

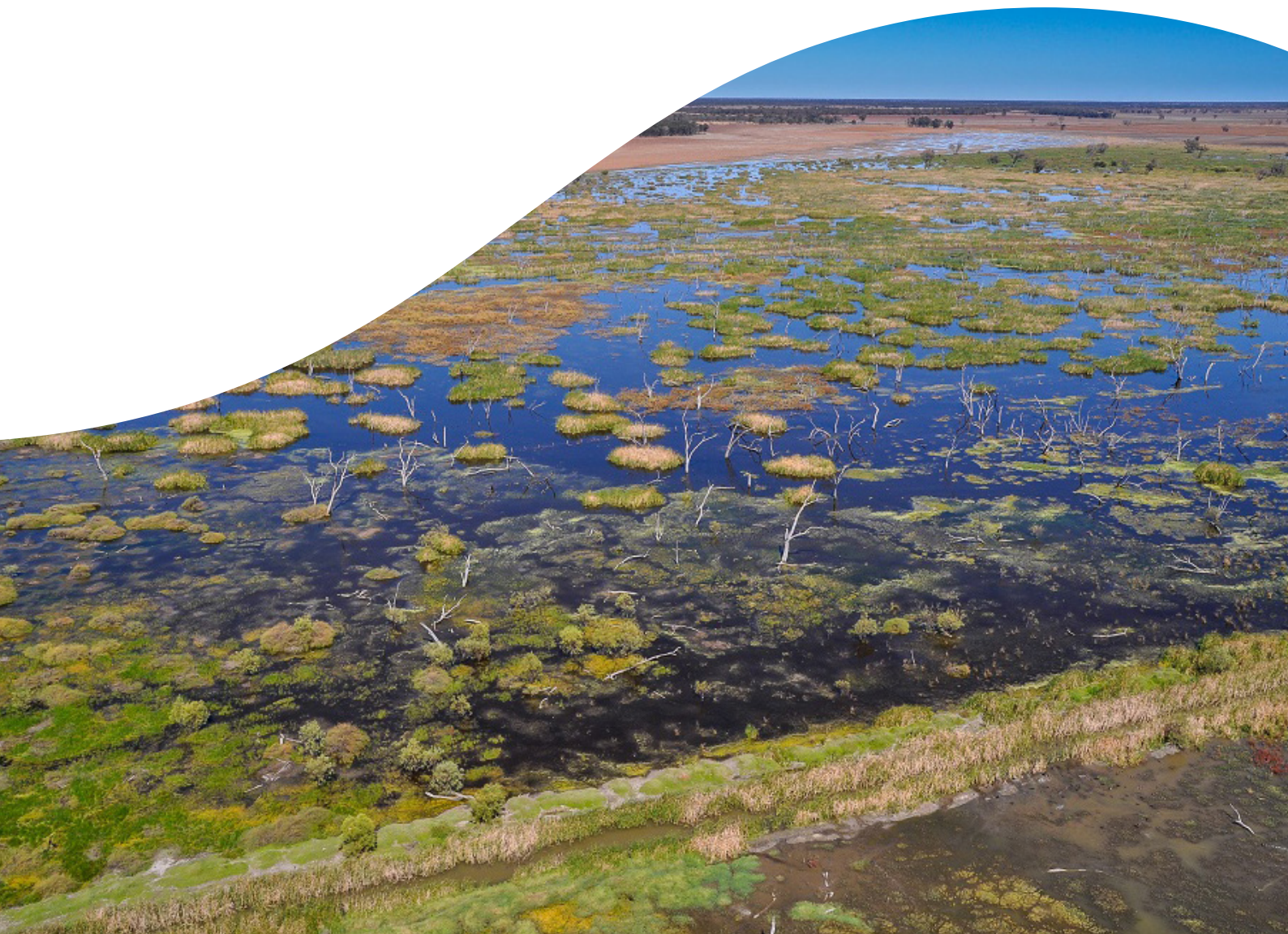


Natural Resources Commission

Final report

**Audit of the implementation of the
*Floodplain Management Plan for the
Gwydir Valley Floodplain 2016***

August 2021



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Acknowledgement of Country

The Natural Resources Commission acknowledges and pays respect to traditional owners and Aboriginal peoples. The Commission recognises and acknowledges that traditional owners have a deep cultural, social, environmental, spiritual and economic connection to their lands and waters. We value and respect their knowledge in natural resource management and the contributions of many generations, including Elders, to this understanding and connection.

In relation to the Gwydir valley floodplain covered in this report, the Commission pays its respects to the Kamilaroi Traditional Owners past, present and future, as well as other Aboriginal peoples for whom these waterways are significant. The Commission hopes that the audit process will help to shape collaborative floodplain planning that is beneficial to Aboriginal peoples and their country.

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Acronyms and abbreviations

Act	<i>Water Management Act 2000 No 92 (NSW)</i>
ASAE	Australian Standard on Assurance Engagements
Commission	the Natural Resources Commission
CIRaM	Compliance Investigation Reporting and Management system
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DPIE-Water	Department of Planning, Industry and Environment – Water
DPIE-EES	Department of Planning, Industry and Environment – Environment, Energy and Science
F	Finding
MDBA	Murray Darling Basin Authority
MER	Monitoring, Evaluation and Reporting
NRAR	Natural Resources Access Regulator
O	Observation
OEH	Office of Environment and Heritage (Predecessor to DPIE-EES)
Plan	<i>Floodplain Management Plan for the Gwydir Valley Floodplain 2016</i>
R	Recommendation
SA	Suggested action
SMART	Specific, measurable, achievable, relevant and time-bound
Regulation	<i>Water Management (General) Regulation 2018 (NSW)</i>
WLS	Water Licensing System

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Attachment A: Historical plans and guidelines for the Gwydir valley floodplain

Attachment B: Non-core (additional) provisions for FMPs as outlined in the Act

1 Executive summary

The Natural Resources Commission (the Commission) has audited the *Floodplain Management Plan for the Gwydir Valley Floodplain 2016* ('the Plan') to ascertain whether the provisions of the Plan are being given effect to, as required under Section 44 of the *Water Management Act 2000* (the Act).¹

1.1 Audit conclusion

The Commission considers that on balance the provisions of the Plan have not been given full effect to in accordance with the Act.

The audit conclusion is based on the procedures performed and the evidence obtained. The Commission is of the view that the information presented fairly reflects the implementation of the Plan.

1.2 Audit findings and recommendations

The audit focused on current implementation to determine recommendations but also considered evidence from the full audit period, which is defined as being from Plan commencement under the Act (12 August 2016) to the date of receipt of agency comments on the draft report (July 2021).

The Commission found that the relevant organisations generally have systems, processes and procedures in place that mostly align with legislative requirements and are available to support implementation of the Plan.

The Commission also found that flood work approvals were generally assessed and processed in accordance with legislative requirements. There is progress towards improving associated procedures for floodplain management plans.

Table 1 outlines the audit findings and recommendations against the four audit criteria:

- Criterion 1: The relevant responsible parties have implemented Plan provisions relating to vision, objectives, strategies and performance (see **Section 5**)
- Criterion 2: The relevant responsible parties have implemented Plan provisions relating to granting or amending flood work approvals (see **Section 6**)
- Criterion 3: The relevant responsible parties have implemented Plan provisions relating to mandatory conditions including enforcement (see **Section 7**)
- Criterion 4: The relevant responsible parties have implemented Plan provisions relating to amendments (where these are not optional) and there is evidence that identified amendments (which may include optional amendments) have been given due consideration (see **Section 8**).

¹ Note that in this report, 'the Act' is used to refer only to the *Water Management Act 2000* and 'the Regulations' refers only to the *Water Management (General) Regulations 2018*.

The Commission has raised recommendations (R) only for material findings (F) relating to gaps in the implementation of legislative requirements that result in the Plan not being given full effect under Section 44 of the Act. The Commission focused on the fundamental elements of Plan implementation. The Commission did not explore the quality of implementation in detail in this audit.

The Commission undertook detailed limited assurance sample testing and examined roles and responsibilities, systems, processes, and procedures as relevant for all criteria. Relevant information was examined against detailed legislative requirements as set out for each criterion. Implementation was found to comply with legislative requirements except where the report identifies gaps. In the interests of brevity, neither the discussion nor the tables of findings and observations list all positive findings, only identified gaps to enable future action to be taken to address them.

The Commission did not prioritise legislative provisions or recommendations in relation to gaps in implementing these provisions. The Commission has not assigned specific time frames to recommendations. However, given the findings are gaps to legislative requirements, the Commission considers that all recommendations should be implemented as soon as practicable within a maximum timeframe of 12 months.

The Commission has also raised observations (O) and suggested actions (SA) related to areas that are not specifically legislative requirements but support the implementation of these requirements.

While this report discusses specific consequences for each criterion, the overarching consequence of not giving full effect to provisions of the Plan is that the objectives of the Plan are unlikely to be achieved. These objectives are intended to support environmental, social and economic outcomes. In addition, the principles set out in Section 5 of the Act are not likely being given full effect.

Table 1: Audit findings and recommendations

Findings	Recommendations
Criterion 1 Finding: The relevant responsible parties have not implemented Plan provisions relating to vision, objectives, strategies and performance	
<p>F 1 Provisions related to vision, objectives, strategies, and performance indicators under Part 2 of the Plan were not implemented in the audit period.</p>	<p>R 1 DPIE-Water to lead the monitoring and evaluation of performance indicators and to use generated data to support decision making for Plan implementation.</p>
Criterion 2 Finding: The relevant responsible parties have partially implemented Plan provisions relating to rules for water supply work approvals	
<p>F 2 Cumulative impacts are not being assessed for new flood work applications under clauses 30(2), 40(5), 42(6), 42(7), 43(6) and 46(5) of the Plan.</p>	<p>R 2.1 WaterNSW to provide required data to DPIE-Water to enable model updates to reflect new approvals under the Plan as required.</p> <p>R 2.2 DPIE-Water to regularly update the model and provide this updated model information to WaterNSW and NRAR to enable approval assessment officers to undertake cumulative impact assessments for new approvals going forward.</p>
Criterion 3 Finding: The relevant responsible parties have partially implemented Plan provisions relating to mandatory conditions including enforcement	
<p>F 3 Mandatory conditions to give effect to flood work approvals (approvals) for the Plan were not applied in accordance with Section 100(1)(a) and Section 100 (1A) of the Act.</p>	<p>R 3.1 DPIE-Water to write mandatory conditions necessary to give effect to requirements of the Plan and code them into Water Licensing System so they will automatically apply to new approvals going forward, whilst maintaining existing discretionary conditions.</p> <p>R 3.2 DPIE-Water to issue an instruction to WaterNSW to re-issue the statement of approvals to existing approval holders inclusive of mandatory conditions.</p> <p>R 3.3 WaterNSW to re-issue the statement of approvals to existing approval holders inclusive of mandatory conditions, inclusive of an updated plan map.</p>
Criterion 4 Finding: There is no evidence that optional amendments have been given due consideration	
<p>F 4 Due consideration has not been given to non-mandatory amendments</p>	<p>R 4 DPIE-Water to formalise and implement a process for documenting the:</p> <ul style="list-style-type: none"> ▪ decision making process that underpins how and whether to implement potential amendments ▪ status of potential amendments.

