



## Gunbower Forest Environmental Watering Winter/Spring 2018

Results from our recent social benchmarking survey indicate 95% of respondents in the local area value Gunbower Island as a place for canoeing, bushwalking, camping, fishing and bird watching. Delivering environmental water will help preserve Gunbower Island’s environmental and recreational values for current and future generations to enjoy.

### WHY IS GUNBOWER FOREST BEING WATERED?

Gunbower Forest relies on regular flooding to remain healthy and support the forest’s many plants and animals.

Over time, river regulation and a drier climate has substantially reduced the frequency and duration of natural flooding in the forest. The health of Gunbower Forest declined greatly during the Millennium Drought and despite regular flooding from 2010 onwards, the forest is still recovering. In 2018 most of the sites surveyed for tree health show modest improvements since 2010 but the size of the tree canopies remains in poor or moderate condition.

Since the 2016 natural floods, the forest has experienced two hot and dry summers, as well as the lowest winter/spring rainfall on record in 2017. Most of the forest’s wetlands are now completely dry or contain only small pools, and the sedges, reeds and rushes that flourished after the floods have dried out.

The forest needs watering this year. Fortunately, there is water available in storage for this coming season and 2018 is our chance to make the best use of this water to help aid Gunbower Forest’s continued recovery.

### WHEN WILL THE ENVIRONMENTAL WATER BE DELIVERED?

Environmental water will start flowing through the Hipwell Road Channel in mid-June, after the irrigation season has finished. Water will continue to be released through the channel, and through smaller regulators on the lower Gunbower Creek, until early November. However, if rare colonial waterbirds (e.g. egrets) begin to breed in response to the flooding, low volumes of water may continue to be released into the forest over the summer months to support the development of chicks.

Water levels across the forest will gradually recede over late spring and summer.

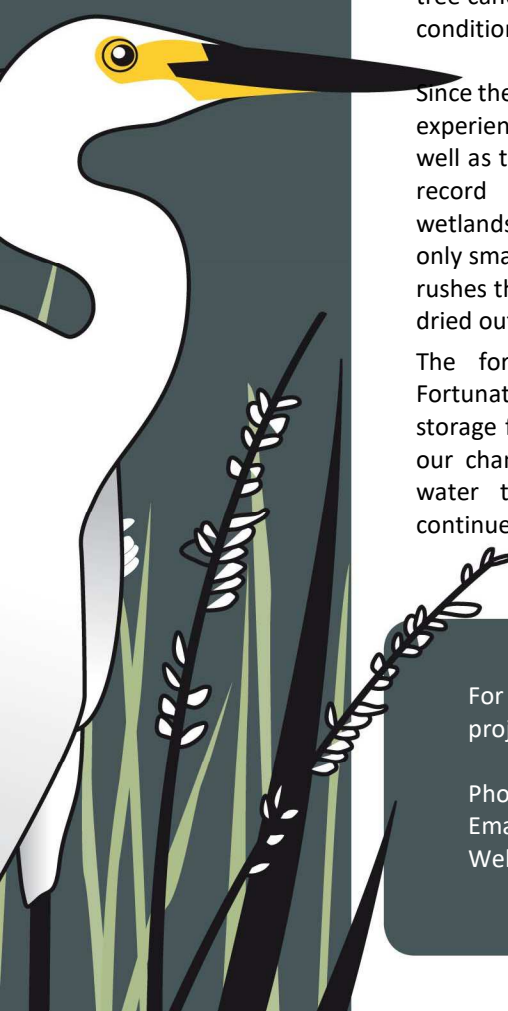
### WHERE WILL THE ENVIRONMENTAL WATER SPREAD TO?

At the peak of watering, up to 3,500 ha of the middle and lower sections of Gunbower Forest will be inundated.

The environmental water will flow from the Hipwell Road Channel into Spur Creek and then continue downstream, spreading out through the flood runners and onto the river red gum floodplain, and eventually filling wetlands in the lower forest e.g. the Little Reedy Lagoon Wetland Complex and Little Gunbower Wetland Complex.

For further information on the environmental watering of Gunbower Forest and other project information, contact the North Central Catchment Management Authority.

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If the water delivered through Hipwell Road Channel doesn't reach some of the key wetlands in the lower part of the forest, the small regulators on the lower Gunbower Creek may also be used in spring to help water these important areas e.g. Reedy Lagoon and Black Swamp regulators. Opening these regulators will also allow for carbon and nutrient-rich water to move from the floodplain into the Creek, providing important food resources for aquatic biota.

