

Summary

For the past century, the Murray–Darling Basin (the Basin) has been developed with a focus on delivering water for productive use. Large dams have been built to capture and store as much water as possible to be used later for consumption and irrigation. There have also been many rules put in place across the Basin around how the rivers and dams are managed.

These structures and practices are of great benefit to our industries and have greatly supported the building of our nation, our Basin communities and our economy. However, the changes we have made have affected how, when and where the Basin's rivers flow and how healthy they are. Water that once flowed downstream is now often stored, and delivered in regular patterns at times that suits production, not necessarily in a more natural variable way that most benefits and supports the environment.

For many floodplain areas of the Basin, the time between drinks is now too long for floodplain plants and animals. Overbank flows that connect the river to its floodplain are vital to the environment. These overbank flows improve water and soil quality, recharge groundwater, and support native plant and animal species. Before rivers were regulated, these flows were far more common. The lack of these flows is affecting long-term river and floodplain health, and ultimately Basin communities and businesses who rely on healthy waterways.

Environmental watering has been successfully done for many years in some parts of the Basin, and is one way we can deliver water to benefit the environment. However, there would be many environmental benefits if we could deliver slightly higher flows in the future to reach the floodplains (up to flows in the minor flood level range). So, state and federal governments requested that the Basin Plan include a Constraints Management Strategy (the Strategy) to explore how this might be done.

The Constraints Management Strategy

The Strategy is about ensuring that water can flow onto the floodplain, while mitigating any effects this water may have on property and people. For the purpose of the Strategy, constraints are river rules, practices and structures that restrict or limit the volume and/or timing of regulated water delivery through the river system. The Strategy seeks to find smarter ways to operate our highly regulated rivers to increase how often overbank flows below and in the minor flood range occur to sustain and improve floodplain health.

Given consumption and irrigation needs, it is not possible, nor is it the goal, to return regulated rivers to their 'natural' or 'without-development' flows. The Strategy is also not trying to create or change how often damaging moderate and major floods occur. The idea is to make modest regulated releases from storages, generally when higher flows downstream would have occurred if dams were not there. That is, the overbank flows being proposed will be created by releasing water from storage in response to natural cues to 'top up' unregulated tributary inflows, to increase either the flow peak and/or duration of the event.

The Constraints Management Strategy has a number of overarching principles to help guide work over the next 10 years. These include that:

- affected communities should be involved from the beginning to identify potential impacts and solutions
- any solutions need to recognise and respect the property rights of landholders and water entitlement holders
- any solutions will not create new risks to the reliability of entitlements
- any solutions will work within the boundaries defined by the *Water Act 2007* (Cwlth), the Murray–Darling Basin Plan and relevant state water access and planning systems
- any investment should focus on avoiding and addressing any impacts to third parties and focus on lasting solutions to provide certainty and protection to stakeholders over time.

In 2014, we completed the first phase of work — the prefeasibility phase — which involved looking at seven areas of the Basin in more detail. The Murray–Darling Basin Authority (MDBA) collected information about how overbank flows up to the minor flood range affect the environment and people who live and work along the Goulburn River. We also collected information about how such flows can be managed, and what sorts of protective measures are needed first.

Victorian and Australian Government investment in water recovery for the environment has enabled the delivery of significant volumes of water to improve the health of our waterways. Although this can provide greater environmental benefit, it can also increase the risk to communities and property.

In Victoria, water corporations and catchment management authorities are liable to pay compensation if they intentionally release water from their works and this water causes injury, loss or damage, or if, through a negligent act, they cause flows that result in loss, injury or damage. These laws are intended to protect landowners who, through no fault of their own, are flooded by flows from works of water corporations or catchment management authorities.

Currently, river operators cannot deliver water orders that would result in water flowing onto private land unless they have landholder approval to do so. To ease constraints in the Goulburn, the Victorian government would need to formalise and pay for land-based agreements with landholders, such as easements, to allow water to flow onto private land (for flows to reach an environmental asset or allow sufficient water to flow down a channel). Landholders can still use their land freely, but are paid up front for potential impacts.

This report, about investigating potential changes to environmental water management for the Goulburn River, was released for public comment in September 2014. Since then, we have continued discussing constraints with the communities that might be affected by any changes to river management. This final version contains some new information that communities thought should be included to tell a more complete story of the region.

The Goulburn River

The Goulburn River is one of seven areas of the Basin that the MDBA is studying for the Strategy.

The Goulburn River is 570 km long and around 215,000 people call the Goulburn region home. The river and its associated floodplain and wetland habitats support a diversity of habitats and species. Over time, the Goulburn River has been modified and become highly managed.

