Introduction to the draft Gwydir Long-Term Water Plan

AIISAP

5 - 6 June, 2018
Sydney
Purpose
To introduce the Gwydir LTWP, including:
1. Purpose and audience
2. Components and examples
   a. Objectives and targets
   b. Environmental watering requirements
   c. Risks and constraints
   d. Strategies
3. Alignment opportunities
Purpose of the Gwydir LTWP

To guide the management of water, within each water resource plan area, to maximise catchment and Basin-wide environmental outcomes through to 2038
Gwydir Catchment

Provide a **Resilient, functioning ecosystem** that supports connectivity between and across the catchments, adequate water quality, and the cycling of nutrients.

Maintain the number and type of **waterbirds** present by protecting feeding and nesting sites, and support breeding events when they occur.

Maintain or increase the extent of **plants** in good condition to improve water quality and provide bank stabilisation, habitat and food sources.

Protect **native fish** species by providing the required flows needed to support healthy fish populations within and between catchments.
Daily flows ML/day in Gingham at Tyreel (based on Yarraman less South Arm) during summer environmental water delivery period 2016-2017
Filling The Gaps
Daily inflows ML/day in Gingham at Tyreel (based on Yarraman less South Arm) and components of flows YTD 1 July 2016 to 30 April 2017
Audience

Environmental Water Managers/Holders
  • To inform use (EWAGs)

State and Commonwealth
  • To inform planning

River Operators
  • To inform operations

Broad Stakeholders
  • To build shared understanding and partnerships
Basin Plan Requirements

LTWPs should identify:

- Priority environmental assets and functions
- Ecological objectives and targets for those assets and functions
- Environmental watering requirements to meet those objectives and targets
- Possible co-operative arrangements within and between areas
- Long-term risks and operational constraints and strategies to manage or overcome them
- Water-dependent cultural values
Documents that make up the Gwydir Long-Term Water Plan

Fact Sheet

- 2 Pages
- Broad target audience with little to no background knowledge of water management

Summary Document

- 20-30 pages
- Purpose, scope and outcomes of the LTWP
- Role of the LTWP in relation to other water planning frameworks and legislation at the Basin and State scale
- Broad target audience with limited background knowledge of water management

Technical Report

- 100+ Pages
- Contains all requirements for a LTWP as outlined in the Basin Plan
- Technical information is presented at the catchment and planning unit scale
- Information to guide shorter term water management decisions

Background Document

- 70-80 pages
- Explains the steps involved in the development of the LTWP
- Identifies the information sources used, and how it was analysed
Development of the Gwydir LTWP

Assets
In accordance with Schedule 8 of the Basin Plan

Objectives and targets
Using best available information and consistent with the Basin-wide Watering Strategy
- Functions
- Fish
- Waterbirds
- Vegetation

Other dependencies

Environmental water requirements (EWRs)
Based on best available science
Developed by panel of experts

Flows likely to be met under current conditions
Assumptions
Management strategies
Risks and constraints

Flows not currently being met
Risks and constraints
Recommendations
Components of the Gwydir LTWP

**Catchment Scale**
- Catchment Scale Map
- Catchment scale EWRs
- Objectives & Targets
- Risks & Constraints

**Planning Unit Scale**

<table>
<thead>
<tr>
<th>Actively Managed PU report card</th>
<th>Passively Managed PU report card</th>
</tr>
</thead>
<tbody>
<tr>
<td>PU Scale Map</td>
<td>PU Scale Map</td>
</tr>
<tr>
<td>Specific EWRs</td>
<td>Relevant Flow Components</td>
</tr>
<tr>
<td>Potential Management Actions</td>
<td>Protection of Important Flow Components</td>
</tr>
<tr>
<td></td>
<td>Risks &amp; Constraints</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
High flows release carbon from leaf litter

Overbank flows allow water to reach wetland and floodplain trees. They also deposit vital nutrients on the floodplain floor, fertilising the floodplain.

Small freshes help to maintain aquatic plants and inundate instream habitat

Pulses in the river prompt native fish to breed and migrate

Waterbirds find food and safety in the floodplain wetlands where they can raise their young

Low flows provide slow-moving water that is often favoured by small-bodied fish, shrimp and young fish

During dry times, rivers may cease to flow. Environmental water may be used to provide refuge for fish until flows return to the river.
Defining environmental water requirements

Flow component in ML/day

Duration of event (days)

Duration between events (days or years)

Timing

| 2016  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 2017  |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |

Frequency of years with event (eg 1 year in 4)
Key points

• Opportunity not obligation
• Think long-term
• Build shared direction and understanding
• Identify linkages and build partnerships
• Maximise river and wetland health outcomes from available water
Gwydir LTWP case studies
Fishes of the Gwydir – Then

I remember when I was a kid it’d be nothing to catch like, in an hour, forty to fifty catfish, no worries at all (1960s)

