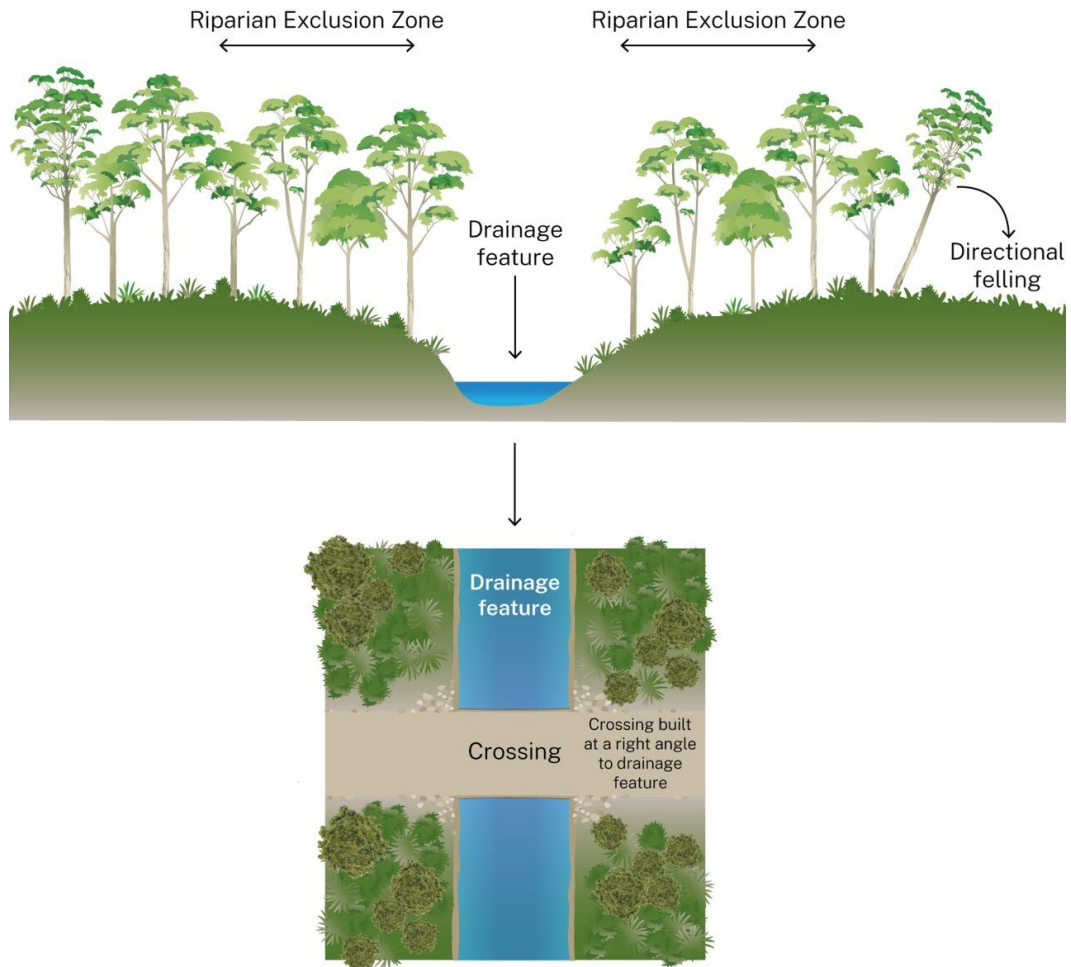


Figure 2: Riparian exclusion zones and directional felling (top) and drainage feature crossing (bottom)

Further resources

[Major Rivers Database | NSW Department of Planning & Environment](#)
[What is a controlled activity? | NSW Natural Resources Access Regulator](#)

We're here to help

Find us online: [nsw.gov.au](https://www.nsw.gov.au)

Call us: 1300 795 299 and ask for an officer to advise you on Farm Forestry

Email us: pnf.info@nsw.gov.au

See us: drop into your nearest Local Land Services office

Information in this fact sheet refers to Private Native Forestry approvals under Part 5B of the LLS Act.