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FMP Review Submissions
Department of Planning, Industry and Environment
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Submission into the review of the Floodplain Management Plan for the Gwydir Valley Floodplain (2016)

The Gwydir Valley Irrigators Association (GVIA) welcomes the opportunity to review the Floodplain Management Plan (FMP) for the Gwydir Valley Floodplain (2016). Since the finalisation of the FMP for the Gwydir Valley Floodplain, three other valleys have also progressed through development and implementation as well as, the completion of many of the outstanding legacy applications, applied for prior to 2008 and the gazettal in 2016.

The five-year review is therefore an opportunity to ensure consistency in planning arrangements (where applicable) but also incorporate new information that has come to light since its implementation.

We have prepared this submission as a high-level review into some of the issues on behalf of our members. We have encouraged our members to raise specific, farm-scale issues as part of this process.

To prepare for this submission we discussed the range of issues with a number of consultants that work in our region, as well as, requested a review of recent flood flow behaviour against, the existing flood flow pathways. As a result, we have outlined areas of technical inconsistencies as well as inaccuracy and error within the modelling outputs of the FMP for the Gwydir Valley Floodplain. We in most cases, recommend further analysis may need to be undertaken to assess whether there are systemic modelling issues that can be improved through new data or minor errors that can be easily addressed and maybe immaterial. That's because the GVIA has not prepared this submission as an exhaustive list of issues or recommendations. Rather, we sort to identify areas where there are identified inconsistencies between data sets, which have come to light since the implementation of this plan in 2016 that need further technical assessment by the Department.

Notwithstanding these inconsistencies, these issues have the potential to result in errors in the plans assumptions which in-turn have administrative, environmental, and financial impacts now and in the future. We, therefore, implore the Department to recognise the importance of adaptive management and providing genuine opportunities for new

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information to improve and build on this plan and its outcomes. Whilst it may require resources there are clearly areas of the plan that are potentially impacting planning outcomes and peoples livelihoods, that require further technical review.

In providing this submission, we have provided a response to comments as requested by the Department and also outlined a number of specific areas of concern, which meet elements of the comments requested.

We trust this is of assistance in the Department's review and welcome further opportunity to discuss our submission with you.

Comments Requested by the Department

We note the department requested specific comments on the following questions:

1. Is the floodplain management plan(s) adequate and appropriate for ensuring the effective implementation of the water management principles?
2. Are there issues with the plan(s) that were identified since commencement and impact on effectiveness of implementation?
3. Are there potential amendments to the plan(s) that should be considered?

Question 1: Water Management Principles

The *NSW Water Management Act (2000)* outlines general principles for water management in Section 5 (2) being

- (a) *water sources, floodplains and dependent ecosystems (including groundwater and wetlands) should be protected and restored and, where possible, land should not be degraded, and*
- (b) *habitats, animals and plants that benefit from water or are potentially affected by managed activities should be protected and (in the case of habitats) restored, and*
- (c) *the water quality of all water sources should be protected and, wherever possible, enhanced, and*
- (d) *the cumulative impacts of water management licences and approvals and other activities on water sources and their dependent ecosystems, should be considered and minimised, and*
- (e) *geographical and other features of Aboriginal significance should be protected, and*
- (f) *geographical and other features of major cultural, heritage or spiritual significance should be protected, and*
- (g) *the social and economic benefits to the community should be maximised, and*
- (h) *the principles of adaptive management should be applied, which should be responsive to monitoring and improvements in understanding of ecological water requirements.*

The following principles in Section 5(6) in relation to floodplain management:

- (a) *floodplain management must avoid or minimise land degradation, including soil erosion, compaction, geomorphic instability, contamination, acidity, waterlogging, decline of native vegetation or, where appropriate, salinity and, where possible, land must be rehabilitated, and*
- (b) *the impacts of flood works on other water users should be avoided or minimised, and*
- (c) *the existing and future risk to human life and property arising from occupation of floodplains must be minimised.*

The FMP for the Gwydir Valley Floodplain (2016) provides a consistent framework to enable floodplain flow connectivity through the establishment of floodway networks that recognise

potential critical floodplain dependant vegetation and manage existing and future works to ensure this connectivity. It, therefore, provides an opportunity for consistent rules and assessment throughout the valley which was prior to 2016, undertaken through individual sub-catchment plans where they were available. The FMP therefore provides consistency within a valley and clarity, where it may not have previously existed.

