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Review of *Guideline 9: Rural land uses and water quality* of the National Water Quality Management Strategy

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## Forward

The National Association of Forest Industries (NAFI) appreciates the opportunity to present our views and recommendations regarding the NWQMS Contact Group of *Guideline 9: Rural land uses and water quality – a community resource document – 2000*.

NAFI fully supports the development of water policy underpinned by fair and equitable treatment of rural water users. Water quality management is inextricably linked with Australia's forest industry, both plantation and review native forests, as well as value adding infrastructure and business that supports these production forests.

This review paper provides comment to broad and high level parameters of Guideline 9 from the perspective of forest industries. The NAFI review also provides technical comment related specifically to the guideline's content, which in some instances unfairly singles out forestry as a source of contamination, whilst in others neglects the important role commercial tree crops can play in various areas of water quality management.

Whilst Guideline 9 recognises the role forestry can play in addressing salinity, it neglects the filtering effect of commercial trees to protect water courses from chemical, organic nutrient and suspended solid contamination. NAFI strongly recommends inclusion of forestry's role in managing these specific areas of water quality.

## Scale of the risk to water quality by plantations

Whilst plantations provide known water quality benefits, especially in predominantly cleared agricultural landscapes for soil stabilisation, salinity mitigation and nutrient filtering, to mention a few, the Australia-wide impact on water by plantations is negligible. Only one percent of cleared arable land (not including rangeland pastoral) which totals 168 million hectares<sup>1</sup> is currently used for commercial timber plantation (1.8M Ha<sup>2</sup>).

Over the majority of a plantation rotation chemical input is rarely required, leaving plantations to deliver important environmental services over long timeframes. When comparing commercial primary production land use, plantations are exceptionally well placed<sup>3</sup>, especially when considering the long-term nature of timber production.

Crop	P (average kg ha <sup>-1</sup> yr <sup>-1</sup> )	N (average kg ha <sup>-1</sup> yr <sup>-1</sup> )
Sugarcane	29	230
Horticulture	98	188
Cotton	9	121
Cereals	13	43
Oilseeds	10	13
Pasture	5	2.5
Plantation forestry	Low (less than 13)	Low (less than 30)

Source: FIFA (2000) Fertiliser use on various Australian crop types. Fertiliser Industry Federation of Australia ([www.fifa.asn.au](http://www.fifa.asn.au))

## Broad Water Policy Considerations

There have been a number of changes to water management, water-related policy and the role of forestry since the inception of Guideline 9 in 2000. Moving forward, NAFI recommends continuous research and adaptive management as the keys to long term water quality management and assurance.

- 1. The major expansion of the plantation estate on previously cleared agricultural land.** (Australia's estate is growing by 75,000ha per year over recent years<sup>2</sup>). The emphasis is shifting in forestry. As time goes by, it is expected that more of Australia's timber and wood fibre will come from plantations and less from native/natural forests. Plantation forestry can help improve water quality, and forestry best-practice minimises impact on the environment. See below for notes on interception, salinity and soil erosion.
- 2. The National Water Initiative (NWI) intergovernmental agreement.** This is the principal driver of water management policy in all state jurisdictions. It is mostly about quantity and goes to quality only in terms of "water for the environment" (S78 and onwards). The explanatory memorandum that goes with it says: "Under the NWI, Governments agree to specify the environmental outcomes to be achieved in surface and groundwater systems, and require explicit provision of water and associated management arrangements to meet those outcomes in an accountable manner. Achieving environmental outcomes will no longer be seen as an optional extra in water management." It also includes S55-57 provisions on interception. Guideline 9 and the NWI need to be updated to take greater account of quality issues and this in turn needs to be backed up with better science (see note 3).
- 3. Advances in scientific understanding of water flow, both surface and sub-surface.** Studies to date have been both positive and negative but above all they are incomplete and ambiguous. They are giving mixed messages about both quantity and quality, such that opponents of forestry can claim simultaneously that harvesting trees from a native/natural forest reduces water flow and quality, and that production plantations do the same. The key here is that the scientific research effort needs to be continuous, and its results regularly added into Guideline 9 according to adaptive management principles.
- 4. Adaptive management.** This is the successor to the precautionary principle, being applied for example in the Bureau of Rural Sciences' Connected Water Project ([http://www.connectedwater.gov.au/framework/adaptive\\_management.html](http://www.connectedwater.gov.au/framework/adaptive_management.html)) Adaptive management is essentially the continuous improvement of policies and practices by learning and applying the outcomes of previous work. Thus science and management are brought together.
- 5. Stewardship.** The forestry industry, whether native forest or plantation, has almost universally adopted management standards (ISO 14001) and certification (ASC, FSC) beyond the Codes of Practice being put in place since the time of inception of Guideline 9. Thus most of the water quality risks identified in Guideline 9 have been addressed voluntarily by the industry and go above and beyond water quality measures detailed in Guideline 9.

