Report to the Department of Climate Change, Energy, the Environment and Water: Annual Performance Report (2024) against the Enlarged Cotter Dam Fish Management Plan Version 4

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Document management

Document summary

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Introduction

This report outlines Icon Water 's performance against Version 4 of the Enlarged Cotter Dam (ECD) Fish Management Plan (FMP V4) as required under the Commonwealth Department of Department of Climate Change, Energy, the Environment and Water conditions of approval:

'*The person taking the action must implement the Plan. Every year, the person taking the action must submit to the Minister a report covering performance against the Fish Management Plan.'*

Icon Water has completed the requirements of the ECD FMP V4 and associated sub-plans throughout the reporting period (2024 calendar year).

This performance report is structured against each of the sub-plans.

This Performance Report should be read with the ECD FMP V4 on Icon Water's website.

Background

As a condition of approval for the ECD, the Commonwealth Environment Minister directed Icon Water to manage the potential environmental impacts on five threatened native aquatic species in the Cotter River system, particularly the endangered species protected under the *Environment Protection and Biodiversity Conservation Act 1999 (Cth)* (EPBC Act).

The specific fish and crayfish species to be managed are listed below.

Species	EPBC Act Listing Status
Macquarie Perch(*Macquaria australasica*)	Endangered
Trout Cod (*Maccullochella macquariensis*)	Endangered
Murray Cod (*Maccullochella peelii*)[1]	Vulnerable
Two-spined Blackfish (*Gadopsis bispinosus*)[2]	-
Murray River Crayfish (*Euastacus armatus*)	Endangered

Table 1 - EPBC Listing Status

Icon Water's approach to managing threatened aquatic species is documented through a series of ECD Fish Management Plans and projects, as shown in **Figure 1**. The ECD Fish Management Plan is reviewed every five years, which aligns with Icon Water's adaptive management principles.

The objective of FMP V4 is "*To ensure that operation of the Cotter Dam for the supply of community drinking water continues to support aquatic communities, particularly threatened native fish and crayfish species."*

Objective	Controls
Risks mitigation	Protect threatened aquatic fauna and their habitats arising from the construction and operation of the enlarged Cotter Dam.
Adaptive Management	Scientifically based, using adaptive management and use of expertise.
Stakeholder involvement	Robust peer review and public transparency
Compliance	Regularly updated on the basis specified in the approval conditions
	Developed as part of the overall requirements of the ECD

Table 2. ECD Fish Management Plan version 4 (and relevant sub-plans) objectives and controls

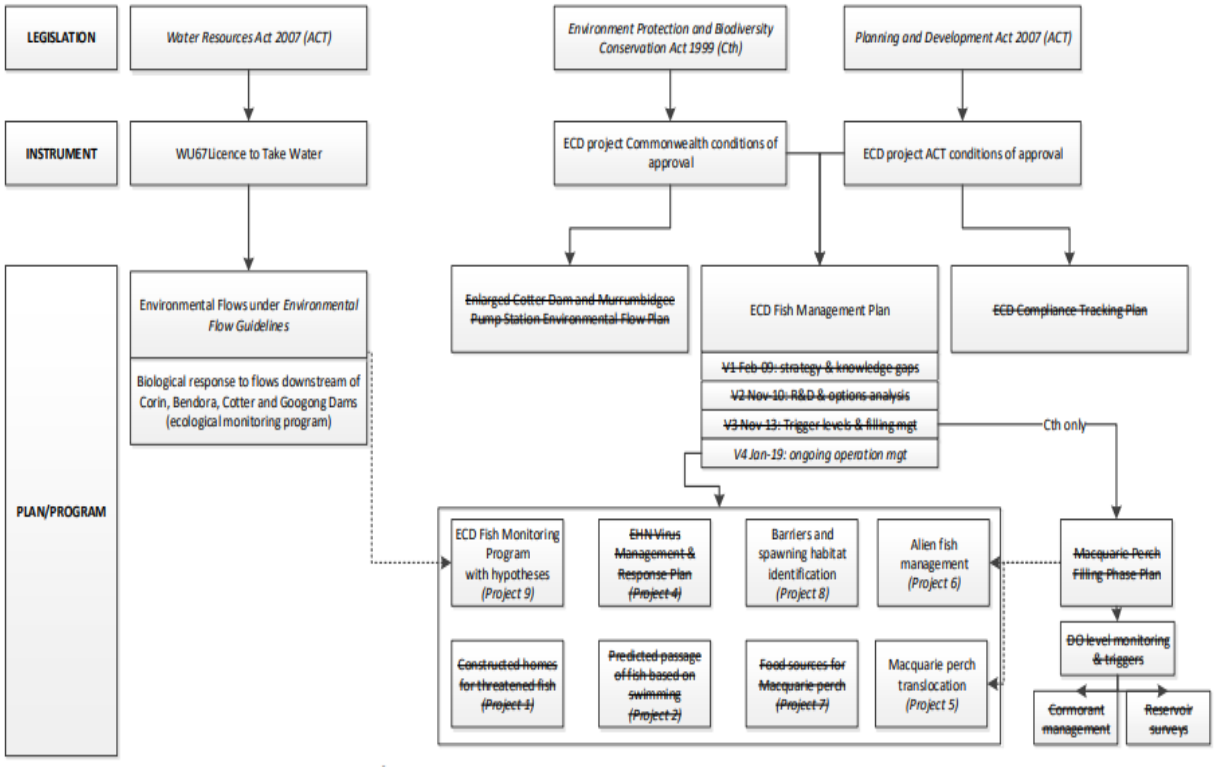
[1] Murray cod have not been detected in the Cotter River and are not included in this version of the FMP