Eildon Dam and Goulburn Weir store and deliver water for irrigation and consumption, and also significantly alter the flow of the river. On average, 91% of water released from Eildon Dam is diverted for irrigation in the Goulburn, Loddon and Campaspe valleys, and the lake supplies about 60% of water used in the Goulburn–Murray Irrigation District. With such a large storage capacity, operation of Eildon dam fully captures flows from the upstream catchments in all but the wettest years.

Changing the seasonal flow pattern disrupts the natural cycles of feeding, growing and breeding for many plants and animals. Because of this, many native species have significantly declined in the Goulburn region. A series of studies have consistently reported that the frequency of overbank flows is less than what is needed to maintain the health of the lower Goulburn floodplain (see 'What the science says').

To allow the Goulburn River to connect with its floodplain more often, and to deliver flows to the River Murray downstream, we are looking at possible new ways to release regulated water from storage to add to unregulated tributary flows to make them large enough to reach the floodplain. The overbank flows being looked at are between 25–40,000 megalitres/day (ML/d), or 9.4–10.3 m at Shepparton (gauging station number 405204).

This range of flow footprints wets the majority of wetlands and flood-dependent vegetation on the lower Goulburn floodplain (mainly native vegetation and the Lower Goulburn National Park). This range of flows also avoids the risks and liabilities of flooding valuable agricultural land outside of the levee network, and avoids triggering the opening of the Loch Garry regulator. Flow footprints in this range at the Shepparton gauge would get water to between 45% and 89% of the water-dependent vegetation on the floodplain, while staying within the leveed floodway.

These flows would occur between June and November, when rainfall and natural tributary flow events typically happen and when the Goulburn floodplain needs the water most. This timing also minimises competition for channel space by avoiding peak irrigation demands in late spring and summer. Based on initial overbank flow recommendations for the lower Goulburn in 2011, the flows would occur at least once every three years. Given that these flows sometimes happen naturally, this means an extra one to two managed overbank flows every ten years on average to achieve lower Goulburn environmental outcomes (not managed overbank flows every year).

From our consultations, it is clear that duration of flow is a key concern for many Goulburn landholders, because duration is perhaps the biggest factor driving the severity of impacts.

Extended releases from Lake Eildon have never been proposed (e.g. months as can occur during pre-releases during flood operations). The lower Goulburn overbank flow events that are being investigated are relatively short, in the order of lasting days to weeks. Feedback from most riverbank landholders that we have talked with so far is that short duration events that rise and

fall quickly in a week or less might be acceptable, subject to the time of year and how often they occur.

Development and testing of real-time catchment and river models would provide water managers, river operators and community with the confidence to water within the target flow range. This would take the floodplain closer to an environmentally sustainable watering regime. Further analysis of how governments might manage the river in the future may provide different opportunities to achieve these flows, however any increase in managed overbanks flows will only occur when effects on public and private assets are able to be managed.

Potential effects on businesses and communities in the Goulburn mainly centre on the inundation of river flats on private land and closure of some local roads and bridges. Mitigation measures would need to be put into place to protect communities and businesses from any risks associated with an increase in regulated flows.

Flows of between 25,000 and 40,000 ML/d at Shepparton could be created by topping up unregulated tributary flows with some regulated releases from Eildon Dam and/or Goulburn Weir. This should be examined in more detail in the next phase of the Strategy.

The community

This report reflects MDBA's current knowledge base after preliminary technical work and after talking with a range of people along the Goulburn River. In 2013, MDBA formed three advisory groups of local residents and businesses. Many of the group members have decades of first-hand experience of Goulburn River conditions and this has been an incredibly valuable source of knowledge. Meetings were also held with a range of other residents to collect additional information on how people are affected by different river flows. Community input is included throughout this report.

In addition, before publication on the MDBA website, an early draft of the reach report was shared with the three advisory groups in August 2014 so that their feedback could be included in the draft. The report was published on the MDBA website in September 2014, and was also emailed and/or posted to stakeholders that had been involved in previous conversations with MDBA about constraints throughout 2013–14.

After publication, further community engagement to May 2015 included: 7 public meetings; community advisory group meetings, 12 landholder meetings (individuals and groups), and three local council and regional authority briefings. Email feedback was also received from several landholders in the mid-Goulburn region.

The revisions in this final report reflect the comments made by stakeholders over September 2014 to March 2015. Changes were made to include more information on the tributaries of the Goulburn River and to better describe the impacts and risks of higher flows in the mid-Goulburn region. In particular a landholder case study was developed to detail potential impacts after visiting a number of Molesworth farms and businesses in April and May 2015.

Naturally, there has been a diversity of reactions towards exploring managed overbank flows in the Goulburn. Some people are proponents, others are cautious — reserving judgement until more information is available — and others are very concerned.