## Key issues pertaining to Guideline 9

Forestry has adopted a stewardship approach to water quality management. This needs to be addressed as a result of this review process.

- 1. Interception.** This may well turn up in the submissions of others as a new water quality issue that needs to be addressed in plantation areas. The industry, recognising the NWI, has initiated scientific studies and supports continuous research and adaptive management in the area of interception. What is known is that strategically placed plantations can provide positive water quality outcomes by naturally regulating stream flows and reducing the impact of flooding and extreme precipitation events.
- 2. Increased nutrient load in watercourses.** The argument about interception reducing stream flows may be brought together with the risk of low stream flows promoting algal bloom caused by natural or artificial nutrients. An increased understanding of the impact of plantations on water resources is showing that, over time, nutrient loading is far less than first supposed. In fact, change from agriculture to plantations can have immediate positive benefits to nutrient loading into watercourses, due to the exclusion of hard-hoofed stock, the waste of which contribute significantly to nutrient loading in natural water systems.
- 3. Fertiliser and other chemical runoff.** The forest industry has addressed this by rigorous adoption of stewardship principles, which emphasise efficiency and effectiveness in chemical use. Essentially, State Government-sponsored Codes of Practice provide an operational framework for strict water quality management practice. Industry also conducts voluntary monitoring and assessment, and audit reports reveal high-level transparency and compliance, especially in the area of water policy<sup>4</sup>.
- 4. Soil erosion.** Trees help control erosion and therefore help keep watercourses free of excess turbidity. However, plantations – in the development phase and in harvesting – may be a source of erosion, though forestry entities are addressing this through sound planning and practice, underpinned by comprehensive operational policy frameworks and voluntary participation in certification of forest management.
- 5. Salinity.** It has long been good practice in farming areas to plant trees as a control measure for salinity. Previous farming practices and remnant forest degradation can have a converse effect on reaching salinity mitigation outcomes. Greater knowledge is needed on the impacts of forests on groundwater salinity, as well as research devoted to how plantation development can meet the twin goals of commercial viability and water quality outcomes.

## **Section 2. Types of Water Quality Degradation and Their Causes**

NAFI believes that forestry and forest industry related development is unfairly singled-out in Section 2 of Guideline 9. The Guideline was developed in a time where much of the information base consisted of unsubstantiated evidence about the impact of forestry and regionally based wood processing on water quality. This review process must address the lack of scientific basis of current content in Section 2, replacing outdated assertions with current knowledge.

Specific to the content of Section 2, NAFI offers the following recommendations:

### **2.4.1 Sources of Chemical Contamination**

#### *Recommendation*

Remove 'timber treatment plants' from the list of dot points as main sources of chemical contamination to water bodies (Pg. 13).

#### *Comment*

The inclusion of 'timber treatment plants' as a main source of chemical contamination unfairly singles out the wood processing sector from other rural manufacturing industries, many impacting water quality in a significantly more profound way. NAFI sees no reason for the continued inclusion or relevance of 'timber treatment plants' in this broad source list of chemical contamination.

#### *Recommendation*

Remove 'runoff following a forest fire' under the heading 'forestry' (Pg. 13).

#### *Comment*

Under 'forestry' the description of 'runoff following a forest fire' as an additional potential source of chemical contamination, directly contradicts reference to fuel load management to reduce the intensity of bushfires, detailed in Section 3. Management Approaches (Pg. 24). Controlled burning as part of sustainable production forestry management practice is necessary, as it reduces intensity of uncontrolled fires by minimising fuel load, and is imperative in eucalypt regeneration and emulates indigenous fire regimes. Some temporary impact on water quality should be acceptable within water bodies, as a significantly better outcome than mass ash loading resulting from extreme wildfire events.

### **Section 3. Management Approaches**

Production plantations and other strategic rural tree growing can deliver benefits in absorption and filtration of nutrients, chemicals and suspended solids, not to mention significant salinity mitigation outcomes. With an exception to management approaches for the threat of salinity, the important water quality maintenance role of forestry is overlooked in Section 3 of Guideline 9.

The considerable volume and rigour of information related to forest-water quality outcomes sourced since the inception of the Guideline 9 must be reflected in this timely review process. NAFI strongly urges significantly more reference to the potential role of commercial forestry in addressing various water quality issues in Section 3, and offers the following recommendations.