The water is expected to reach the Murray River outfalls at the Shillinglaws and Barham Cut regulators, but may not reach as far as the Chinaman Bend outfall into Gunbower Creek near Koondrook.

**IS THE FOREST ACCESSIBLE DURING THE WATER DELIVERY?**

Yes, the forest is 'open for business' however some access tracks to recreational areas may be closed to assist visitors to avoid flood waters.

Spring is a great time to visit the forest and with some access tracks closed there are still many areas within the forest, along the Murray River and Gunbower Creek, for visitors to enjoy bush walking, fishing, camping or bird watching.

For information about track access, check the Department of Environment, Land, Water and Planning's (DELWP) Loddon Mallee Facebook page [www.facebook.com/DELWPLoddonMallee](http://www.facebook.com/DELWPLoddonMallee) or phone 136 186. You can also visit the Parks Victoria website [www.parks.vic.gov.au](http://www.parks.vic.gov.au) or call 13 19 63 for information on Gunbower National Park.

**WILL DOMESTIC FIREWOOD COLLECTION BE IMPACTED?**

The firewood collection coupe at McCutchell Bend is not expected to be impacted by the watering prior to the autumn domestic firewood collection season closing at the end of June 2018. Domestic firewood collection areas may be closed over the spring season (September

to December 2018) if conditions are unsuitable.

For the latest information about domestic firewood collection areas and regulations governing firewood collection, please contact DELWP on 136 186 or visit [www.delwp.vic.gov.au](http://www.delwp.vic.gov.au)

**WILL IRRIGATION SUPPLIES BE IMPACTED?**

No. Water supply to irrigators accessing Gunbower Creek will not be affected by the environmental watering.

**WILL PRIVATE LAND BE AFFECTED BY THE ENVIRONMENTAL WATER?**

No. Operation of the Hipwell Road Channel will not impact private land. Landholders upstream of the Hipwell Road Weir may notice a higher water level within Gunbower Creek, however operations will remain within the capacity of the creek.

Landholders bordering the forest are protected from flooding by flood easements or levees.

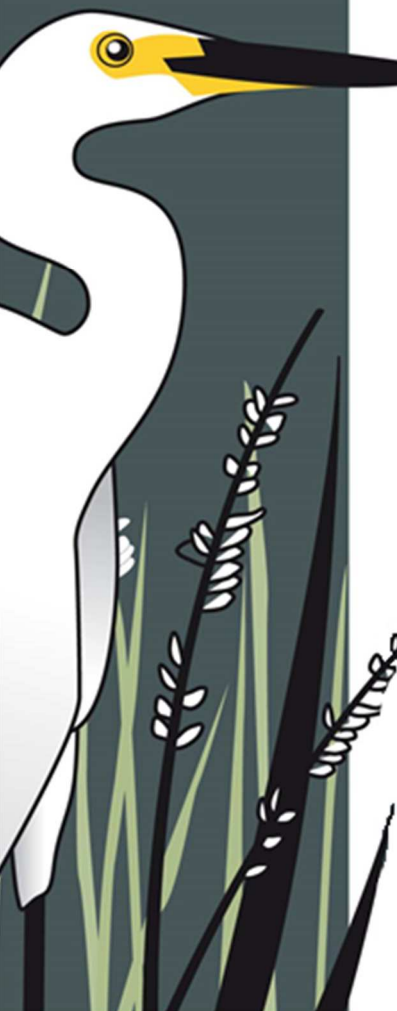
Monitoring of water levels within the forest and creek will be conducted regularly throughout the operation.

Landholders in close proximity to the forest and creek will be contacted prior to the operation commencing.

**HOW MUCH WATER WILL BE DELIVERED TO THE FOREST?**

Up to 82 GL of water will be delivered to Gunbower Forest over the course of the event. About half of this will be delivered outside the irrigation season (from mid-June until early August), with the remainder being delivered once irrigation demands in Gunbower Creek are met.

As Gunbower Forest is a through-flow system, some of the water delivered will be returned to the Murray River near Koondrook and be available for downstream users. The rest will remain in the forest's wetlands and provide ongoing





aquatic habitat for native plants and animals. This water will be debited from Gunbower Forest's environmental water allocation for 2018-19.

**HOW WILL THE WATER BE DELIVERED?**

The flow pattern delivered through Hipwell Road Channel is designed to mimic a natural flood pattern and includes three phases – filling, holding and draw down.



Filling involves slowly and gradually increasing water flow into the forest. Water levels in Gunbower Creek will rise, allowing the volume of water entering the forest to gradually increase.