However, in the implementation of these rules and interpretation there has been issues particularly where the floodplain extent was enhanced or legacy cases – those cases applied for previously are being assessed or considered. The changes were considered rather minor within the background supporting documentation, but it is only when an individual seeks to resolve an application or through an audit of the farm, reveals the rules are now different to when they were constructed that there is conflict. This conflict maybe between neighbours or groups of neighbours, but also with the regulator, which since gazettal is now the independent Natural Resources Access Regulator.

For these reasons it is imperative that the data used to develop the management zones is reviewed against any new information, such as recent flooding or finalised applications to ensure it is as accurate as possible.

It must be accepted under the principle of adaptive management that while the FMP may have been an improvement on the consistency and clarity through application of rules that previously existed, the accuracy of the plan, at the farm-scale is not without reproach. We have made some recommendations to address this but more broadly, there must be an acknowledgement of this fact through the establishment of a pathway to amend the zones with new information within the plan lifetime.

Question 2: Issues that impact on effectiveness of implementation.

We note the following specific comments relate to the identified issues which have related in area of concern or errors which are impacting the effectiveness of the plan's implementation.

These areas include:

- Technical improvements in the method to determine the floodplain network.
- Edge effects on the boundary of the floodplain management plan extent.
- Separation of Management Zone A.

Question 3: Amendments

In response to some of the issues identified above, the GVIA have made suggested to review and amend parts of the FMP.

In addition, it is clear now that the plan did not allow for an appropriate transition pathway to finalise and incorporate remaining legacy work approval applications. Whilst some pathway was offered there have been issues which we have as a result, recommended amendment be made to clearly provide a transparent and consistent pathway. These are for determined and any remaining undetermined applications, which meet the relevant cut-off dates being 2008 or prior to this plans gazettal in 2016.

Specific Identified Issues

Determination of the floodway network:

Comparison of technical material used for different plan areas, highlighted an inconsistent criterion to determining the floodway networks, which in turn then help to determine the location of management zones. For example, the Gwydir Valley a depth velocity product of $0.1\text{m}^2/\text{sec}$ was utilised to determine flood flow paths at the two design floods of 2012 (4% AEP large flood) and 2004 (10% small flood), where there was connectivity. We accept that reference floods maybe different for each valley, given the different data sets available. But would assume the criteria adopted should be consistent unless different flow outcomes are being targeted.

The Gwydir Plan appears to be focused on modelling of peak flow rates as well as the depth-velocity product at specified locations, whereas the later plans, more focus is on the depth-velocity products at between $0.2\text{m}^2/\text{sec}$ or $0.3\text{m}^2/\text{sec}$.

We recommend a review of the approach in the Gwydir to compare the management zone and floodway network outcomes of a $0.1\text{m}^2/\text{sec}$ and $0.2\text{m}^2/\text{sec}$ criteria and consider the merits of applying a consistent criterion between valleys.

Gwydir Floodplain boundaries:

As we raised in our submission to the draft FMP for the Gwydir Valley, we requested there be further smoothing of mapping and review of the minimum polygon size to address the granularity in the model outputs. This is more relevant in areas where the scale of data is different (20m resolution in central areas to 50m resolution on the outer areas as per the Background documentation) but also at the edges of the Plan, whereby boundary effects are impacting the accuracy of the locations. One example presented below in Figure 1 can be evidenced here on the Eastern floodplain and the north-western, where the zones do not align with recent flooding which occurred at lower thresholds than the reference flood.