Increases in water levels don't have to be large to start affecting landholders downstream of Eildon Dam. There is a lot of community concern about the impacts and risks of the higher flow footprints being looked at, especially around Molesworth. Residents and farmers in the mid-Goulburn

Overall, there were concerns about flows potentially happening too often (more than a few extra times a decade), lasting too long (longer than a week) or happening too late in spring (October–November). However, there was general recognition that water on river flats can be good for farming, the environment and the productivity of the land.

Some long-time residents believe that the river flats are not as good as they used to be when overbank flows used to happen more often.

*A lot has been taken out and nothing has been put back in.
Long-time farmer from the mid-Goulburn*

People saw less impact for the smaller overbank flows being investigated, namely:

- Eildon – Killingworth, flow footprint up to 12,000 ML/d for the Molesworth region, and 15,000 ML/d elsewhere in the subreach
- Seymour – Goulburn Weir, flow footprint of 15–20,000 ML/d
- Goulburn Weir – River Murray, flow footprint of 25–30,000 ML/d.

The general feeling of residents was that impacts on businesses and communities for these flows **may** be tolerable if appropriate mitigation measures are put in place first.

This is balanced by strong community reaction to the scale of potential impacts and risk of things going wrong around the following flows:

- Eildon – Killingworth, flow footprint above 12,000 ML/d at Molesworth and 15,000 ML/d elsewhere in the subreach
- Goulburn Weir – River Murray, flow footprint of 40,000 ML/d.

People are very concerned about the size of the larger proposed flows, in particular, the potential for unintended adverse consequences. At the upper range of the flows being investigated, the Goulburn community would need to be comfortable with the risk and the level of issues created, and confident that the risk and issues can be managed well. We do not yet know if this is the case.

People in the Goulburn community are willing to continue to work with MDBA, especially around exploratory feasibility and technical work.

Some of the key points that Goulburn residents have raised include:

- It is important that managers know enough to ensure that the system can be controlled and risk managed at the flows being proposed.
- The Strategy is an opportunity to fix long-standing minor flooding issues for people.

- There are community members who identify themselves as being direct beneficiaries of floodplain watering in the lower Goulburn — flexibility to fill up creeks and wetlands when the waterways need it, not just putting water down the main Goulburn River channel.
- The wetness of the catchment (or recent previous flow events) has a big influence on how far the river rises or spreads. This needs to be taken into account.
- Detailed planning is needed around how specific flow footprints could be created and managed under a range of catchment conditions and tributary flow scenarios, including worst case (e.g. unexpected rainfall event after a release from storage has been made).
- People want the Strategy to plan for residual risk. What if the flow footprint is larger than expected? How will people be protected? Where does the financial liability lie? Financial risk and liability should not be shifted onto the affected individual or business.
- A flow of 40,000 ML/d (10.3 m) at Shepparton is too close to triggering the Loch Garry flood protection scheme (10.36 m). Opening the Loch Garry regulator is very damaging to landholders in the Bunbartha region.
- Improvements to the stream gauging network will be needed to deliver more accuracy, confidence and forecasting power for safely making regulated releases from storage in combination with unregulated tributary flows.

Next steps

This is the start of a 10-year process. Basin governments are only at the early stages of finding out what the issues and opportunities are, to support future decision-making.

This reach report:

- provides a context and background to MDBA work on constraints, which seeks increased flexibility to connect rivers with their floodplains, as part of the implementation of the Basin Plan
- outlines the types of changes needed to achieve the river flows being investigated
- reports on community feedback and reaction to possible changes to managed river flows.

The MDBA released the reach reports for all seven regions on our website through September–December 2014. Discussions with community on these reports have continued to add to the knowledge base and refine our understanding of what changes to flows might mean for businesses and communities throughout the southern Basin.

Information from the seven priority areas of the Basin was included in the constraints annual report, which made recommendations to Basin governments about options for further investigations. The report was made available on the MDBA website in late 2014.

In late 2014, state and federal governments decided to continue investigations in all of the seven priority areas. The 2014 decision was about whether to proceed with collecting more information including technical and community studies to better understand the feasibility of overbank flows and the mitigation measures needed for delivering the proposed flows. The 2014 decision was not a green light to build, do or change anything about how the river is managed.

Further to this, state and federal governments refined the flow limits that should be considered in future investigations. In the Goulburn region, it was decided that 40,000 ML/d at Shepparton should be the upper limit for future investigations. It was agreed that the work for the feasibility

phase would be led by the Victorian Government and that a constraints business case for the Goulburn River would be prepared.

The second decision by state and federal governments, due in mid-2016, is about whether to start detailed planning and preparation towards putting mitigation measures in place, based on recommended flow options put forward in constraints business cases. Actions would take place between 2016 and 2024 to ensure mitigation measures are in place — such as formal arrangements with landholders to allow water onto private land, rule or management practice changes, asset protection, gauging system and infrastructure upgrades — before any managed overbank flows are delivered