During the holding phase, the maximum inflow to the forest will be held. Holding the maximum inflow for as long as possible is important to allow water to fill the creeks, flood-runners and wetlands, and push out across the forest floor under the River Red Gums.

During the draw down phase, inflows into the forest are slowly reduced to allow enough time for fish to leave the floodplain and return to the Murray River or Gunbower Creek. During the draw down phase the forest looks its best as the warm spring weather encourages plants to grow and flower. It is also at this time that many animals begin to breed e.g. fish, frogs and waterbirds.

**WILL ENVIRONMENTAL WATERING CAUSE A BLACKWATER EVENT?**

Blackwater occurs naturally due to the breakdown of leaf litter and other vegetation in the water of the floodplain.

The release of tannins causes the water to turn a dark brown or black. Not all blackwater is bad. Blackwater is rich in carbon compounds and is important for fish and aquatic invertebrate production in floodplain rivers, acting as the basis for much of the food chain in rivers.

During the watering event, this 'good' blackwater will be released where possible from Gunbower Forest into Gunbower Creek and the Murray River to help provide a food source for aquatic animals. This may be visible in some parts of Gunbower Creek as 'tea' coloured water, but is not cause for concern.

However, blackwater can be associated with low dissolved oxygen levels, known as 'hypoxic blackwater', particularly when there are high litter loads and high temperatures. This can cause stress and the death of fish and other aquatic animals.

Assessments of existing litter loads in the forest have been undertaken prior to watering and the loading is low. Water delivery is planned for winter, during cooler weather.

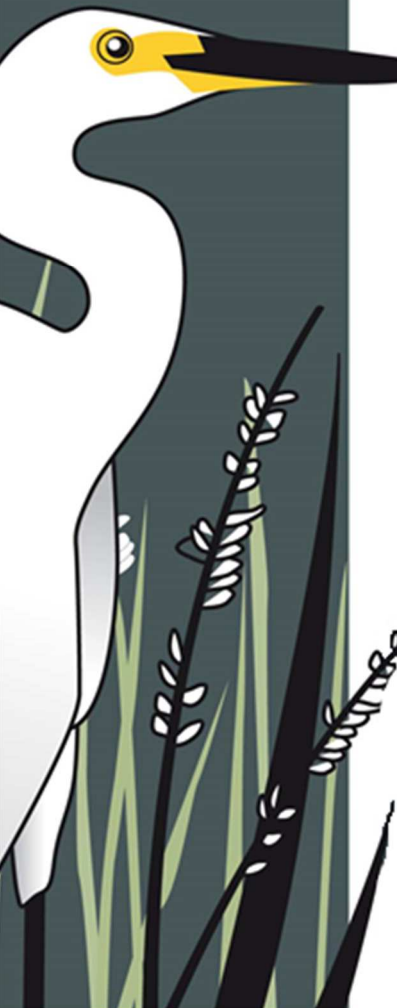
Accordingly, the likelihood of widespread hypoxic blackwater is low.

Permanent monitoring stations are located in Gunbower Creek and Gunbower Forest to continuously assess water quality to identify critical areas and determine when dissolved oxygen levels are approaching critical thresholds. This information is available in real-time and will be used to understand how water quality changes as it moves across the floodplain.

If hypoxic blackwater is detected in Gunbower Forest, its impacts on Gunbower Creek and the Murray River will be managed and reduced through a combination of closing regulators to retain the water in the forest and providing dilution flows where required in Gunbower Creek.

**WHAT BENEFITS WILL THE ENVIRONMENTAL WATER PROVIDE?**

Watering the forest aims to provide environmental benefits through:







- Filling 80% of the forest’s wetlands to allow aquatic plants to grow and set seed.
- Watering 30% of the forest’s river red gums to aid their recovery following the Millennium drought.
- Providing feeding areas for waterbirds and other animals.
- Providing opportunities for fish to move between Gunbower Creek and Gunbower Forest so they can access the abundant food sources created by the flooding.

There are also recreational opportunities provided by the watering e.g. canoeing, kayaking and bird watching. The environmental water will help keep the forest looking its best, ready for the community and visitors to enjoy over the coming summer holiday period.

### WHAT WILL FLOWS BE LIKE IN GUNBOWER CREEK WHILE THE FOREST IS BEING WATERED?

During the off-irrigation season when Hipwell Road Channel is running, winter low flows will be delivered to Gunbower Creek but at a lower level than in recent years. This is due to the capacity constraints on Gunbower Creek preventing optimum winter flows being delivered downstream at the same time as the forest is watered. The winter low flows intend to maintain inundated habitat and food resources for native fish in the creek prior to flows increasing with the commencement of the irrigation season.