Table 2: Audit observations and suggested actions

Observations	Suggested actions
<p>O 1 There is no transparent reporting of plan performance in relation to progress towards achieving stated objectives.</p>	<p>SA 1 DPIE-Water to publicly report on progress towards objectives of the Plan.</p>
<p>O2.1: Available technical guidance is not integrated into current processes and procedures to improve the quality of impact assessments of flood work approval applications.</p>	<p>SA 2.1.1: DPIE-Water to finalise technical guidance for the Plan and make these available for WaterNSW and NRAR water regulation officers to use when assessing approvals to ensure a consistent approach between assessments undertaken by these two organisations. In preparing these procedures DPIE-Water should integrate the Office of Environment and Heritage (OEH) Implementation Guidelines where appropriate.</p>
	<p>SA 2.1.2 After the implementation of SA 2.1, WaterNSW and NRAR to ensure their internal administrative processes link to this guidance once available.</p> <p>SA 2.1.3 DPIE-Water to provide technical expertise to NRAR and WaterNSW as required to support assessment of the impacts of flood work applications in relation to hydraulic, environmental, and cultural assets.</p>
<p>O2.2: Information is not available to WaterNSW to determine if new applications have been refused or remain undetermined under Part 8 of the <i>Water Act 1912</i> per clauses 39 and 45 of the Plan.</p>	<p>SA 2.2: NRAR make available all relevant information relating to approvals that were refused or remain undetermined under Part 8 of the <i>Water Act 1912</i> to facilitate WaterNSW's assessment regarding the eligibility of new applications.</p>
<p>O 3.1 NRAR's public register cannot be searched by floodplain area.</p>	<p>SA 3.1 NRAR to publicly report on compliance by floodplain management plan area to increase transparency of details of offences.</p>
<p>O 3.2 There has been no proactive compliance work done in the Plan to determine the extent of structures that are not built or operating in accordance with Plan rules.</p>	<p>SA 3.2 NRAR to quantify the extent of structures not built in accordance with Plan rules, and identify their risks to life, property, cultural and environmental assets and to undertake proactive investigation and enforcement proportional to the level of identified risk and/or impact.</p>
<p>O 3.3 The extent of structures and the associated potential downstream risks to life, property, and environmental or cultural assets is not clear or transparent.</p>	<p>SA 3.3 DPIE-Water to quantify and identify the locations of structures that do not meet hydraulic or environmental criteria impacting the floodway network and creating downstream risks for life, property, environment or cultural assets. DPIE-Water to partner with NRAR to address problems proportional to the level of risk and or impact.</p>
<p>O 4 Due consideration has not been given to proposed amendments to further protect ecological, cultural and heritage assets.</p>	<p>SA 4 DPIE-Water to consider amending the Plan to incorporate high priority amendment provisions including:</p> <ul style="list-style-type: none"> ▪ provisions for ecological, cultural and heritage site enhancement works to enable the connection of flows to ecological assets in Management Zones A and D ▪ provisions in Zone D method to include lagoons and water bodies, in particular Ramsar Wetlands ▪ provisions in the Dictionary to include a specific definition of wetlands ▪ provisions in Schedule 1 to improve recognition of known ecological assets.

2 The Commission's role and audit approach

2.1 The Commission's role in auditing management plans

The Commission is an independent body, that provides evidence-based advice to Government to secure social, economic and environmental outcomes in natural resource management in NSW.

The Commission has a role under Section 44 of the Act to audit water management plans within the first five years of each plan. The audits are to assess whether the provisions outlined in the water management plans are being given effect to. This role began on 1 December 2018 under changes to the Act through the *Water Management Act Amendment Bill 2018*.

Water management plans include:

- **water sharing plans** – statutory documents that establish the rules for sharing water between the environment and other water users
- **floodplain management plans** – frameworks to coordinate flood work development to minimise future changes to flooding behaviour, and to increase awareness of risk to life and property from flooding.

More detail on the purpose of plans is provided in **Section 3.1**.

2.2 Audit objective

The objective of this audit was to determine, in accordance with Section 44 of the Act, whether the provisions of the Plan are being given effect to.

2.3 Audit standards

This audit was executed as a limited assurance engagement in accordance with the following standards:

- *Standards on Assurance Engagements (ASAE) 3000 Assurance Engagements other than Audits or Reviews of Historical Financial Information*
- *ASAE 3100 for specific Compliance Assurance Engagements*
- *Auditing Standard ASQC 1 Quality Control for Firms that Perform Audits and Reviews of Financial Reports and Other Financial Information, and Other Assurance Engagements.*

In accordance with these standards, the Commission has:

- complied with applicable ethical requirements
- planned and performed procedures to obtain independent assurance about whether the relevant responsible parties have implemented the Plan, in all material respects, as evaluated against the audit criteria.

2.4 Audit criteria

Audit criteria were developed based on common parts of the Plan that the Commission considered warranted examination to ascertain whether provisions are being given effect to. The audit criteria were:

- Criterion 1: The relevant responsible parties have implemented plan provisions relating to vision, objectives, strategies and performance
- Criterion 2: The relevant responsible parties have implemented plan provisions relating to granting or amending flood work approvals
- Criterion 3: The relevant responsible parties have implemented plan provisions relating to mandatory conditions including enforcement
- Criterion 4: The relevant responsible parties have implemented plan provisions relating to amendments (where these are not optional) and there is evidence that identified amendments (which may include optional amendments) have been given due consideration.

These criteria were selected for audit as they are:

- key to implementation of the Plan
- governed by requirements under the Act (for example, flood works approval assessments and plan review), or
- not explicitly governed by requirements under the Act but important for determining if the Plan implementation supports, or is in accordance with, the Act requirements (for example, monitoring and performance indicator assessment information can be used to inform legislated floodplain management plan reviews).

2.5 Audit procedures

Audit procedures included:

- document review of either written documents or numerical data, including overarching frameworks, procedures, guidelines, manuals, policies and reports
- interviews with process owners, implementors and users including:
 - auditee NSW responsible organisations– Department of Planning, Industry and Environment – Water (DPIE-Water), the Natural Resources Access Regulator (NRAR) and WaterNSW
 - other organisations with an historical or current role in aspects of floodplains, but without responsibility for Plan implementation – Department of Planning, Industry and Environment – Environment, Energy and Science (DPIE-EES).
- walk throughs of material activities, including key systems and processes with system implementors, owners and users
- sampling of data.

These procedures were carried out on a test basis, with sufficient evidence to determine an audit finding and corrective action or observation and suggested action.

2.6 Limitations

This audit was a limited assurance engagement. As a limited assurance engagement, the audit cannot be relied on to comprehensively identify all weaknesses, improvements or areas of non-compliance. Inherent limitations mean that there is an unavoidable risk that some material matters may not be detected, despite the audit being properly planned and executed in accordance with the standards outlined in **Section 2.3**.

2.7 Exclusions

The audit has not provided an assessment against all provisions or parts in the Plan. It has not examined or provided an opinion regarding:

- compliance or non-compliance of individuals
- whether the Plan is being implemented efficiently
- whether the Plan is achieving environmental, social, or economic outcomes
- whether the Plan is achieving stated visions, objectives or performance indicators
- whether the Plan provisions are effective, appropriate or in line with the Act
- approvals that sit under the *Environmental Planning and Assessment Act 1979* that are not related to the objects, principles, core and additional Plan provisions
- compliance with any legislation unrelated to the Act.

3 Audit context

The Plan was developed by the NSW Office of Environment and Heritage (OEH) and DPIE-Water in consultation with the Gwydir technical advisory group. It was reviewed and endorsed by the Interagency Regional Panel in April 2014 and gazetted in 2016.

It was the first floodplain management plan developed under the Act, representing a transition away from the *Water Act 1912* and historical management arrangements and guidelines (see **Attachment A**). The Plan has been developed in combination with the floodplain harvesting regime.

The Plan builds on the historical floodplain management arrangements across the Gwydir valley floodplain and supersedes all current plans and guidelines. The Plan provides management zones and rules that can be applied for amendment of existing flood works and approval of new flood works. In addition to minimise risks to life and property, the Plan seeks to protect the movement of water through the floodplain.²

3.1 Purpose of floodplain management plans under the Act

Floodplain management plans, like all water management plans, are subject to the objects, water management principles, requirements and general provisions in the Act.³

Floodplain management plans aim to coordinate development of flood works on a whole of valley basis, and establish management zones, rules and assessment criteria for granting or amending approvals for flood works.⁴

The following specific principles related to floodplain management are stated in Section 5(6) of the Act:

- (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.*

Core provisions for floodplain management plans are stated in Section 29 of the Act. Specifically, they must deal with:

- (a) *identification of the existing and natural flooding regimes in the area, in terms of the frequency, duration, nature and extent of flooding*

² DPIE (2020). *Draft Regional Water Strategy: Gwydir*. Available at: https://www.industry.nsw.gov.au/__data/assets/pdf_file/0016/324511/draft-rws-gwydir.pdf

³ Objects, water management principles, requirements and general provisions for all water management plans are stated in Section 3, Section 5, Section 16 and Section 17 of the Act, respectively.

⁴ DPIE (n.d.) *Floodplain management program*. Available at: <https://www.industry.nsw.gov.au/water/plans-programs/healthy-floodplains-project/plans>

- (b) *the identification of the ecological benefits of flooding in the area, with particular regard to wetlands and other floodplain ecosystems and groundwater recharge*
- (c) *the identification of existing flood works in the area and the way they are managed, their benefits in terms of the protection they give to life and property, and their ecological impacts, including cumulative impacts*
- (d) *the risk to life and property from the effects of flooding.*

Additional provisions that may be addressed by a floodplain management plan are outlined in Section 30 of the Act (**Attachment B**). These include matters such as restoration and rehabilitation of land and improvement of water quality during and after a flooding event. A technical manual outlines the methodology to be used for the development of new floodplain management plans under the Act. The Commission has been advised that this approach has been applied in the development of the Plan.^{5,6}

3.2 Context for Plan implementation

3.2.1 NSW water reforms and compliance have focused on other priorities

There have been many competing demands on organisations responsible for water management plan implementation as they have addressed a large program of water reform.

There has been a focus on developing floodplain management plans under the Act under the Healthy Floodplains project. Since 2013, floodplain management plans under the Act have been prepared across five valleys in northern NSW including the Gwydir, Namoi (upper and lower), Barwon-Darling, Macquarie (draft) and Border Rivers.⁷ The floodplain management plans developed under the Healthy Floodplains project transitions the plans from the requirements of the *Water Act 1912* to the requirements of the Act. There has also been a focus on developing NSW floodplain harvesting and measurement policies to establish the process for bringing floodplain harvesting into the water licensing framework.

In relation to compliance and enforcement, the *Natural Resources Access Regulator Act 2017* specifically provides that NRAR's priorities are to be set independently. These regulatory priorities are reviewed on a regular basis and published.⁸ Interviews with NRAR reinforced that the compliance issues relating to water extraction in the northern Murray-Darling Basin has been a regulatory priority in accordance with NRAR's risk assessments. This has been the focus of proactive compliance activities in priority over proactive enforcement activities regarding flood work structures.

⁵ Department of Industry (2014) *Rural floodplain management plans: Technical manual for plans developed under the Water Management Act 2000*. Available at: http://www.water.nsw.gov.au/__data/assets/pdf_file/0011/548606/floodplain_management_plans_draft_technical_manual.pdf.

