



Notice is hereby given, in accordance with the provisions of the Local Government Act 1993 that an **ORDINARY MEETING** of Wentworth Shire Council will be held in the **WENTWORTH SHIRE COUNCIL CHAMBERS, DARLING STREET, WENTWORTH**, commencing at **5:00 PM**.

The meeting is being livestreamed and/or recorded for on-demand viewing via Council's website. Attendance at the meeting is to be taken as consent by a person to their image and/or voice being webcast.

All speakers should refrain from making any defamatory comments or releasing personal information about another individual without their consent. Council accepts no liability for any damage that may result from defamatory comments made by persons attending meetings – all liability will rest with the individual who made the comments.

The meeting must not be recorded by others without prior written consent of the Council in accordance with the Council's code of meeting practice.

Councillors & staff are obligated to declare Conflicts of Interest as required under the Local Government Act 1993 and Councils adopted Code of Conduct.

Councillors are reminded of their Oath of Office whereby they have declared and affirmed that they will undertake the duties of the Office of Councillor in the best interests of the people of Wentworth Shire and the Wentworth Shire Council and that they will faithfully and impartially carry out the functions, powers, authorities and discretions vested in them under the Local Government Act 1993 or any other Act to the best of their ability and judgment.

KEN ROSS
GENERAL MANAGER

ORDINARY MEETING

AGENDA

17 SEPTEMBER 2025

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1 OPENING OF MEETING

The Mayor requests that the General Manager makes announcements regarding the live-streaming of the meeting.

2 PRAYER OR ACKNOWLEDGEMENT OF COUNTRY

We acknowledge the traditional owners of the land on which we live and work, and pay our respects to their elders past, present, and emerging.

3 APOLOGIES AND APPLICATIONS FOR LEAVE OF ABSENCE

4 DISCLOSURES OF INTERESTS

5 CONFIRMATION OF MINUTES

Recommendation

That the Minutes of the Ordinary Meeting held 20 August 2025 be confirmed as circulated.



ORDINARY MEETING MINUTES

20 AUGUST 2025

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1 OPENING OF MEETING

The Mayor opened the meeting with a prayer and Acknowledgement of Country at 5:01PM

The Mayor acknowledged profound sadness for this Council and community on 1 July 2025 on the passing of Tim Elstone and our ongoing support for Ellen, Luke, Daniel, Sarah and Lachie.

Cr Beaumont took his Oath of Office and signed his Declaration of Oath on Monday 18 August 2025.

Cr Beaumont responded and acknowledged the contribution of Tim Elstone to the whole shire his knowledge and experience will be sorely missed. Cr Beaumont extended his sympathy to the Elstone family.

2 PRAYER OR ACKNOWLEDGEMENT OF COUNTRY

PRESENT:

COUNCILLORS: Councillor Daniel Linklater
Councillor Jon Armstrong
Councillor Brian Beaumont
Councillor Peter Crisp
Councillor Greg Evans
Councillor Susan Nichols
Councillor Jo Rodda (Via Video Conference)
Councillor Jody Starick
Councillor Michael Weeding

STAFF: Ken Ross (General Manager)
Geoff Gunn (Director Roads and Engineering)
Simon Rule (Director Finance and Policy)
Gayle Marsden (Executive Assistant to General Manager)
Ebony Carter (Business Support Officer)

3 APOLOGIES AND LEAVE OF ABSENCE

Nil

4 DISCLOSURES OF INTERESTS

Councillor Starick advised that she had a non-pecuniary interest in Item 9.8 as a board member of MASP is a personal friend and MASP is requesting funding from Council.

Councillor Armstrong advised that he had a non-pecuniary interest in Item 9.10 as his employer is a supplier to the business involved.

Councillor Beaumont advised that he has non-pecuniary interest in Item 9.3 as he is a member of the board of the Wentworth District Community Medical Centre.

Councillor Beaumont advised that he had a less non-pecuniary interest in Item 9.8 as prior to being re-elected to Council he provided some advice to the Dareton Youth & Community Centre submission for financial assistance.

Councillor Nichols advised that she had non-pecuniary interest in Item 9.8 as she is a life member of the Wentworth Bowling Club.