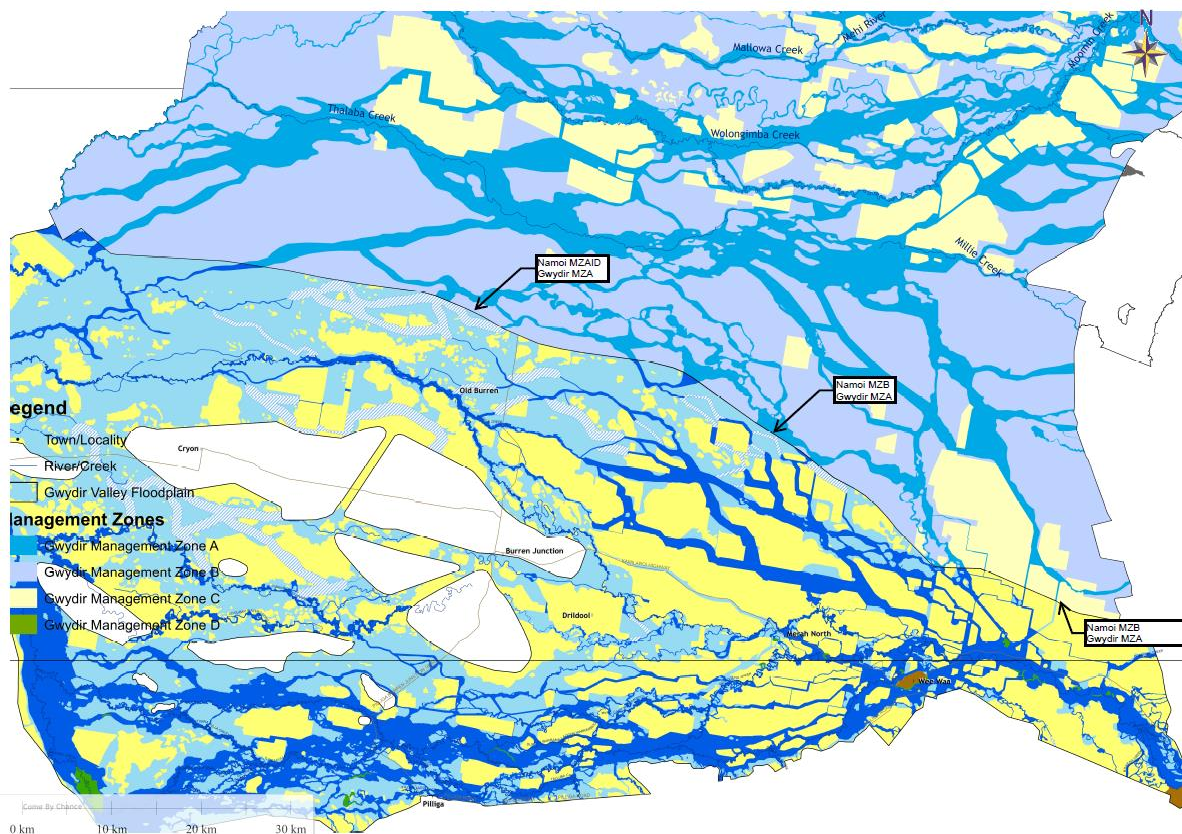
Figure 1: Eastern Boundary of the Gwydir Floodplain



There are more minor examples, along the edges of the boundary particularly where the floodplain extend was enhanced. The rigidity of what can be constructed within some zones means all areas need a high level of accuracy and therefore, such edge concerns must be addressed. This is also relevant where a plan may not have existed before-hand and therefore may not have needed any approvals prior which was noted in the background material as being a major change.

Furthermore, as implementation in neighbouring plan areas have been finalised to the North and South of the Gwydir alignment of all the plans should be assessed. It would be assumed that these boundaries should in practice align and be consistent. As evidenced below in Figure 2 on the southern boundary with the Namoi Valley there is no alignment in some cases particularly around key flow paths in Zone AD or Zone AID. This maybe a result of different criteria being adopted in the different plan areas as raised above with the floodway network analysis.

Figure 2: Comparison on FMP Management Zones between Namoi and Gwydir



In addition to our recommendation above to review of the approach to the Gwydir to compare the outcomes of a 0.1m²/sec and 0.2m²/sec on determining floodway networks, we also recommend to enabling additional smoothing of the model to allow for consistency between adjoining plan areas. This would ensure that landholders who may have land on both areas have consistency in zone determination, which is not currently the case.

There are also inconsistencies with recent flooding behaviour that is highlighted by a review of certain boundaries. This is evident by the Eastern boundary (presented in Figure 1) and North-western, whereby edge effects may be resulting in unusual zoning characteristics that should be reviewed. This includes small areas of some zones and misalignment with natural flooding corridors. This was highlighted by a comparison of the recent flooding in March 2021 to the floodway network and zone maps.