⁶ DPI Water (2016). *Rural floodplain management plans: Background document to the floodplain management plan for the Gwydir Valley Floodplain 2015*. Available at: https://www.industry.nsw.gov.au/__data/assets/pdf_file/0018/146052/gwydir-fmp-background-document.pdf

⁷ DPIE (n.d.) *Floodplain management program*. Available at: <https://www.industry.nsw.gov.au/water/plans-programs/healthy-floodplains-project/plans>

⁸ NRAR (2019) *Natural Resource Access Regulator Regulatory Priorities 2019 – 2021*. Available at: https://www.industry.nsw.gov.au/__data/assets/pdf_file/0020/227324/NRARs-regulatory-priorities-2019-to-2021.pdf.

NRAR monitors and inspects reactively in response to reports of alleged breaches of water laws, incidents or other intelligence received from members of the public and other regulators such as councils. No documented risk assessment was provided to the Commission as part of this audit. The Commission is not seeking to comment on the appropriateness of decisions regarding NRAR's compliance priorities.

Resources have been prioritised to deliver the above work programs, which has been prioritised over implementation of the Plan.

3.2.2 Roles and responsibilities have changed over time

There has been a complex history of changes in government agencies in water management and regulation, and their roles and governance.

An investigation by the NSW Ombudsman into water compliance and enforcement reported that the high level of restructuring and moving of water administration functions and regulation between different government agencies has resulted in significant impacts on staff, loss of expertise and corporate knowledge, and disruptions to systems, strategy and continuity of service delivery.^{9,10}

Roles and responsibilities changed several times during Plan development and following the gazettal of floodplain management plans. The Plan refers to agencies that no longer exist. Public information is available on roles for floodplain management plan administration in a range of documents. However, some of these are outdated, while others do not provide the detail required to determine the agency responsible for Plan implementation.¹¹

For this audit, DPIE-Water is assumed to be responsible, except where other agencies are documented as being responsible (for example through the Water NSW Operating Licence and the *Natural Resources Access Regulator Act 2017*). In June 2021, DPIE-Water, NRAR and WaterNSW signed an agreement which clarifies roles and responsibilities including those relating to floodplain management plans and flood work approvals.

⁹ NSW Ombudsman (2017) *Investigation into water compliance and enforcement 2007-17*. Available at: https://www.ombo.nsw.gov.au/__data/assets/pdf_file/0012/50133/Investigation-into-water-compliance-and-enforcement-2007-17.pdf

¹⁰ Prior to 2015 there were numerous agencies responsible for implementing various aspects of the floodplain management plans. These included the Department of Primary Industries, NSW Office of Water, Department of Environment, Climate Change and Water, Department of Environment, Climate Change, Department of Natural Resources as well as the Office of Environment and Heritage.

¹¹ Department of Primary Industries - NSW Office of Water (2014) *Floodplain management under the Water Management Act 2000: A guide to the changes*. Available at: https://www.industry.nsw.gov.au/__data/assets/pdf_file/0017/143153/floodplain-management-under-the-WMA-2000-a-guide-to-changes.pdf; Water NSW (2017) *WaterNSW Operating Licence 2017-2022*. Available at: https://www.watnsw.com.au/__data/assets/pdf_file/0004/126607/WaterNSW-Operating-Licence-2017-22.pdf; *Natural Resources Access Regulator Act 2017*; NRAR (2019) *Floodplain management, Our compliance approach to flood works*. Available at: https://www.industry.nsw.gov.au/__data/assets/pdf_file/0003/273621/PUB19-445-Factsheet-Regulatory-Response-to-Floodplain-Management-16-Aug-19.pdf.

4 Plan area

The Gwydir valley floodplain covers approximately one million hectares and is located in north-west New South Wales (**Figure 1**).¹² The Gwydir floodplain is bounded by the Great Dividing Range (east), Barwon-Darling river system (west), Mastermans Range (north) and Nandewar Range (south).¹³

When fully inundated under large floods, the Gwydir floodplain forms a series of irregular inundated wetlands.¹⁴ The floodplain is very flat, with water movement occurring at slow velocities.¹⁵ This results in water from large floods remaining in the landscape for weeks or months following inundation.¹⁶

Major water courses in the Gwydir floodplain include the Gwydir River, Mehi River and Carole Creek.¹⁷ Copeton Dam (1,364 GL capacity) is the major water storage in the floodplain area which is operated by WaterNSW. The dam is located on the Gwydir River in the upper reaches of the valley,¹⁸ with a further network of weirs and regulating structures across the floodplain to store and distribute water for irrigation. Water users including towns, industry and environmental water holders rely on surface water delivered from Copeton Dam.¹⁹

The Gwydir region is home to a population of approximately 25,000 people, with Moree the largest town centre.²⁰ Other local centres include Uralla, Bingara, Warialda, Tingha and Delungra.

The Gwydir wetlands are one of the most significant semi-permanent wetlands in north-western NSW.²¹ Importantly, the Gwydir wetland system contributes to the environmental health of the Murray-Darling Basin, as it provides refuge and breeding habitat for migratory birds, and assists with the recovery of waterbird populations.²²

¹² DPI Water (2016). *Rural floodplain management plans: Background document to the floodplain management plan for the Gwydir Valley Floodplain 2015*. Available at: https://www.industry.nsw.gov.au/__data/assets/pdf_file/0018/146052/gwydir-fmp-background-document.pdf

¹³ *Ibid*

¹⁴ Murray Darling Basin Authority (MDBA) (2015). *Gwydir region reach report: Constraints Management Strategy*. Available at: <https://www.mdba.gov.au/sites/default/files/pubs/Gwydir-reach-report-2015.pdf>

¹⁵ DPI Water (2016). *Rural floodplain management plans: Background document to the floodplain management plan for the Gwydir Valley Floodplain 2015*. Available at: https://www.industry.nsw.gov.au/__data/assets/pdf_file/0018/146052/gwydir-fmp-background-document.pdf

¹⁶ *Ibid*

¹⁷ *Ibid*

¹⁸ DPIE (2020). *Draft Regional Water Strategy: Gwydir*. Available at: https://www.industry.nsw.gov.au/__data/assets/pdf_file/0016/324511/draft-rws-gwydir.pdf

¹⁹ *Ibid*

²⁰ *Ibid*

²¹ DPIE (2020). *Gwydir Long Term Water Plan, Part A: Gwydir catchment*. Available at: <https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Water/Water-for-the-environment/long-term-water-plans/gwydir-long-term-water-plan-part-a-catchment-200083.pdf>

²² MDBA (2015). *Gwydir region reach report: Constraints Management Strategy*. Available at: <https://www.mdba.gov.au/sites/default/files/pubs/Gwydir-reach-report-2015.pdf>; DPIE (2020). *Gwydir Long Term Water Plan, Part A: Gwydir catchment*. Available at: <https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Water/Water-for-the-environment/long-term-water-plans/gwydir-long-term-water-plan-part-a-catchment-200083.pdf>

Four sites (totalling 823 ha) across the Gwydir Floodplain have been listed as wetlands of significant international importance under the Ramsar Convention.²³ A further 7,069 ha of the wetlands fall under the NSW reserve system.²⁴

In addition to changes to river flow caused by river regulation, the Gwydir river has been partially blocked by the Gwydir Raft, which is a 15km area of fallen trees, sediment and debris following extensive clearing in the early 1900s (**Figure 2**).²⁵ As a result, the Gwydir river splits into the Gingham and Lower Gwydir channels upstream of the Raft at Tyreel weir. This has significantly affected flows to the lower reaches of the Gwydir system.²⁶

The Gwydir valley and its water sources are of significant cultural importance to the Kamilaroi Nations.²⁷ The region contains many cultural sites and values for the Aboriginal community including coolamon scars, flood dependent tree species, ceremony and dreaming sites and waterholes.²⁸

The majority of the land area in the Gwydir valley is used for agriculture with a focus on grazing (sheep and cattle production) and cropping (dryland and irrigated).²⁹ Agriculture remains the largest contributor to regional gross value at \$1.34 billion in 2018, with tourism and transport, postal and warehousing the next largest sectors.³⁰ Cotton is the main irrigated crop, with the area cultivated shifting according to water availability. More than one third of all surface water taken in the region comes from water diverted from the floodplain.³¹

²³ MDBA (2015). *Gwydir region reach report: Constraints Management Strategy*. Available at: <https://www.mdba.gov.au/sites/default/files/pubs/Gwydir-reach-report-2015.pdf>

²⁴ DPI Water (2016). *Rural floodplain management plans: Background document to the floodplain management plan for the Gwydir Valley Floodplain 2015*. Available at: https://www.industry.nsw.gov.au/__data/assets/pdf_file/0018/146052/gwydir-fmp-background-document.pdf

²⁵ DPI Water (2016) *Rural floodplain management plans: Background document to the floodplain management plan for the Gwydir Valley Floodplain 2015*. Available at:

https://www.industry.nsw.gov.au/__data/assets/pdf_file/0018/146052/gwydir-fmp-background-document.pdf; MDBA (2015) *Gwydir region reach report: Constraints Management Strategy*. Available at: <https://www.mdba.gov.au/sites/default/files/pubs/Gwydir-reach-report-2015.pdf>

²⁶ DPI Water (2016) *Rural floodplain management plans: Background document to the floodplain management plan for the Gwydir Valley Floodplain 2015*. Available at: https://www.industry.nsw.gov.au/__data/assets/pdf_file/0018/146052/gwydir-fmp-background-document.pdf

²⁷ Horton, D.R. (1996) Aboriginal Studies Press, The Australian Institute of Aboriginal and Torres Strait Islander Studies (AIATSIS), and Auslig/Sinclair, Knight, Merz (2020) *AIATSIS map of Indigenous Australia*. Available at: <https://aiatsis.gov.au/explore/articles/aiatsis-map-indigenous-australia>.