5 CONFIRMATION OF MINUTES

Recommendation

That the Minutes of the Ordinary Meeting held 16 July 2025 be confirmed as circulated.

Council Resolution

That the Minutes of the Ordinary Meeting held 16 July 2025 be confirmed as circulated.

Moved Cr. Nichols, Seconded Cr. Evans

CARRIED UNANIMOUSLY

Council Resolution

That the Ordinary Council meeting be adjourned for the purpose of conducting a Public Forum.

The meeting was adjourned at 5:13pm.

Moved Cr. Crisp, Seconded Cr. Weeding

CARRIED UNANIMOUSLY

Public Forum

Glenis Beaumont spoke in favour of Item 9.3

Simon Dorotich spoke in favour of the recommendation for Item 9.10

Brian Ferry spoke in favour of the recommendation for Item 9.10

Howard Ferry spoke in favour of the recommendation for Item 9.10

Council Resolution

That Council reconvenes into open session. The meeting was reconvened at 5:20pm.

Moved Cr. Crisp, Seconded Cr. Weeding

CARRIED UNANIMOUSLY

6 OUTSTANDING MATTERS FROM PREVIOUS MEETINGS

Nil

7 MAYORAL AND COUNCILLOR REPORTS

7.1 MAYORAL REPORT AUGUST 2025

File Number: RPT/25/419

Recommendation

That Council receives and notes the information contained in the Mayoral report for August 2025.

Council Resolution

That Council receives and notes the information contained in the Mayoral report for August 2025.

Moved Cr. Linklater, Seconded Cr. Beaumont

CARRIED UNANIMOUSLY

7.2 RIVER REFLECTIONS CONFERENCE - MURRAY BRIDGE

File Number: RPT/25/468

Summary

Cr Weeding and Cr Evans attended the *River Reflections Conference* held at Murray Bridge 29 & 30 July 2025. Cr Weeding has provided Council with the attached report regarding the conference.

Recommendation

That the information contained in the report from Councillor Weeding be noted.

Council Resolution

That the information contained in the report from Councillor Weeding be noted.

Moved Cr. Weeding, Seconded Cr. Evans

CARRIED UNANIMOUSLY

8 REPORTS FROM COMMITTEES

Nil

9 REPORTS TO COUNCIL

9.1 GENERAL MANAGERS REPORT AUGUST 2025

File Number: RPT/25/420

Responsible Officer: Ken Ross - General Manager

Responsible Division:

Reporting Officer: Gayle Marsden - Executive Assistant

Objective: 4.0 Wentworth Shire is supported by strong and ethical civic leadership with all activities conducted in an open, transparent and inclusive manner

Strategy: 4.2 We value our civic leadership whose stewardship and decision making benefits present and future generations

Summary

The General Manager's report details information pertaining to meetings attended and general information which are of public interest, and which have not been reported elsewhere in this agenda. Items of note in this report are:

1. OLG Circulars
Circulars 25-15 to 25-17
2. Meetings
As listed.
3. Upcoming meetings or events
As listed.
4. Other items of note

Recommendation

That Council receive and note the information contained within the report from the General Manager.

Council Resolution

That Council receive and note the information contained within the report from the General Manager.

Moved Cr. Starick, Seconded Cr. Armstrong

CARRIED UNANIMOUSLY

9.2 UNION PICNIC DAY

File Number: RPT/25/418

Responsible Officer: Ken Ross - General Manager
Responsible Division: Office of the General Manager
Reporting Officer: Glen Norris - Manager Human Resources

Objective: 4.0 Wentworth Shire is supported by strong and ethical civic leadership with all activities conducted in an open, transparent and inclusive manner

Strategy: 4.4 Manage public resources responsibly and efficiently for the benefit of the community

Summary

Union Picnic Day is an entitlement under the Local Government (State) Award for employees who are financial members of Union(s) only. Council is required to determine which day shall be regarded as the Union Picnic Day and the arrangements for the non-union members on the determined Union Picnic Day.