#### **3.2.1 Best Management Practices**

##### *Recommendation*

Insert 'and forestry' in relation to 'drawing on knowledge from a wide range of experts, including agricultural (and forestry) extension officers, as well as agricultural (and forestry) researchers' (Pg 22 & 23).

##### *Comment*

As forestry delivers wide environmental benefits, including water quality management, it is appropriate for acknowledging this as a Best Management Practice (BMPs). In the context of improved sustainability outcomes, forestry as with agriculture, is a legitimate primary productivity pursuit and must be acknowledged as such in Guideline 9. NAFI recommends that 3.2.1 BMPs is one of the appropriate locations to acknowledge forestry's role in management approaches to maintain or improve water quality outcomes.

#### **3.4 Suspended solids**

##### *Recommendation*

Include 'strategic placement of deep rooted vegetation, such as plantations', as a measure to address the impact of suspended solids on water ways (Pg.24).

##### *Comment*

Although the role of maintaining permanent vegetation was described under 'Agriculture' amongst other examples it made no reference to the potential role of plantations or other forestry practices. NAFI recommends the role of forestry, which includes intensive plantations, agroforestry and other innovative techniques to integrate trees into predominantly cleared landscapes, should be included in this section.

##### *Recommendation*

Include an acknowledgement in the second paragraph under 'Forestry Operations' (Pg. 25), to the effect:

'Forestry conducted legally will be already managed for best water quality outcomes related to suspended solids.'

*Comment*

Australia's forest industry, whilst increasingly taking up voluntary certification, operates in an onerous, repetitive and overlapping regulatory environment. It is imperative that under 'Forestry Operations' (Pg. 25), due acknowledgement that legality satisfies suspended solid water quality outcomes are provided.

Strict compliance measures already associated with maintenance of suspended solids is a particular feature of State Government-based policies, incorporating tracks, post-harvest areas, as well as steep slope operational limits.

### 3.6 Chemical contamination

*Recommendation*

Remove the second paragraph under 'Forestry' (Pg 30), as it is unnecessarily technical, inadequate in depth and inappropriate under the scope of Guideline 1.

*Comment*

Forestry should be treated consistently with agriculture in relation to the potential management strategies for water quality. Whilst it is necessary to acknowledge the legislative framework in which forestry operates, it is not appropriate to add additional technical information outside of that used under 'Agriculture'.

The use of chemicals in commercial forestry application is strictly regulated under State Government law, and significant industry stewardship has developed since the inception of Guideline 9. Chemical use is also a key area under forest management certification requirements, providing further certainty of 'best practice' chemical usage related to meeting water quality outcomes.

## Conclusion

There is an essential requirement to find tree growing solutions, in particular for predominantly cleared agricultural landscapes. The role of commercial plantations and other forms of productive tree growing is inextricably linked with water quality and other environmental outcomes. Guideline 9 must be amended as part of this review process to embrace the important role of commercial forestry, as apposed to its current theme, which creates more disincentives to use commercial tree growing solutions for water quality outcomes than it does incentives.

Whilst Guideline 9 recognises the role forestry can play in addressing salinity, it neglects the filtering effect of commercial trees to protect natural water courses from chemical, organic nutrient and suspended solid contamination. NAFI strongly recommends inclusion of forestry's role in managing these specific areas of water quality.

Plantation forestry in Australia is a risk-averse and environmentally aware industry, underpinned by voluntary and legislative mechanisms put in place to protect important environmental values, including water quality. Whilst plantations offer many environmental services, its focus in policy frameworks such as Guideline 9, should more fairly reflect the scale and impact of the industry in Australia, which currently occupies only around 1% of arable (non-rangeland pastoral) agricultural land.

The fair and equitable treatment of plantation forestry as a legitimate primary production activity is the foundation for NAFI's participation in policy revision, such as the review of *Guideline 9: Rural land uses and water quality* of the National Water Quality Management Strategy. NAFI appreciates the opportunity to participate in this review process and welcomes any clarification or requests for further information, regarding the content of this submission or NAFI's position on national rural land use and water policy development.

## References

1. ABS (2006) Purchased statistics: 2003-04 Farm Census results. Australian Bureau of Statistics. Canberra
2. Montreal Process Implementation Group for Australia (2008) *Australia's State of the Forest Report 2008*. Bureau of Rural Sciences, Canberra
3. FWPRDC (2006) *Pesticides in plantations: the use of chemical pesticides by the Australian Plantation forest industry*. Summary Report. Forest and Wood Products Research and Development Corporation. Victoria
4. EPA (2007) *The 2007 Environmental Audit of Timber Production on Public Land*. Environment and Protection Authority. Victoria