²⁸ MDBA (2015) *Gwydir region reach report: Constraints Management Strategy*. Available at: <https://www.mdba.gov.au/sites/default/files/pubs/Gwydir-reach-report-2015.pdf>; DPIE (2020). *Draft Regional Water Strategy: Gwydir*. Available at:

https://www.industry.nsw.gov.au/__data/assets/pdf_file/0016/324511/draft-rws-gwydir.pdf

²⁹ DPIE (2020) *Draft Regional Water Strategy: Gwydir*. Available at:

https://www.industry.nsw.gov.au/__data/assets/pdf_file/0016/324511/draft-rws-gwydir.pdf

³⁰ *Ibid*

³¹ *Ibid*

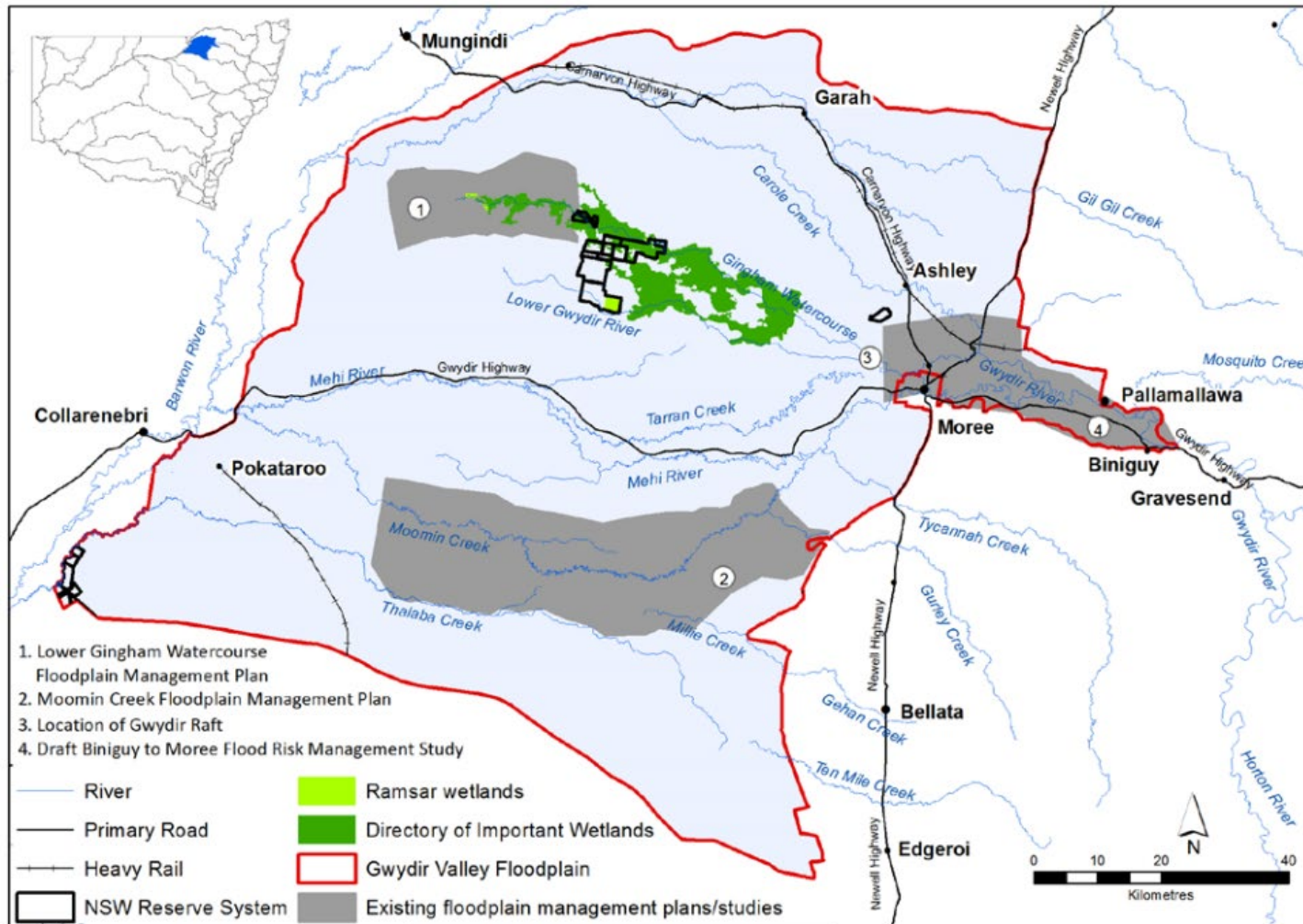


Figure 1: Key features of the Gwydir Valley Floodplain³²

³² DPI Water (2016). *Rural floodplain management plans: Background document to the floodplain management plan for the Gwydir Valley Floodplain 2015*. Available at: https://www.industry.nsw.gov.au/__data/assets/pdf_file/0018/146052/gwydir-fmp-background-document.pdf

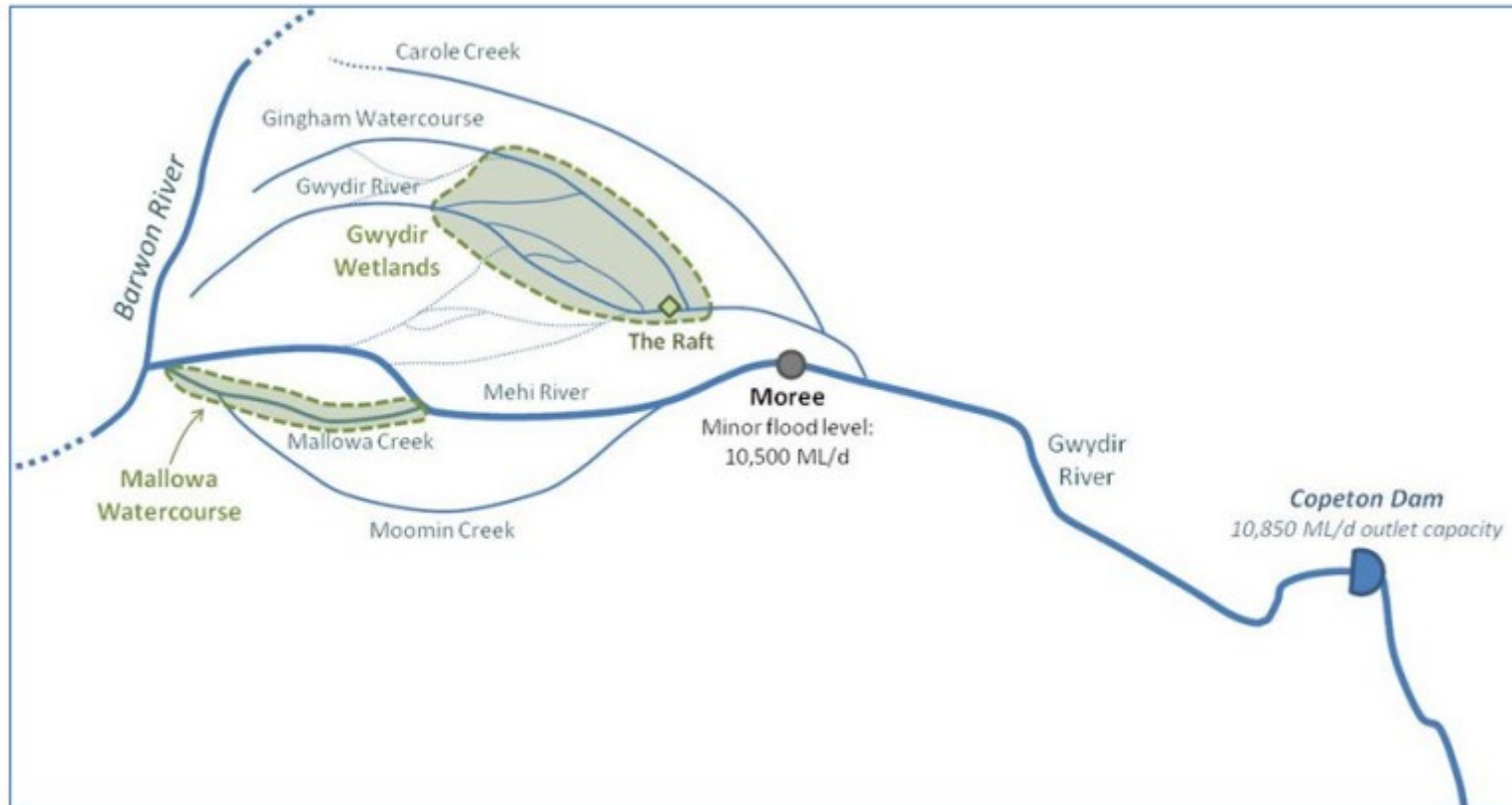


Figure 2: Key structural and flow constraints in the Gwydir region³³

³³ Murray Darling Basin Authority (2015). *Gwydir region reach report: Constraints Management Strategy*. Available at: <https://www.mdba.gov.au/sites/default/files/pubs/Gwydir-reach-report-2015.pdf>

5 Criterion 1 – Vision, objectives, strategies and performance indicators

5.1 Criterion overview

Part 2 of the Plan is made in accordance with Section 35(1) the Act. This section requires floodplain management plans to include a vision statement, objectives consistent with the vision statement, strategies for reaching objectives, and performance indicators to measure the success of those strategies. The key clauses within Part 2 of the Plan examined for this audit were:

- Clause 12(a) - the extent to which flood works are impacting on the flood connectivity of ecological and cultural assets and groundwater recharge
- Clause 12(b) - the change to flood connectivity to ecological and cultural assets caused by flood works constructed after commencement of the Plan
- Clause 12(c) - the extent to which flood works are modifying the hydraulic behaviour of floodwaters
- Clause 12(d) - the change to the hydraulic behaviour of floodwater caused by flood works constructed after commencement of the Plan
- Clause 12(e) - the extent to which the hydraulic behaviour of monitored floods is consistent with the floodway network.

These clauses require the performance indicators to be largely assessed by examining the impact that flood works³⁴ have on the flood connectivity of ecological and cultural assets; and their effect on groundwater recharge, including whether they are responsible for any changes in the hydraulic behaviour of flood waters.

The identified performance indicators are not specifically aligned to the Objectives of the Plan; and the Plan does not identify how these matters are to be assessed and monitored. The Commission expects to see at a minimum a process detailing what data will be collected; and how it will be collected and used for the purpose of undertaking these assessments.

5.2 Current roles, systems and processes

DPIE-Water is the lead agency responsible for giving effect to performance provisions, including during the audit period.³⁵ This includes using performance indicators to measure the success of the strategies in meeting Plan objectives.

The Commission considers that there were no systems, processes, or procedures to manage the implementation of Plan provisions relating to monitoring performance during the audit period.

³⁴ This refers to flood works existing and constructed after the commencement of the Plan.

³⁵ DPIE-Water is assumed to be responsible, except where other agencies are identified to be responsible (through the WaterNSW Operating Licence and the *Natural Resources Access Regulator Act 2017*).

5.3 Performance monitoring provisions have not been given effect to

While the Plan includes provisions to satisfy this requirement of the Act, the relevant responsible parties have not implemented them during the audit period.

DPIE-Water indicated that performance indicators have not been used to measure the success of strategies to reach the objectives of the Plan, as required. DPIE-Water staff indicated that some monitoring data had been collected in relation to vegetation, however, the Commission has not viewed this data. While data is being collected by other agencies, it is being used for other purposes such as the Gwydir Constraints Project and not for the purpose of implementing Criterion 1. The Commission is aware that flood monitoring data such as satellite imagery is available and can be obtained after flood events. However, this data has not yet been analysed to assess the performance of the Plan in relation to flood events during the audit period.

The lack of implementation of performance monitoring provisions is likely due in part to the lack of a robust monitoring, evaluation and reporting (MER) framework for the Plan. The performance indicators included in the Plan have not been specifically aligned to the Objectives of that Plan; and are not specific, measurable, achievable, relevant and time-bound (SMART), further no metrics and targets have been set to better define these performance indicators.

These deficiencies with the Plan provisions should be addressed by specifically documenting the linkages between the Plan's Objectives and the proposed monitoring regime; and by identifying case-specific metrics, timing and specific responsibilities for carrying out monitoring activities.

The lack of MER is a significant and recurring issue across NSW that has been repeatedly highlighted by stakeholders, in previous Commission reviews, by the National Water Commission and in Section 44 implementation audits undertaken in 2019 for other water sharing plans.