Recommendation

That Council:

- a) Approve Tuesday 4 November 2025 as the Award holiday known as Union Picnic Day for those employees who are financial members of the United Services Union
- b) Authorise the closure of Council Offices, Council Depots, Libraries, Landfills and Visitor Information Centre
- c) Require Non-union members to apply for 4 November 2025 from leave entitlements to enable the above arrangements

Council Resolution

That Council:

- a) Approve Tuesday 4 November 2025 as the Award holiday known as Union Picnic Day for those employees who are financial members of the United Services Union
- b) Authorise the closure of Council Offices, Council Depots, Libraries, Landfills and Visitor Information Centre
- c) Require Non-union members to apply for 4 November 2025 from leave entitlements to enable the above arrangements

Moved Cr. Armstrong, Seconded Cr. Crisp

CARRIED UNANIMOUSLY

9.3 AVAILABILITY OF THE WENTWORTH VISITOR CENTRE CONFERENCE ROOM

File Number: RPT/25/427

Responsible Officer: Ken Ross - General Manager
Responsible Division: Office of the General Manager
Reporting Officer: Ebony Carter - Business Support Officer

Objective: 1.0 Wentworth Shire is a vibrant, growing and thriving region
Strategy: 1.1 Create a supportive environment for business to grow

At 5.37pm Councillor Brian Beaumont left the Council Chambers.

Summary

Council is in receipt of a request from Wentworth District Community Medical Centre Inc. to make available the Wentworth Visitor Centre Conference Room facilities to host their annual charity dinner and auction event.

Recommendation

That Council considers making the Wentworth Visitor Centre Conference Room facilities available to Wentworth District Community Medical Centre Inc for their annual charity dinner and auction to be held on Friday 14 November 2025 and whether the nature of the request requires a fee to be paid for the hire of the facilities.

Council Resolution

That Council makes the Wentworth Visitor Centre Conference Room facilities available to Wentworth District Community Medical Centre Inc for their annual charity dinner and auction to be held on Friday 14 November 2025 and that fees not be charged.

Moved Cr. Nichols, Seconded Cr. Weeding

CARRIED UNANIMOUSLY

At 05:39 pm Councillor Brian Beaumont returned to Council Chambers.

9.4 MONTHLY FINANCE REPORT - JULY 2025

File Number: RPT/25/433

Responsible Officer: Simon Rule - Director Corporate Services

Responsible Division: Corporate Services

Reporting Officer: Vanessa Lock - Finance Officer

Objective: 4.0 Wentworth Shire is supported by strong and ethical civic leadership with all activities conducted in an open, transparent and inclusive manner

Strategy: 4.1 A well engaged and informed community

Summary

Rates and Charges collections for the month of July 2025 were \$1,112,195.12. After allowing for pensioner subsidies, the total levies collected are now 9.57%. For comparison purposes 7.97% of the levy had been collected at the end of July 2024. Council currently has \$42,249,006.63 in cash and investments.

Recommendation

That Council receives and notes the Monthly Finance Report for July 2025.

Council Resolution

That Council receives and notes the Monthly Finance Report for July 2025.

Moved Cr. Starick, Seconded Cr. Armstrong

CARRIED UNANIMOUSLY

9.5 MONTHLY INVESTMENT REPORT - JULY 2025

File Number: RPT/25/442

Responsible Officer: Simon Rule - Director Corporate Services
Responsible Division: Corporate Services
Reporting Officer: Ned Lamond - Financial Services Coordinator

Objective: 4.0 Wentworth Shire is supported by strong and ethical civic leadership with all activities conducted in an open, transparent and inclusive manner

Strategy: 4.4 Manage public resources responsibly and efficiently for the benefit of the community

Summary

As of 31 July 2025, Council had \$37 million invested in term deposits and \$5,249,005.63 in other cash investments. Council received \$217,205.76 from its investments for the month of July 2025.

In July 2025 Council investments averaged a rate of return of 4.05% and it currently has \$6,546,983.93 of internal restrictions and \$34,008,988.24 of external restrictions.

Recommendation

That Council receives and notes the monthly investment report for July 2025.

Council Resolution

That Council receives and notes the monthly investment report for July 2025.