We recommend that a decision to review the edge of the floodplain extent to avoid inconsistent zone characteristics or edge impacts of the model outputs.

Ill-defined floodway zone:

Another inconsistency between the later plans is the delineation of Management Zone A, to include an area of defined extent (Management Zone AD) and an ill-defined extent (Management Zone AID). This approach recognises that there are in some instances data deficiencies and accuracy issues but that the floodway network connectivity is maintained. This presents an opportunity to provide flexibility to respond to higher accuracy ground-based information rather than model outputs, to determine suitability of the location of some works. The fact sheet for the Lower Namoi Management Zone AID explains how this flexibility works:

“if the flood work or any part of the flood work is, or is proposed to be, located outside of the required flood flow corridor [deemed to be a minimum of 80m width], the application for the flood work approval is advertised in accordance the rules for MZ B, where references to MZB in the clause are taken to be references to MZ AID.”

We recommend following the review of the floodway network, that Management Zone A is delineated in such way to have a defined zone and an ill-defined zone, where localised information may be used to allow for a more flexible approach to the location of work approvals and their assessment without compromising the connectivity of the floodway network. This maybe particularly relevant in the outer areas of the floodplain where there is gaps in data and the input information is on a higher resolution.

Finalised legacy applications

As we raised in our submission into the draft FMP for the Gwydir Valley, we recommend a recalibration/alignment of zones to reflect the approved applications. This is of particular importance to Zone C whereby applications that were applied, prior to the relevant cut-off dates and are not approved should be reflected. Relevant cut-off dates include those applications that were made prior to July 2008 in addition, to application made post 2008 and prior to the gazettal of this plan on 12 August 2016.

We have encouraged members to submit into this review but recommend a review of the WaterNSW works approvals that have been licensed and the zones adjusted accordingly.

We recommend an amendment provision be included to allow for the remaining existing flood work approvals that are considered legacy issues be incorporated into the zones when completed to avoid needing to wait for statutory review periods.

Undetermined legacy applications:

The GVIA note that the later plans provide for a mechanism for undetermined applications made prior to the gazettal of the (see S 39 Floodplain Management Plan for the Lower Namoi 2020). This clause acts to provide clarity to which plan and rules are to be applied to such applications. As a result, we believe this provides clarity to applications which has not been afforded in the Gwydir Valley by apply the plan rules at the time of the application to the application.

We therefore seek an assessment of applications that may have been unduly impacted by the exclusion of such a clause, that exists in other valleys and assessed for consistency. These applications should be rectified. Furthermore, we recommend the inclusions of similar clauses for the Gwydir Valley if it is deemed there are remaining undetermined legacy applications and that any impact on existing management zones are also reflected.

Summarised List of Recommendations:

1. To include a clearer, more responsive pathway to amend the management zones during the life of the Plan with new information such as finalised work approval applications and or floodway distribution information.
2. Amendment be made to clearly provide a transparent and consistent pathway for any now determined but not prior to this plan being made, and any remaining undetermined applications, which meet the relevant cut-off dates of applications being incorporated into management zones. This is of particular importance for any applications which would result in new management zone C.
3. A comparison of the management zone and floodway network outcomes of a 0.1m²/sec and 0.2m²/sec criteria for the Gwydir Valley with consideration of adopting consistent criteria between valleys.
4. Enabling additional smoothing of the model to allow for consistency between adjoining plan areas. This would ensure that landholders who may have land on both areas have consistency in zone determination, which is not currently the case.
5. Review the edge of the floodplain extent to avoid inconsistent zone characteristics or edge impacts of the model outputs, which may be resulting in erroneous zoning.
6. Management Zone A is delineated in such way to have a defined zone and an ill-defined zone, where localised information may be used to allow for a more flexible approach to the location of work approvals and their assessment without compromising the connectivity of the floodway network.
7. Assessment of applications that may have been unduly impacted by the exclusion of transitional clause like that provided in the Lower Namoi, for undetermined applications and rectification of any additional restrictions as a result.
8. The inclusion of a transitional pathway for undetermined applications that remain, if it is deemed there are remaining undetermined legacy applications.

Ends.



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