5.4 Potential impacts

Performance indicators are key to measuring the success of strategies in meeting Plan objectives. Potential impacts of not using performance indicators include:

- no ability to determine and demonstrate if Plan implementation aligns with the objects and principles of the Act
- no ability to benchmark or identify good practices that could be adopted in other floodplain areas
- no ability to transparently report on the achievement of Plan outcomes
- insufficient information to make evidence-based decisions, apply adaptive management, or continually improve implementation to proactively address risks to life, property or environmental or cultural assets
- no ability to measure the consequence of the partial or non-implementation of Plan provisions
- limited evidence base to inform the five- year review of the Plan under Section 43A of the Act.

5.5 DPIE-Water is making efforts to improve MER

The Commission acknowledges DPIE-Water has drafted an MER framework for the northern Murray Darling Basin. This framework is still in draft (due for finalisation in July 2021) and has not been utilised in the audit period.

DPIE-Water staff have advised remote sensing imagery and vegetation monitoring data is currently available to support the analysis of the Plan's performance indicators; and that hydrological (gauge-based) data will be available. DPIE-Water staff indicate that they are working to develop a methodology to collect data, on a routine and repeatable basis, that is comparable across all floodplain valleys.

Once the draft MER framework for the northern Murray Darling Basin is finalised and implemented, DPIE-Water staff have indicated that they should be able to measure the success of the Plan from 2016-present using the remote sensing and gauged based data.

5.6 Recommendations and suggested actions

The Commission makes one recommendation and raises one suggested action.

R 1	The Commission recommends that DPIE-Water lead the monitoring and evaluation of performance indicators and to use generated data to support decision making for Plan implementation.
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Although not a specific requirement of the Plan or the Act, public reporting is becoming increasingly important in relation to water sharing. It was a key theme in reports such as Ken Matthews' *Independent investigation into NSW water management and compliance*³⁶ and in the NSW Government's *Water Reform Action Plan*.³⁷

Data accessibility to support transparency is consistent with the NSW Government's *Open Data Policy*³⁸ and its importance is highlighted in DPIE-Water's statement that '*we provide transparent stewardship of water resources, and deliver services and reforms which support sustainable and healthy environments, economies and societies*'.³⁹

The Commission suggests that DPIE-Water publicly report on progress towards objectives of the Plan so that all stakeholders (including community stakeholders) are informed on the extent to which Plan objectives are being met.

SA 1	DPIE-Water to publicly report on progress towards objectives of the Plan.
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³⁶ Ken Matthews (2017) *Independent investigation into NSW water management and compliance*. Available at: https://www.industry.nsw.gov.au/__data/assets/pdf_file/0016/120193/Matthews-interim-report-nsw-water.pdf.

³⁷ NSW Government (2017) *Securing our water NSW Government water reform action plan*. Available at: https://www.industry.nsw.gov.au/__data/assets/pdf_file/0015/312144/nsw-government-water-reform-action-plan.pdf

³⁸ NSW Department of Finance, Service and Innovation (2016) *NSW Government Open Data Policy*. Accessed 25 September 2020 at: <https://data.nsw.gov.au/nsw-government-open-data-policy>.

³⁹ DPIE-Water (n.d.) *Water*. Available at: <https://www.dpie.nsw.gov.au/our-work/water>.

6 Criterion 2 – Rules for flood work approvals

6.1 Criterion overview

Provisions in the Act establish rules for flood work approvals including:

- Section 92 - applications for approvals
- Section 93 - objections to applications
- Section 95 - determinations of applications
- Section 96 - matters for consideration in relation to granting approvals
- Section 97 - grounds of refusal of certain applications
- Section 98 - notification of approval holders
- Section 100 - imposing mandatory and discretionary conditions on approvals.

The relevant clauses of the Regulation include:

- Clause 25(1)(a) - requires the application to be in an approved form
- Clause 25(1)(b) - requires an application to include or to be accompanied by an assessment of the likely impact of the water use, water or activity concerned (if required by the Minister)
- Clause 26(7) - requires the application for approval to be published
- Clause 29 - specifies the circumstances in which an existing approval may be amended
- Clause 30 - specifies the circumstances in which the Minister may refuse to accept the surrender of an approval.

6.2 Current roles, systems and processes

WaterNSW, NRAR and DPIE-Water administer the Act, the Regulation and individual rules for the Plan related to the granting or amending of flood work approvals.

Roles and responsibilities for giving effect to Plan provisions have been documented broadly for the public on the WaterNSW and NRAR websites.⁴⁰

In addition, the *WaterNSW Operating Licence 2017-2022* and other internal documents outline various functions, including the Deed of Business Transfer between WaterNSW and the former DPIE-Water and delegations. In addition, audit interviews indicate that roles in relation to approvals are well understood between the two organisations. Any gaps in documentation or understanding are considered immaterial.

There have been several restructures impacting agency roles and names since 2015. Prior to 2015, the NSW Office of Water held the broad assessment role for flood approvals.

⁴⁰ NSW Government (2018) *Roles of water management agencies in NSW*. Available at: https://www.watnsw.com.au/__data/assets/pdf_file/0020/133940/Water-Roles-and-Responsibilities.pdf; NRAR (n.d.) *Licensing and approvals*. Available at: <https://www.industry.nsw.gov.au/natural-resources-access-regulator/licensing-and-approvals>.

This changed to the Department of Primary Industries–Water in 2015-16. From July 2016, this role transferred to WaterNSW. From April 2018, NRAR commenced its role for approval assessments and compliance and enforcement, taking the responsibility for granting approvals for a subset of customers.

A summary of agency roles in flood work approvals is as follows:

- **WaterNSW** is responsible for assessing and granting flood work approvals to landholders, industries and developments that are not State significant developments or State significant infrastructure.⁴¹ WaterNSW is also responsible for notification of all holders of former entitlements under the *Water Act 1912* upon the commencement of a new floodplain management plan under the Act.
- **NRAR** is responsible for assessing and granting flood work approvals to government agencies, including other NSW Government agencies, local councils and the Australian Government; state-owned corporations; major water utilities, water supply authorities, and local water utilities; licensed network operators under the *Water Industry Competition Act 2006*; mining companies; irrigation corporations; floodplain harvesting; major developments (State significant developments and State significant infrastructure); schools and hospitals. During the audit period, NRAR assessed controlled works applications made under the *Water Act 1912*, existing at Plan commencement. NRAR also has a role to monitor and audit compliance with approvals, specifically detecting instances of non-compliance in a timely manner.⁴²

The main systems used to grant flood work approvals are the:

- **Water Licensing System (WLS) - Approvals Transaction Module** – this is an automated workflow and storage system. It captures all applications, including flood work approvals and supports the assessment officers to undertake the assessments of the application in line with the requirements. Part 8 approvals under the 1912 Act were processed using the Licencing Administration System (LAS), the predecessor to WLS.
- **NSW Water Register** – this is set up under Section 113 of the Act, which requires the register to be available for public inspection and record every application and every approval granted, extended, amended, transferred, surrendered, suspended or cancelled. The register can be found at the WaterNSW website.⁴³

The main procedural and process documents used by WaterNSW, NRAR and DPIE-Water to support the granting of flood work approvals used throughout the audit period are:

- **The Licensing Procedure Manual** - which sets out requirements for operationalising the Act and Regulation requirements for the flood works approval process.

⁴¹ State of NSW (n.d.) *WaterNSW Operating Licence 2017-2022*, pp 50-51. Available at: https://www.watnsw.com.au/__data/assets/pdf_file/0004/126607/July-2020-WaterNSW-Operating-Licence.pdf, NRAR Act 2017 cl. 11 Functions of the Regulator and Schedule 2 Additional functions of the Regulator.

⁴² NRAR (n.d.) *Which agency do I lodge my application with?* Available at: <https://www.dpie.nsw.gov.au/nrar/how-to-apply/water-licences/which-agency>

⁴³ WaterNSW (n.d) *NSW Water Register*. Available at: <https://waterregister.watnsw.com.au/water-register-frame>

- **Assessment summary report** – this provides a framework for officers to document their assessment of an application and their decision. It is designed to ensure the relevant administrative and environmental checks stated in the Act and Regulation are undertaken by water regulation officers, and includes space to capture the relevant signatures.
- **Approval assessment checklist** – this is a checklist for use by water regulation officers to ensure they have undertaken the required processes (administrative and environmental checks and impact assessment of the activity) under the Licensing Procedure Manual, the Act and the Regulation.

WaterNSW and NRAR advised that they intend to update their documentation to provide more specific guidance for the assessment of flood work approvals. WaterNSW has progressed a draft suite of documentation to support assessment of flood work approvals.

The Commission found that the relevant organisations have systems, processes and procedures in place that generally align with legislative requirements that are available to support assessment and granting of flood work approvals.

The Commission also found that flood work approvals were generally assessed and processed in accordance with legislative requirements. There is progress towards improving associated approval procedures for floodplain management plans.

6.3 Rules for flood work approvals were partially implemented

To assess if Plan provisions were given effect in relation to approvals applied for and granted in the audit period, the Commission reviewed WaterNSW's five most recent flood work approvals processed under the Plan. NRAR provided a sample of six controlled work applications made under the *Water Act 1912* that were granted as flood work approvals under the Act in the audit period. NRAR did not assess any new applications during the audit period for the Plan.

This analysis found that approval applications were generally assessed and processed in accordance with legislative requirements set out above. However, the Commission noted the following gaps:

- No mandatory conditions were included in the statement of approvals for flood work approval holders. This is discussed further in **Section 7- Criteria 3- Mandatory Conditions**.
- Cumulative impact assessment required under clauses 30(2), 40(5), 42(6), 42(7), 43(6) and 46(5) of the Plan has not occurred (see **Section 6.5** below). This is largely because the floodplain model for the Plan has not been updated to reflect new works as originally intended at Plan commencement. This limits the ability to undertake cumulative impact assessment as floodplain development continues. The Commission has not assessed whether a model update was triggered in the Gwydir valley floodplain or the materiality of the update not occurring. The Commission notes that:
 - The original intention was to perform annual updates to the model at a minimum, and more frequently if triggered by a pre-defined event.

- As of October 2020, formal arrangements have been put in place between WaterNSW and DPIE-Water to facilitate two-way data sharing, to enable a more efficient approvals assessment process. This should also provide necessary information to perform model updates.
- DPIE-Water staff advised the Commission that there are no resources available to perform an update to the model.
- There is currently no process for WaterNSW and NRAR to refer applications to DPIE-Water for expert assistance for water regulation officers assessing flood work approval applications. Previously, water regulation officers used to refer controlled work applications under the *Water Act 1912* to OEH (predecessor to DPIE-EES). Following the transition of flood work management plan responsibilities moving from OEH to DPIE-Water, this no longer occurs. DPIE-Water should consider making technical experts available to assist water regulation officers in WaterNSW and NRAR, where required, to assess hydraulic, environmental, cultural and heritage impacts of flood work applications under the Act as part of a formal ongoing arrangement. This may require a formal arrangement to be put in place between DPIE-Water and WaterNSW and NRAR.
- Clauses 39(1)(c) and 45(1)(c) of the Plan prohibit approvals being granted if they have been previously refused or remain undetermined under Part 8 of the *Water Act 1912*. WaterNSW's ability to assess the eligibility of new applications under clauses 39(1)(c) and 45(1)(c) of the Plan is dependent on information held by NRAR. This information relates to the status of applications made under Part 8 of the *Water Act 1912*. Currently, WaterNSW is requesting this information from NRAR on an application specific basis, however this is inefficient and could be improved via a bulk information transfer from NRAR to WaterNSW into a shared database like WLS.
- The status of notification to the applicant is not clear for some approvals associated with controlled work applications that were granted as flood work approvals under the Act and for approvals existing at Plan commencement that were converted flood work approvals under the Act. This may be because some historic information created under the Licencing and Approvals System has not been digitised and transferred into WLS. The Commission has been advised that this is an historic issue and is being progressed and makes no recommendation on this as part of this audit.