You could look out and see the fish…You could see down about ten or twelve foot…it was actually crystal clear. (1965)

we could see flashes of fish in the water…dad got into the river and just quickly kept throwing the fish out, straight to my feet. They were yellowbelly and big black bream [silver perch]. (1948)
Fish of the Gwydir – Now

- 15 native fish species
- High diversity but low numbers
- Loss or reduction in numbers of key species
  - Silver Perch (5 recorded since 1994)
- Populations of threatened species
Fish Community Status 2015 Gwydir River Valley

Fish Community Value

- Very Good
- Good
- Moderate
- Poor
- Very Poor
- Predicted Threatened Species
- High Alien Presence
- Carp Hotspot

The information contained in this publication is based on knowledge and understanding at the time of writing (February 2015). However, because of advances in knowledge, users are reminded of the need to ensure that the information upon which they rely is up to date and to check the currency of the information with the appropriate officer of the Department of Trade and Investment, Regional Infrastructure and Services or the user’s independent adviser. Recognising that some of the information in this document is provided by third parties, the State of New South Wales, the author and the publisher take no responsibility for the accuracy, currency, reliability or correctness of any information included in the document provided by third parties.


Produced by K. Danaher NSW DPI Fisheries 19 May 2015
Fish functional groups

Group 1: Flow Specialist
Group 2a: Riverine (a) Lotic
Group 2b: Riverine (b) Lentic
Group 3: Floodplain Specialist
Group 4: Generalist
Key water-dependent values

Native fish
- Australian smelt
- Unspecked hardyhead
- Carp-gudgeon

Murray-Darling rainbowfish
- Spangled perch
- Golden perch

Murray cod
- Bony herring
- Freshwater catfish
1. Have regard to the BWS
2. Compliment WSP Objectives

<table>
<thead>
<tr>
<th>Ecological objective</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>No loss of species in PU or Monitoring zone</td>
<td>All known species detected annually</td>
</tr>
</tbody>
</table>
| Increased distribution and abundance of short lived species relative to levels prior to Basin Plan monitoring | - Increased distribution (measured as prevalence) and abundance (measured as CPUE) from pre-Basin Plan for known short lived species  
  - No more than one year between detection of immature size classes                  |
| Improved population structure of moderate to long lived species driven by sufficient frequency and magnitude of recruitment events | - Population length-frequency data indicates presence of young of year, juveniles, and adult size classes within the population  
  - No more than 2 consecutive years without recruitment for moderate lived species and no more than 4 consecutive years without recruitment for long lived species  
  - At least one (2023), two (2028), or four (2038) significant recruitment event(s), indicated by a size/age cohort (YoY) representing >30% of numbers of the population from standardised sample |
| Increased prevalence and/or extent of occurrence (range) of Key Species in PU or Monitoring zone | - Species detected annually in Planning Unit  
  - Increase in distribution (measured as prevalence) and abundance (measured as CPUE)  
  - No more than one (Olive Perchlet) or two (Freshwater Catfish and Purple Spotted Gudgeon) consecutive years between detection of Young of Year |
## Lower Horton

*Passively managed planning unit*

Identify critical flow components and associated EWRs where appropriate to achieve objective

<table>
<thead>
<tr>
<th>Ecological objective</th>
<th>EWRs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Flow component</strong></td>
<td><strong>Timing</strong></td>
</tr>
<tr>
<td>Increased prevalence and or extent of occurrence (range) of Freshwater Catfish in PU or Monitoring zone</td>
<td>Baseflow                     Sept – March         Maintained throughout spawning season</td>
</tr>
<tr>
<td></td>
<td>Small Fresh                October – April   10 days min</td>
</tr>
<tr>
<td></td>
<td>Large Fresh                July – Sept       5 days min</td>
</tr>
</tbody>
</table>
## Potential Management Actions

<table>
<thead>
<tr>
<th>Flow Component</th>
<th>Current Rules</th>
<th>Risks to EWRs</th>
<th>Potential Action/Recommendation</th>
</tr>
</thead>
</table>
| Baseflows      | • Cease to pump 4 ML/day (Rider @ Horton gauge)  
• Trade not permitted into water source or management zones | • High Risk (DPI Water Risk Assessment)  
• This could reduce the efficacy of spawning flows and maintenance of populations, particularly between October and April, required to support recruitment of freshwater catfish populations throughout the planning unit | • Review of Gwydir Water Sharing Plan rules to better protect baseflows |
| Freshes        | • Trade not permitted into water source or management zones | • Low risk (DPI Water Risk Assessment)  
• Important to maintain the low risk determined by DPI Water to these flow components to allow for their continued protection  
• These events are critical in achieving spawning and recruitment outcomes for native fish, as well as supporting movement and condition outcomes | • Review of Gwydir Water Sharing Plan rules to improve protection of fresh events during critical ecological times of the season, especially with a large number of licenses concentrated in areas with threatened native fish and high diversity.  
• Maintain existing Gwydir Water Sharing Plan rules, especially trade and LTAAEL to protect fresh events. |