[2] Listed as vulnerable in the ACT under Section 91 of the Nature Conservation Act 2014.

The following sub-plans are contained in the following appendices to the FMP:

Appendix E	Cotter Reservoir EHN Virus Management Plan
Appendix F	Cotter Reservoir Destratification System Process Operating Plan
Appendix G	Enlarged Cotter Reservoir (ECR) Cormorant Management Plan
Appendix H	ECR Emergency Inspection and Translocation Plan
Appendix I	Cotter Reservoir Alien Fish Management Plan

Figure 1. ECD framework



FMP Working Group

The delivery of FMP V4 was managed by the FMP Working Group, chaired by Icon Water, and included representatives from the Commonwealth Government, ACT Government, and the University of Canberra. Icon Water continues to meet and report to the WG, with the latest meeting on September 05, 2024.

Based on stakeholder feedback in November 2021 (and as notified to the Commonwealth), it was decided to halt further fish translocations from the ECD and focus solely on monitoring for the remaining approval period. As a result, no Macquarie Perch were translocated from the ECD in 2024.

However, as with traditional monitoring of previously translocated Fish, Icon Water conducted eDNA monitoring in Corin Dam in 2024 to determine if any translocated fish had moved into the reservoir.

ECD Fish Monitoring – Technical & Data Summary Report 2024

The 2024 FMP technical and spring data reports summarised key monitoring findings:

Adult Macquarie Perch

- Adult Macquarie perch numbers in 2024 have rebounded from the low captures in 2022, with relative abundance near the median since monitoring began.
- Encouragingly, younger adults were captured, indicating successful recruitment of previous generations.
- A 2022 mark-recapture study estimated the adult population in Cotter Reservoir at 1,152 individuals.
- However, boat electrofishing in 2024 showed the second-lowest adult abundance since 2014.
- Despite this, adult body condition remained higher than baseline levels, with no significant CPUE differences across monitoring phases.
- Low adult catches in 2019-2020 were likely due to recruitment failure in 2014-2015.

Young of the Year (YOY)

- Successful recruitment to the YOY stage continued for the sixth year in 2024, though at lower levels.
- YOY captures were consistent with most previous years, with CPUE improving compared to the filling phase.
- No snorkelling surveys were conducted in December 2024 due to high flows and turbidity.
- Despite high reservoir levels and unregulated flows, suitable spawning habitats were accessible.
- YOY abundance at the reference site was lowest in 2022, likely impacted by 2019-2020 bushfires.

Juveniles (1+ and older)

- Juvenile captures in 2024 were similar to other years, except 2010 and 2011, which had higher numbers.
- Juvenile abundance in Cotter Reservoir has been stable since 2018, suggesting favourable conditions for early survival.
- Strong juvenile recruitment has been observed over the last five years (2018-2024).

Other Ecologies

- No Two-spined blackfish were captured in 2024 bait traps.
- Rainbow trout abundance in 2022 was consistent with previous years, while brown trout numbers were low after five years of high abundance.
- Goldfish numbers have remained low since 2017.
- The piscivorous bird population remains stable, though Little Pied Cormorants showed some distribution shifts.
- Emergent macrophytes were observed along Cotter Reservoir's shoreline.
- Food resources, such as Chironomidae and decapods, have returned to baseline levels since 2018

Operational Risks to native fish and mitigation actions

The FMP Technical Report 2024 and data report outlines management measures and controls in FMP V4, including risk ratings. The table below highlights high (H) and medium (M) level risks and the status of Icon Water's management actions to address them.