6.4 Potential Impacts

Improving the quality of information available to support the assessment of applications through:

- updated models to inform cumulative impact assessment
- improved detailed technical guidance and procedures to inform a consistent approach and greater technical rigour by the organisations undertaking assessments
- improved data sharing between agencies.

will help support improved decision making around the granting of approvals for new, amended or decommissioned structures in the floodplain.

Without the above, there is a higher risk of:

- increased flood liability on individual owners and occupiers of flood-prone property

- increased private and public losses of life and property resulting from floods
- reduced diversity and well-being of riverine and floodplain ecosystems that depend on flood inundation including important wetland areas.

6.5 Recommendations and suggested actions

The Commission makes two recommendations and raises four suggested actions.

To ensure that requirements set out in the Plan under clauses 30(2), 40(5) and 46(5) and in the Principles of the Act (Sections 5(2)(d) and 6) relating to cumulative impact assessment are met, we recommend:

R 2.1	WaterNSW to provide required data to DPIE-Water to enable model updates to reflect new approvals under the Plan as required.
R 2.2	DPIE-Water to regularly update the model and provide this updated model information to WaterNSW and NRAR to enable approval assessment officers to undertake cumulative impact assessments for new approvals going forward.

To improve technical guidance for assessment of flood work approvals, and provide greater clarity and consistency to support assessment processes undertaken by NRAR and WaterNSW water regulation officers when performing flood work approval assessments, we suggest:

SA 2.1.1	DPIE-Water to finalise technical guidance for the Plan and make these available for WaterNSW and NRAR water regulation officers to use when assessing approvals to ensure a consistent approach between assessments undertaken by these two organisations. In preparing this guidance DPIE-Water should integrate the OEH Implementation Guidelines where appropriate.
SA 2.1.2	After the implementation of SA 2.1, WaterNSW and NRAR to ensure their internal administrative processes link to this guidance once available.
SA 2.1.3	DPIE-Water to provide technical expertise to NRAR and WaterNSW as required to support assessment of the impact of flood work applications in relation to hydraulic, environmental, and cultural assets.

To improve the ability of WaterNSW water regulation officers to establish the eligibility of applications under clauses 39(1)(c) and 45(1)(c) of the Plan in relation to applications previously made under Part 8 of the *Water Act 1912*, we suggest:

SA 2.2	NRAR make available all relevant information relating to approvals that were refused or remain undetermined under Part 8 of the <i>Water Act 1912</i> to facilitate WaterNSW's assessment regarding the eligibility of new applications.
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7 Criterion 3 – Mandatory conditions

7.1 Criterion overview

Part 9 of the Plan sets out provisions describing the mandatory conditions that flood work approvals (approval) must include (where required). Mandatory conditions for flood work approvals generally relate to rules for appropriate construction or amendment of works, decommissioning of a work, notification of breaches of conditions (Clause 47).

Enforcement requirements for flood work approvals are set out in the Act, specifically:

- Part 3 Division 1A:
 - Section 91D - offence relates to constructing a flood work without an approval
 - Section 91G - offence relates to contravention of an approval
 - Chapter 7 – enforcement actions such as stop work orders, removal of unlawful water management works.

To be given effect, mandatory conditions rely on:

- notifying flood work approval holders of mandatory conditions
- relevant Plan provisions being accurately reflected as mandatory conditions on statement of approvals
- a compliance and enforcement regime promoting compliance by approval holders with the obligations set out in the conditions applied to the approvals.

In relation to the first dot point above, notification of flood work approval holders of mandatory conditions was considered a critical component of Criterion 2 and issues around these provisions are discussed in **Section 6**. In particular, the assessment of Criterion 2 found that notification of a decision had occurred, but that this notification did not include the required notification of mandatory conditions.

This Section focuses on the second two dot points above - the accuracy of the mandatory conditions themselves in reflecting Plan provisions, as well as the enforcement regime.

The Commission notes that it was outside the scope of this audit to comment on the adequacy of the provisions for mandatory conditions in the Plan.

7.2 Current roles, systems and processes

A summary of organisational roles is as follows:

- **DPIE-Water** – responsible for creating, entering and coding the mandatory conditions into the WLS (since September 2019). This includes identifying the individual management zones and matching them to applicable Plan provisions so that they can be applied by water regulation officers in WaterNSW and NRAR to flood work approvals. Prior to this, the function was at various times carried out by NRAR and DPIE-Water predecessor organisations such as DPI-Water, Department of Industry–Lands and Water and Department of Industry–Water.

- **WaterNSW** – responsible for imposing mandatory conditions on approval holders in accordance with Section 100⁴⁴ of the Act for its customers.⁴⁵ WaterNSW is also responsible for notifying licence and approval holders upon the commencement of a new Plan under the Act, conversions of pre-existing rights under Schedule 10(2) or changes to or remakes of floodplain management plans under the Act. Prior to this, these functions were the responsibility of DPIE-Water predecessors or NRAR.
- **NRAR** - responsible for enforcement of the conditions applied to flood work approvals that give effect to Plan provisions. NRAR took over these responsibilities in April 2018, prior to this, DPI-Water and WaterNSW were responsible. Regardless of compliance behaviours, in a particular plan area, it has been recognised as important to have adequate enforcement capabilities and arrangements in place by the NSW Ombudsman.⁴⁶ *The Natural Resources Access Regulator Act 2017* objects are to: 10(a) to ensure effective, efficient, transparent and accountable compliance and enforcement measures for the natural resources management legislation, and 10(b) to maintain public confidence in the enforcement of the natural resources management legislation. NRAR took the lead role in assessing legacy applications made under the *Water Act 1912*, prior to Plan commencement. The majority of these assessments took place during the audit period.

The following systems are used to administer and manage the implementation of mandatory conditions:

- **WLS** – owned and maintained by WaterNSW. Used by DPIE-Water to code mandatory conditions and make them available to water regulation officers in WaterNSW and NRAR. Water regulation officers then apply these to approvals, along with any discretionary conditions applicable on a case by case basis. WLS generates the statement of approval, notice of decision and the cover letter that is sent to approval holders by NRAR and WaterNSW. These documents should include the relevant mandatory conditions.
- **NSW Water Register** – operated by WaterNSW, this system makes details of granted flood work approvals available to the public as required under Section 113 of the Act.
- **Compliance Investigation Reporting and Management System (CIRaM)** – used by NRAR to record and manage compliance and enforcement activities.

⁴⁴ State of NSW (n.d.) *WaterNSW Operating Licence. 2017-2022*, p. 53. Available at: https://www.watnsw.com.au/__data/assets/pdf_file/0004/126607/July-2020-WaterNSW-Operating-Licence.pdf.

⁴⁵ NRAR (n.d.) *Licensing and approvals*. Available at: <https://www.industry.nsw.gov.au/natural-resources-access-regulator/licensing-and-approvals/licensing-and-approvals> states that NRAR is responsible for granting approvals to government agencies, including other NSW government agencies, local councils and the Commonwealth; state owned corporations; major water utilities, water supply authorities, and local water utilities; licensed network operators under the *Water Industry Competition Act 2006*; mining companies; irrigation corporations; Aboriginal communities and businesses; floodplain harvesting; major developments (state significant developments and state significant infrastructure); schools and hospitals; and that WaterNSW is responsible for granting approvals to rural; landholders; rural industries and developments which are not state significant development or state significant infrastructure.

⁴⁶ NSW Ombudsman (2017) *Investigation into water compliance and enforcement 2007-17*. Available at: https://www.ombo.nsw.gov.au/__data/assets/pdf_file/0012/50133/Investigation-into-water-compliance-and-enforcement-2007-17.pdf

The main procedural and process documents used by WaterNSW, DPIE-Water and NRAR to implement mandatory conditions are:

- **The Licensing Procedure Manual**, specifically:
 - **Chapter 6.3, Section 1.5.2** – relates to issuing approvals and states that mandatory conditions will display on screen (in WLS) and be automatically added to the statement of approval based on the location and the rules within the relevant plan. Floodplain management plans or water management plans are not mentioned in this document. It is directed at management of water sharing plans. The Commission has been advised that this approach should apply to floodplain management plans.
 - **Chapter 8 Conditions** - this provides information in relation to translating water management plan provisions into mandatory conditions in WLS for use by water regulation officers in WaterNSW and NRAR.
- **The Compliance Investigations Manual** - used by NRAR to respond to allegations of non-compliance. It is the primary reference for NRAR investigations staff and sets out the approved processes, procedures, authorities, instruction and guidance to be applied when investigating alleged breaches of water regulations. It is not clear what procedures were followed by agencies responsible for compliance before NRAR was established in April 2018.

The Commission considers there were systems, processes and procedures in place to support implementation of Plan provisions relating to mandatory conditions within the audit period. However:

- these procedures should be updated to specifically include floodplain management plans.
- these systems, processes and procedures were not utilised in the audit period to give effect to the mandatory conditions provisions of the Plan.

7.3 Rules for mandatory conditions have not been implemented

Rules for mandatory conditions were not implemented

To assess if Plan provisions were given effect to, the Commission sampled a range of flood work approvals of both converted former entitlements and those applied for and granted in the audit period. The sample included:

- five recently applied for and granted flood work approvals across the four management zones of different approval types
- six controlled works approvals granted under Part 8 of the *Water Act 1912*, covering different approval types across four management zones, which were converted to flood work approvals under the Plan
- 40 approvals of the approximately 200 pre-existing approvals.⁴⁷

⁴⁷ Note that there is an inconsistency between Clause 5 in the Plan which states there are 286 flood works on the floodplain vs. WLS which shows 197 flood work approvals.

The Commission found that mandatory conditions were missing on all of the approvals sampled. Mandatory conditions have not been applied to flood work approvals, this was confirmed by interviews with DPIE-Water and WaterNSW staff, who indicated that mandatory conditions had not yet been coded into WLS, meaning that they were not available to be automatically applied to the approvals processed by water regulation officers in NRAR and WaterNSW.

DPIE-Water staff further advised that some work was done in 2016 to translate Plan provisions into mandatory conditions, however this work wasn't progressed. DPIE-Water staff indicated the reasons that these mandatory conditions have not been included in WLS are due to:

- WLS not being configured at Plan commencement to include details of the management zones, which is a pre-requisite to enabling the addition of these mandatory conditions. The Commission confirmed the management zones for the Plan have now been configured in WLS via a walk through with DPIE-Water staff.
- Restructuring, which has meant that the responsibility for mandatory conditions has shifted between different organisations during the audit period.
- Priority being given to water sharing plans.

The Commission is of the view that the materiality of missing mandatory conditions was partially offset by the addition of discretionary conditions by water regulation officers in NRAR and WaterNSW. Based on our sample, these discretionary conditions consistently related to construction in accordance with an attached works plan, which shows for example site location and height restrictions. There were some other discretionary conditions which were applied on a case by case basis. However, based on our sample, no discretionary conditions were applied to address mandatory condition provisions relating to decommissioning or notification of breaches.