During the peak of water deliveries through Hipwell Road Channel in late June/early July, there will be a five-day period where water will not be flowing immediately downstream of Hipwell Weir. Water will instead be delivered to Gunbower Creek using the 6/1 channel. This is required to test the maximum flows that can be delivered into the forest through the Hipwell Road Channel, which is important information for future environmental water deliveries.

### WHAT WILL HAPPEN IF A NATURAL FLOOD EVENT OCCURS?

Flows through the Hipwell Road Channel will be modified to accommodate for natural flooding. The Hipwell Road Channel can be used in conjunction with natural inflows to the forest, to extend the duration and increase the size of natural floods.

### WHAT MONITORING WILL BE UNDERTAKEN?

The North Central CMA will coordinate a comprehensive monitoring program to capture the forest’s immediate and long-term responses to the watering. Monitoring will include:

- Response of wetland vegetation
- Response of fish in wetlands and Gunbower Creek
- Impact of carp on wetland vegetation germination
- Effectiveness of fishways at regulators
- Water quality monitoring
- Water depth monitoring
- Area of forest flooded
- Waterbird breeding
- Response of river red gums.

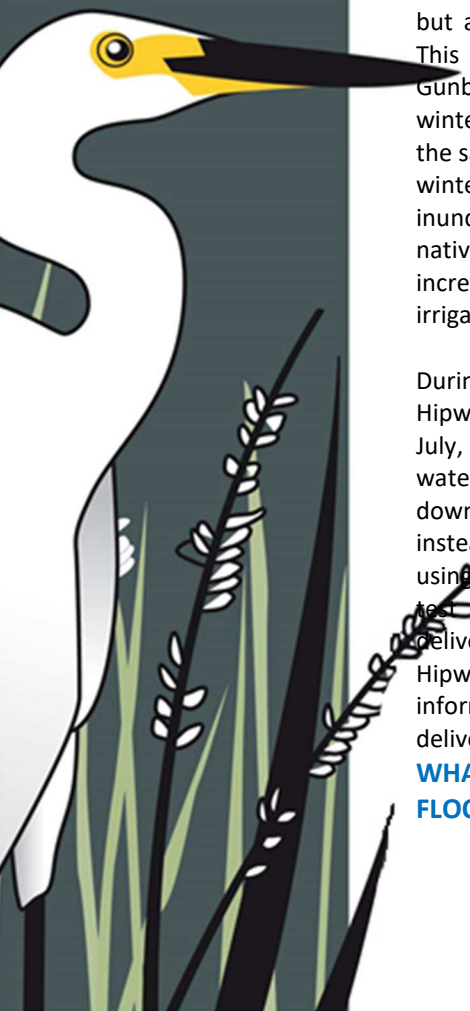
The information collected from this monitoring will be used to improve the forest’s ongoing environmental watering program.

### WHAT INFORMATION SUPPORTS DECISIONS AROUND WHEN TO WATER GUNBOWER FOREST?

Environmental watering of Gunbower Forest using the Hipwell Road Channel aims to mimic the small to moderate floods that now occur less frequently throughout the system.

Each year, the decision to deliver water to the forest using the Hipwell Road Channel considers a number of factors:

- Time and size of last flood;
- Condition of the forest e.g. health of wetland vegetation, river red gums and native fish populations;
- Availability of environmental water (determined by seasonal allocations);
- Watering plans of other forests and wetlands such as Barmah-





Millewa Forest and Koondrook-Perricoota Forest.

## WHAT IS ENVIRONMENTAL WATER AND WHERE DOES IT COME FROM?

Environmental water is water legally set aside for the environment. This water is used to maintain or improve river and wetland health with as little impact as possible on forest users.

Environmental water includes Victorian, Commonwealth and Living Murray entitlements. Like irrigation water, these entitlements are subject to seasonal allocations.

## WHO PAYS FOR THE WATER?

The Murray Darling Basin Authority (MDBA) has entered into an agreement with Goulburn-Murray Water for the delivery of water to the forest.

The agreement, which is in keeping with Victorian policy, ensures the payment of fair charges and balances economic, recreational and social needs with the health of the forest.

Under the agreement MDBA will pay an annual charge equivalent to 100 delivery shares. (The delivery share system means the forest, like any user, is paying a fair amount for the water.)

The agreement makes a significant annual contribution to the upkeep of the irrigation system.

critical environmental needs e.g. supporting threatened colonial waterbird breeding events. (Less critical needs will be met outside the irrigation season or when there is spare capacity.)

When water is delivered to the forest outside the irrigation season, MDBA will pay an additional amount.



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