Risk	Current Controls	Potential Additional Controls	Status
H1. Loss of food resources	• Constructed rock reef provides a substrate for food. • Inundated native hardwood and shrub habitat left in situ provides a source of nutrient loads. • A larger area of shallow fringing habitat in the reservoir provides a habitat for food.	• Trials of reed bed establishment and riparian revegetation around selected reservoir areas. • Macrophytes have returned to the ECD at several locations.	• The current controls are considered adequate as there is a healthy native fish population in the reservoir. • While the reservoir is being used as a water supply source, the fluctuating level makes additional controls impractical at this stage. • Monitoring indicates that food resources and abundances have returned to levels observed during the baseline phase.
H2. Cold Water Pollution	• Monitoring water temperature upstream and in the reservoir and selective environmental releases from Bendora Reservoir by Icon Water's License to Take Water.	• Explore options for using variable offtakes and release at Bendora Reservoir.	• Water temperature and other water quality parameters are monitored upstream and in the Corin and Bendora Reservoirs. • Reservoir levels were almost all full in 2024 and mostly natural flows.
M1. Increased abundance of Alien Fish	• Implement management options described in section 3.2 of the Alien Fish Management Plan following approval by the FMPWG. • Report illegal fishing to PCS (Parks and Conservation Service) for compliance matters. • Implement controls described in section 3 of the EHN Virus Management Plan related to fish vectors of EHN virus. • Implement the ECD Fish Monitoring Program to define trigger levels and inform adaptive management controls. • Educate Icon Water contractors to reduce the risk of transfer of alien fish eggs on vehicles and equipment.	• Monitor for trout predation on Macquarie Perch larvae and implement additional management options if trout impact larvae.	• Rainbow trout size and abundance remain similar between years; Brown trout were low in 2024 in Cotter Reservoir. • Previous confirmed cases of Brown trout predation on YOY Macquarie Perch. • Trout and other alien Fish will continue to be monitored by the ECD Fish Monitoring Program. • Further meetings will take place between EPSDD and IW to assess response actions if required.
M2. EHN Virus	• Report illegal fishing to PCS for compliance matters. • Implement controls described in Section 3 of the EHN Virus Management Plan. • Inspect Fish Monitoring Program Reports for signs of infection in threatened Fish. • Educate Icon Water staff and contractors on wash-down procedures.	• Conduct biosecurity training and simulation exercises for large-scale impacts on the Macquarie perch population.	• All Icon Water staff have attended a Toolbox Talk on vehicle and equipment wash-down procedures. • Regular communication with PCS on catchment risks and EHN Virus-related actions.
M3. Increased Great Cormorant Predation	• Constructed rock reef provides shelter/refuge habitat for Macquarie perch. • Native submerged hardwood provides shelter/refuge habitat. • Implement monitoring and management actions from the Cormorant Management Plan. • Operate destratification mixers to reduce the impact of low dissolved oxygen.	• None identified.	• Regular monitoring of the cormorant population continues, with stable abundance and minor shifts in distribution. • Destratification mixers were back online in the first half of 2023-24.
M4. Drawdown of reservoir and sedimentation of river reach	• Reservoir operating level and inflow management during spawning informed by ECD Fish Monitoring Program. • Environmental flows, including riffle and pool maintenance flushes.	• The Murrumbidgee recirculation pump can be used to maintain reservoir level.	• Reservoir levels were almost full in 2024, with mostly natural flows. • Environmental flows from Bendora Dam have been released per the License to Take Water, with most 2024 flows being natural.
M5. Exposure of instream barriers during MP spawning season	• Reservoir operating level and inflow management during spawning informed by ECR Fish Monitoring Program. • Compliance with licensed environmental flows per Icon Water's License to Take Water.	• Prepare guidelines for spawning targets in successive years. • Management of barriers (identification and mitigation).	• An annual spawning management plan was developed and implemented. • Compliance with licensed environmental flows per Icon Water's License to Take Water

Table 3 Risk Issues, Risk Levels, and Status of Management Actions by Icon Water and FMPWG

References

Broadhurst, B. T., Clear, R. C., Fulton, C. and Lintermans, M. (2024). *Enlarged Cotter Reservoir ecological monitoring program: technical report 2024*. Institute for Applied Ecology, University of Canberra, Canberra

Annexure 1: Ten Management Questions

The 10 management questions that underpin the Enlarged Cotter Reservoir Ecological Monitoring Program are:

1. Has there been a significant change in the abundance and body condition of Macquarie Perch in the enlarged Cotter Reservoir (Young-of-Year, juveniles and adults) because of the filling and operation of the ECD?
2. Has there been a significant change in the abundance, body condition and distribution of the Macquarie Perch in the Cotter River above and below Vanity's Crossing because of the filling and operation of the ECD?
3. Have Two-spined blackfish established a reproducing population in the enlarged Cotter Reservoir, and are they persisting in the newly inundated section of the Cotter River?
4. Has there been a significant change in adult trout's abundance, distribution and size composition in the enlarged Cotter Reservoir due to the filling and operation of the ECD?
5. Has there been a significant change in the abundance and size composition of trout in the Cotter River upstream of the enlarged Cotter Reservoir due to the filling and operation of ECD?
6. Are Two-spined blackfish and Macquarie Perch present in trout stomachs in the Cotter River?
7. Has there been a significant change in the abundance and distribution of non-native fish species in the enlarged Cotter Reservoir due to the filling and operation of the ECD?
8. Has there been a significant change in the abundance, distribution, and species composition of piscivorous birds near the enlarged Cotter Reservoir due to the filling and operation of the ECD?
9. Have macrophyte beds re-established in the enlarged Cotter Reservoir?
10. Are there adequate food resources (particularly decapods) for the Macquarie Perch following the filling and operation of the enlarged Cotter Reservoir?

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