WaterNSW and DPIE-Water staff through interviews indicated that the construction requirements are the most critical and therefore the most material aspects of the mandatory conditions. Given that the majority of approvals (approximately 90 percent of approvals sampled) have discretionary conditions in place relating to construction requirements in accordance with Plan rules, this addresses the large part of that risk. We have not assessed the Plan maps for adequacy as part of this audit.

NRAR staff advised that should there be a condition referring to an attached works plan of high quality, this would enable staff to legally enforce compliance with conditions. A large number of plan maps are of poor quality and could comprise a red pen line on an old topographic map. With new technology available, the details of these approvals can be made clearer to support enforcement action and can be provided to flood work approval holders for clarity and transparency. WaterNSW staff indicated that they are digitising plan maps of structures and improving the quality of maps of existing structures in the Gwydir valley floodplain as part of the approvals extension process and also as requested by flood work approval holders. This will improve the ability of NRAR to undertake enforcement activities of approved flood works.

However, the Commission found that approximately 10 percent of approved works (based on our sample) had no mandatory or discretionary conditions applied, meaning that there is no basis for enforcement action for these works. We have no further information on these structures to determine the level of risk associated with the lack of conditions applied to these structures to be able to comment further.

Applying the mandatory conditions in WLS is an important requirement to ensure that a consistent set of condition is applied to all flood work approvals to give effect to all the mandatory condition provisions in the Plan. Without this, it is up to individual water regulation officers to identify and apply appropriate discretionary conditions.

The lack of mandatory and discretionary conditions to give effect to the Plan rules can lead to unmanaged structures on the floodplain and result in adverse changes to flood flow patterns, which may cause:

- increased flood liability on individual owners and occupiers of flood-prone property
- increased private and public losses of life and property resulting from floods
- reduced diversity and well-being of riverine and floodplain ecosystems that depend on flood inundation.

The application of mandatory conditions is a time consuming and resource intensive process. It is currently a requirement under the Act that relevant mandatory conditions are applied to each flood work approval. With the conversion of pre-existing approvals, the *Gwydir Constraints Measures Project*, on-going assessment of legacy applications and the hotspots strategy there is an increasing amount of work to assess individual flood work approvals and apply mandatory conditions.

It may be prudent at this time to consider whether the process of applications and individually applying mandatory conditions as a basis for enforcement action could be streamlined to reduce the administrative requirements, while still achieving the objectives of the floodplain management plan and the objects of the Act. It is beyond the scope of this audit to comment on provisions in the Act.

A reactive compliance and enforcement regime is in place

There is a reactive enforcement regime in place to support implementation of the Plan to detect offenses under the Act (sections 91D, 91G of the Act as applicable). Associated enforcement of mandatory conditions is undertaken for approvals in accordance with Chapter 7 of the Act.

Evidence of this enforcement activity is summarised in **Table 4** below, which presents the Commission's analysis of available information by water sharing plan area for the last 12 months.⁴⁸ The NRAR public register does not currently include searchable NRAR enforcement activity for the floodplain management areas and so it is not currently transparent how this information corresponds to the Gwydir Plan.⁴⁹

The *Gwydir Regulated River Water Source* and the *Gwydir Unregulated and Alluvial Water Sources* water sharing plans are subject to a reactive compliance regime and NRAR has reported since 2018 on compliance activity on this area. However, this reporting has not distinguished between issues relating to water sharing plans and floodplain management plans.

⁴⁸ Information relating to offences under sections 91D, 91G of the Act is only available on a month by month basis. We have presented the 12 months of activity to provide some indication of recent compliance and enforcement activity.

⁴⁹ NRAR (n.d.). *NRAR public register*. Available at: <https://www.industry.nsw.gov.au/natural-resources-access-regulator/reports-data/nrar-public-register>.

Publicly available information does not indicate if there is a good or poor level of compliance in the Plan areas. The fact that there is a low level of alleged breaches provides some information in relation to the level of compliance, but it is unclear if community awareness is high enough for this to be a reliable indicator.

In addition, community reporting of breaches may not be an adequate control, depending on the level of awareness and interest in the community in relation to:

- downstream impacts of flood works that are not immediately apparent beyond issues between neighbours
- environmental impacts such as connectivity and inundation extent relating to flood works.

Table 3: Publicly reported enforcement activity for the Plan (February 2020- February 2021) ^{50, 51}

Type	Number <i>Gwydir Regulated River Water Source & Gwydir Unregulated and Alluvial Water Sources</i>
Inspections	28
Alleged breach notifications	62
Investigations finalised	50
Advisory letters issued	14
Formal warnings	4
Statutory notices	19
PINs	4
Prosecutions finalised	11

Proactive compliance and enforcement has not been undertaken in the audit period and would be beneficial

In relation to proactive compliance and enforcement, the *Natural Resources Access Regulator Act 2017* specifically enables NRAR's priorities to be set independently. These regulatory priorities are reviewed on a regular basis and published.^{52,53} The 2019-2021 regulatory priorities did include work in relation to structures on the Gwydir floodplain, however, due to other priorities the Gwydir floodplain regulatory pilot was delayed.

⁵⁰ This audit did not seek to establish the quality of the enforcement regime or how these incidents were finalised.

⁵¹ NRAR (n.d.) *How we're doing. Compliance activities and outputs*. Available at: <https://www.industry.nsw.gov.au/natural-resources-access-regulator/reports-data/how-were-doing>

⁵² NRAR (2019) *Natural Resource Access Regulator Regulatory Priorities 2019 – 2021*. Available at: https://www.industry.nsw.gov.au/__data/assets/pdf_file/0020/227324/NRARs-regulatory-priorities-2019-to-2021.pdf.

⁵³ NRAR (2021). *Regulatory priorities 2021-22*. Available at: https://www.dpie.nsw.gov.au/__data/assets/pdf_file/0011/387902/nrar-regulatory-priorities-2021-22.pdf (TRIM ref: "nrar-regulatory-priorities-2021-22" D21/3293)

NRAR staff advised that a pilot in the Gwydir targeting unauthorised flood work structures is intended to be carried out before the end of 2021.

NRAR staff advised that there has not been, nor is there any plan to undertake compliance and enforcement of mandatory conditions at this stage and that the focus will be on unauthorised structures in the near term.

There is some evidence of structures in the Gwydir floodplain that are potentially inconsistent with hydraulic or environmental criteria, that may be causing adverse downstream impacts. The *Gwydir Long Term Water Plan* states that unmanaged construction in the form of levees, diversion channels, sediment blockage of culverts for example has diverted flows and caused barriers to delivering water to wetland and floodplain areas.⁵⁴

The risk of unmanaged structures on the floodplain could potentially contribute to risks to downstream life and property, but also may be adding further stress to already stressed ecosystems.

The Commonwealth Scientific and Industrial Research Organisation (CSIRO) reported in 2007 that since 1976 there has been a reduction in flood frequency in the Gwydir that has reduced the annual flooding volume by 42 percent, which is consistent with the stressed ecological condition of the wetlands.⁵⁵ In this same period, floodplain vegetation and native wetland vegetation has changed significantly with the core wetland extent declining by approximately 90 percent.⁵⁶

Whilst the above is due to a number of factors including land use and climate change, floodplain structures are a contributing factor. One study found that in the Macquarie Marshes floodplain disconnection was greater where earthworks were the most concentrated.⁵⁷

The NSW *Sustaining the Basin Program: Healthy Floodplains Project Business Case* put forward by the NSW Office of Water (predecessor to DPIE-Water) to the Commonwealth government in 2010 included key deliverables of this project to:

- undertake on -ground remedial works to modify or remove inappropriate floodplain development
- develop and implement a compliance and enforcement strategy.⁵⁸

⁵⁴ NSW Government (2020). *Gwydir Long Term Water Plan Part A: Gwydir catchment*. p.63 Available at: <https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Water/Water-for-the-environment/long-term-water-plans/gwydir-long-term-water-plan-part-a-catchment-200083.pdf>

⁵⁵ CSIRO (2007). *Water Availability in the Gwydir*. CSIRO Murray Darling Basin Sustainable Yields Project- a report to the Australian Government. Available at:

<http://www.clw.csiro.au/publications/waterforahealthycountry/mdbsy/pdf/Gwydir-FactSheet.pdf>

⁵⁶ Wilson, G.G., Bickel, T.O., Berney, P.J. & Sisson, J.L. (2009). *Managing environmental flows in an agricultural landscape: the Lower Gwydir floodplain. Final Report to the Australian Government Department of the Environment, Water, Heritage and the Arts*. University of New England and Cotton Catchment Communities Cooperative Research Centre, Armidale, New South Wales. p. vii Available at: <https://www.environment.gov.au/system/files/resources/4e7fd270-de7d-4979-b407-4ee0e05be227/files/lower-gwydir-e-flows.pdf>

⁵⁷ Steinfeld, Kingsford (2011), *Disconnecting the floodplain: Earthworks and their ecological effect on a dryland floodplain in the Murray Darling Basin, Australia*. River and Research Applications. Available at: <https://doi.org/10.1002/rra.1583>.

⁵⁸ NSW Office of Water (2010) *NSW Sustaining the Basin Program: Healthy Floodplains Project Business Case*. p.4

This business case recognised that significant resources are needed to undertake the individual farm assessments and address the complex licensing, assessment, compliance and enforcement issues.⁵⁹

It also indicated that identification of required remedial works not consistent with hydraulic criteria was going to be completed in 2015-16. However, there is no publicly available information to date as to whether this work was carried out or the results of this work.⁶⁰

7.4 Potential impacts

The Plan provisions are primarily implemented through water users complying with mandatory conditions. Without mandatory conditions (or appropriate discretionary conditions applied consistently in their place):

- the Plan cannot be given effect as intended
- compliance and enforcement activities are limited to those structures without an approval and those structures with discretionary conditions in relation to construction requirements
- there are potentially adverse cumulative impacts on the environment affecting wetlands, cultural assets and species that depend on these wetlands and these overland flows.

The Plan area contains some important ecological assets that are currently stressed, which could deteriorate further without a proactive regulatory regime.

7.5 Recommendations and suggested actions

The Commission makes three recommendations and raises three suggested actions.

To give effect to mandatory conditions the Commission recommends the following:

R 3.1	DPIE-Water to write mandatory conditions necessary to give effect to requirements of the Plan and code them into the Water Licencing System so they will automatically apply to new approvals going forward, whilst maintaining existing discretionary conditions.
R 3.2	DPIE-Water to issue an instruction to WaterNSW to re-issue the statement of approvals to existing approval holders inclusive of mandatory conditions.
R 3.3	WaterNSW to re-issue the statement of approvals to existing approval holders inclusive of mandatory conditions, inclusive of an updated plan map.

⁵⁹ NSW Office of Water (2010) *NSW Sustaining the Basin Program: Healthy Floodplains Project Business Case*. p.32

⁶⁰ NSW Office of Water (2010) *NSW Sustaining the Basin Program: Healthy Floodplains Project Business Case*. p.32

To improve transparency, the Commission suggests the following:

SA 3.1	NRAR to publicly report on compliance by floodplain management plan area to increase transparency of details of offences.
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Despite the lack of hard data on the level of risk caused by existing structures in the landscape, there is enough evidence to suggest that proactive investigation is warranted to establish the level of risk to life and property and the environment.

Further, with climate change contributing to reduction in the number of flooding events, the management of floodwater is becoming more critical to achieving environmental outcomes. Identifying approved structures that are inconsistent with the hydraulic and environmental criteria, and unapproved structures in the landscape is critical to achieve the objectives of the Plan and the principles of the Act. A proactive regime is needed to protect properties and life from harm during a flood event, and to protect the already stressed environment including Ramsar and other important wetlands.

To better manage risks to life and property, environmental and cultural assets, the Commission suggests:

SA 3.2	NRAR to quantify the extent of structures not built in accordance with Plan rules, and identify risks to life, property, cultural and environmental assets. Then undertake proactive investigation and enforcement activities proportional to the level of identified risk and or impact.
SA 3.3	DPIE-Water to quantify and identify the locations of structures that do not meet hydraulic or environmental criteria, and are impacting on the floodway network, creating downstream risks for life, property, environment or cultural impacts. DPIE-Water to partner with NRAR to address problems proportional to the level of risk and or impact.

8 Criterion 4 – Amendments

8.1 Criterion overview

Section 45(1) of the Act allows for floodplain management plans to be amended under specific conditions. Part 10 the Plan includes amendment provisions. While the Plan does not contain mandatory amendment provisions, it contains provisions that allow the Plan to be amended for specified reasons (non-mandatory amendments). As such, the Commission has focused on non-mandatory amendment provisions and assessed if they have been given due consideration.

8.2 Current roles, systems and processes

DPIE-Water is responsible for implementing amendment provisions and updating plans as required under Section 42 of the Act. The Minister for the Environment must concur with proposed amendments as required under Clause 45(3) of the Act.

There are currently no documents, procedures, systems or process used to track amendments identified in floodplain management plans. There is no trigger identified for activating these amendment provisions, or for documenting decisions made in relation to proposed amendments. DPIE-Water use a spreadsheet to track amendments that have been gazetted for water sharing plans only during the audit period.

The Commission considers there are not adequate systems, processes or procedures in place to support the implementation of Plan amendment provisions within the audit period.

8.3 Non-mandatory amendment provisions were not duly considered

The Commission found:

- no amendments set out in Part 10 of the Plan were made or were proposed to be made by the end of the audit period
- no documented evidence that non-mandatory amendments were considered.

There were instances where potential amendments had been identified by DPIE-EES. These amendments related to improving the performance of Plan objectives relating to the connectivity to wetlands and protection of ecological assets and cultural heritage and spiritual features of the Gwydir valley floodplain. DPIE-Water staff confirmed that there has been no formal assessment or prioritisation of these proposed amendments.

The Plan was the first of the floodplain management plans to commence under the Act and subsequent floodplain management plans in the northern Murray Darling Basin include additional provisions that address these issues. If similar provisions are implemented as amendments to the Plan, they are likely to provide further opportunities to achieve Plan objectives in the near term rather than waiting until Plan expiry in another five years.

In 2017, DPIE- EES proposed a number of amendments to DPIE-Water in relation to making changes to Parts 5 and 6 of the Plan. The key ecological amendments are set out below.

Proposed amendments under Clause 49- Part 1 Introduction

The Gwydir wetlands is a terminal wetland in the lower reaches of the Gwydir River and Gingham Watercourse. Four sites within the plan area are listed as Wetlands of International Importance under the Ramsar Convention:

- Old Dromana
- Goddard's Lease
- Windella
- Crinolyn.

These are identified in Schedule 1, however, the link between Management Zone D and Schedule 1 is not made clear under Clause 5 of the Plan. Other more recently made floodplain management plans make this link through the addition of a note referring to an additional Schedule (Schedule 2) which specifically identifies the areas of ecological and or cultural significance in Zone D.⁶¹ There is no Schedule 2 in the Plan that lists areas of ecological or cultural significance and no amendment provision to enable the creation of a Schedule 2. However, the relevant areas could be included directly, in a more detailed note that refers specifically to the relevant areas in this Zone. Alternatively, Schedule 1 could be updated to include these areas under Clause 57 (as wetlands are considered ecological assets in the Dictionary).

Proposed amendments under Clause 53- Part 6 Existing flood works and Clause 54- Part 8 rules for granting or amendment flood work approvals

The commencement of floodplain management plans in the northern Murray Darling Basin following the commencement of the Plan include specific requirements for:

- ecological enhancement works
- Aboriginal value enhancement works
- heritage site enhancement works.

These specific flood work types are not currently listed in:

- Clause 24 - types of flood works
- Clause 38(1) - authorised flood works in Management Zone A
- Clause 44(1) - authorised flood works in Management Zone D.

The purpose of these works is to reconnect flows to environmental, cultural or heritage assets. DPIE-EES staff indicated that these particular types of flood works may be needed to realise opportunities identified under the *Gwydir Constraints Measures Project* to more efficiently deliver water to ecological assets and values. Co-benefits could include improved cultural, social and economic outcomes.

Amendment provision Clause 53(a) allows for the addition of flood work types. DPIE-EES is delivering a business case for the *Gwydir Constraints Measures Project* to the Australian Government by 15 November 2021.

⁶¹ For example, the Floodplain Management Plan for the Upper Namoi Valley Floodplain 2019 states "Areas of ecological and/or cultural significance in Upper Namoi Management Zone D are listed in Schedule 2."

If successful, the project will commence implementation in 2022.^{62,63} This means that these amendments could facilitate beneficial changes in the floodplain within the next 12 months.

Proposed amendments under clause 56 - Dictionary

Wetlands are an important ecological asset in the Plan, however the definition of wetlands is missing from the Dictionary, although it is separately included in other Plans such as the *Floodplain Management Plan for the Upper Namoi Valley Floodplain 2019*.

Proposed amendments under clause 57- Schedule 1 Ecological assets and ecological values

The Plan could be improved to better recognise known ecological assets in a similar way to more recently developed floodplain management plans. DPIE-EES has identified specific additions that could be made to Schedule 1. These amendments, if made, will create a greater alignment between the Plan and its objectives set out in clauses 10(c) and 10(d). Specifically, to maintain connectivity to wetlands and contribute to the protection of the ecological assets and values of the Gwydir valley floodplain. Two key examples are set out below:

- Schedule 1 Section 2(b) State Conservation areas could include the Baron Nature Reserve. This reserve is important as it protects flood-dependent black box and coolabah-river-cooba-lignum and coolabah.
- Schedule 1 Section 2(3) could be updated to include migratory shorebird species that the Gwydir wetlands support, which are listed on international migratory bird agreements Australia has signed with Japan, China and the Republic of Korea. Listed international migratory bird species include the Caspian Tern, Black-tailed Godwit, Latham's Snipe, Marsh Sandpiper, Sharp-tailed Sandpiper, Wood Sandpiper, Common Greenshank, Red-necked Stint.

More recently made floodplain management plans include a Schedule 2. However, the Plan does not include a Schedule 2 - Areas of ecological and/or cultural significance in Zone D or an amendment provision to add a Schedule 2 to the Plan. It is worth considering updating Schedule 1 to include these areas and to provide location coordinates and zone numbers for the important wetlands and lagoons. This should be linked back to Zone D as part of the suggested amendment under clause 49 (Part 1) of the Plan.

8.4 Potential impacts

Potential impacts of not implementing identified amendment provisions include:

- poor environmental, cultural and or socio-economic outcomes resulting from the inability to implement structural changes to ease potential physical constraints, as identified as part of the *Gwydir Constraints Measures Project*
- further deterioration and shrinkage of Ramsar sites and wetlands
- further decrease in the opportunities for native fish, birds and other wildlife to reproduce.

⁶² NSW Government (2021) *Northern Basin Toolkit- Gwydir*. Available at: <https://www.environment.nsw.gov.au/topics/water/water-for-the-environment/gwydir/northern-basin-toolkit-gwydir>

⁶³ Murray Darling Basin Authority (2015) *Gwydir region reach report, Constraints management Strategy*. Available at: <https://www.mdba.gov.au/sites/default/files/pubs/Gwydir-reach-report-2015.pdf>

8.5 Recommendations and suggested actions

The Commission makes one recommendation and raises one suggested action.

To improve the functionality of processes in place to amend water management plans and reduce the risk of not triggering work required to duly consider plan amendments the following recommendation is made:

R 4	<p>DPIE-Water to formalise and implement a process to document the:</p> <ul style="list-style-type: none">▪ decision-making process underpinning if and how to implement potential amendment provisions▪ status of potential amendment provisions.
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Specific amendments that should be considered in the near term are suggested below.

SA 4	<p>DPIE-Water to consider amending the Plan to incorporate high priority amendment provisions including:</p> <ul style="list-style-type: none">▪ provisions for ecological, cultural and heritage site enhancement works to enable the connection of flows to ecological assets in Management Zones A and D▪ provisions in Zone D method to include lagoons and water bodies, in particular Ramsar Wetlands▪ provisions in the Dictionary to include a specific definition of wetlands.▪ provisions in Schedule 1 to improve recognition of known ecological assets.
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Attachment A: Historical plans and guidelines for the Gwydir valley floodplain

Category	Document description
Non-statutory guidelines	NSW Water Resources Commission (1971) Guidelines for Mehi River flood plain development NSW Water Resources Commission (1978) Guidelines for floodplain development Gwydir River Moree Area NSW Water Resources Commission (c. 1980) Guidelines for Carole and Gil Gil creeks flood plain development Ashley to Mungindi NSW Water Resources Commission (1981) Guidelines for Boolcarrol to Bulyeroi NSW Water Resources Commission (1984) Guidelines for Narrabri to Wee Waa NSW Department of Water Resources (1989) Guidelines for flood plain development Gwydir River downstream of Brageen Crossing
Rural floodplain management plans under the <i>Water Act 1912</i>	Lower Gingham Watercourse Floodplain Management Plan (adopted June 2006) Moomin Creek Floodplain Management Plan (adopted October 2010)
Flood studies	Draft Biniguy to Moree Flood Risk Management Study (prepared 2005)

Source: DPI Water (2016). *Rural floodplain management plans: Background document to the floodplain management plan for the Gwydir Valley Floodplain 2015*. Available at: https://www.industry.nsw.gov.au/__data/assets/pdf_file/0018/146052/gwydir-fmp-background-document.pdf

Attachment B: Non-core (additional) provisions for FMPs as outlined in the Act

The floodplain management provisions of a management plan for a water management area may also deal with the following matters –

- (a) proposals for the construction of new flood works,*
- (b) the modification or removal of existing flood works,*
- (c) restoration or rehabilitation of land, water sources or their dependent ecosystems, in particular in relation to the following –*
 - (i) the passage, flow and distribution of floodwater,*
 - (ii) existing dominant floodways and exits from floodways,*
 - (iii) rates of flow, floodwater levels and duration of inundation,*
 - (iv) downstream water flows,*
 - (v) natural flood regimes, including spatial and temporal variability,*
- (d) the control of activities that may affect or be affected by the frequency, duration, nature or extent of flooding within the water management area,*
- (e) the preservation and enhancement of the quality of water in the water sources in the area during and after flooding,*
- (f) other measures to give effect to the water management principles and the objects of this Act,*
- (g) such other matters as are prescribed by the regulations.*