Moved Cr. Crisp, Seconded Cr. Armstrong

CARRIED UNANIMOUSLY

9.6 JUNE QUARTERLY BUDGET REVIEW

File Number: RPT/25/425

Responsible Officer: Simon Rule - Director Corporate Services
Responsible Division: Corporate Services
Reporting Officer: Ned Lamond - Financial Services Coordinator

Objective: 4.0 Wentworth Shire is supported by strong and ethical civic leadership with all activities conducted in an open, transparent and inclusive manner

Strategy: 4.4 Manage public resources responsibly and efficiently for the benefit of the community

Summary

A full analysis of Council's Income, Operating Expenditure and Capital Expenditure has been undertaken. Several variations have been identified against the original budget as outlined in this report. Council's revenue and expenditure is reviewed on a quarterly basis to identify any potential areas requiring a variation.

In the June Quarter the result of net variances if approved are an unfavourable operational variance of \$1,939 Million and a favorable capital variance of \$9,190 Million resulting in a total net variance of \$7,251 Million. Note all June figures are prepared prior to accruals posting and prepared on a cash basis for budget purposes only.

Recommendation

That Council:

- a) Note the 2024/2025 Fourth Quarter Budget Review
- b) Note the proposed revised 2024/2025 changes to operational & capital budgets.

Council Resolution

That Council:

- a) Note the 2024/2025 Fourth Quarter Budget Review
- b) Note the proposed revised 2024/2025 changes to operational & capital budgets.

Moved Cr. Crisp, Seconded Cr. Evans

CARRIED UNANIMOUSLY

9.7 QUARTERLY OPERATIONAL PLAN PROGRESS REPORT

File Number: RPT/25/440

Responsible Officer: Simon Rule - Director Corporate Services

Responsible Division: Corporate Services

Reporting Officer: Simon Rule - Director Corporate Services

Objective: 4.0 Wentworth Shire is supported by strong and ethical civic leadership with all activities conducted in an open, transparent and inclusive manner

Strategy: 4.2 We value our civic leadership whose stewardship and decision making benefits present and future generations

Summary

In accordance with the Local Government Integrated Planning and Reporting Framework, Council develops a Four Year Delivery Program and a One Year Operational Plan, which details the actions to be undertaken by Council to implement the strategies established in the Community Strategic Plan.

The *Local Government Act 1993* requires that progress is reported to Council with respect to the principal actions detailed in its Operational Plan at least every six months. To better align with the Quarterly Budget Review Process, the Operational Plan progress report is also compiled on a quarterly basis.

During the 4th Quarter the following occurred:

- The following actions have been completed
 - All annual actions
 - 2.3.8-Implementation of the Child Safe Standards
 - 3.2.7-Arumpo Road Upgrade
 - 3.2.8-Regional Emergency Road Repair Program
 - 3.2.11-Loop Road
 - 3.2.12-Wamberra Road
 - 3.2.13-Alcheringa Drive
 - 3.5.7-Burong/Gol Gol Sporting Masterplan
 - 4.3.4-Monitor Compliance with NSW Modern Slavery obligations
- 23 specific actions remain outstanding and will be carried over into the new financial year for completion.

Recommendation

That Council:

- a) Receives and notes the report
- b) Notes the specific actions that will be carried forward into the new financial year for completion.

Council Resolution

That Council:

- a) Receives and notes the report
- b) Notes the specific actions that will be carried forward into the new financial year for completion.

Moved Cr. Nichols, Seconded Cr. Armstrong

CARRIED UNANIMOUSLY

9.8 AF003 REQUESTS FOR FINANCIAL ASSISTANCE

File Number: RPT/25/445

Responsible Officer: Simon Rule - Director Corporate Services
 Responsible Division: Corporate Services
 Reporting Officer: Annette Fraser - Team Leader Customer Service

Objective: 4.0 Wentworth Shire is supported by strong and ethical civic leadership with all activities conducted in an open, transparent and inclusive manner

Strategy: 4.1 A well engaged and informed community

At 05:43 pm Councillor Brian Beaumont left the Council Chambers.

At 05:43 pm Councillor Susan Nichols left the Council Chambers.

Summary

Council has provided an allocation of \$200,000.00 for the 2025/26 financial year for consideration by Council, for the funding of requests from the community for financial assistance. In this financial year, \$112,348.70 has been granted to a variety of organisations through the annual fees and charges "Exemptions from the Application" process.

The total value of requests granted so far under delegated authority is \$1,306.00. The total value of requests for Round 1 of the 2025/2026 funding application period totals \$23,557.60, which if granted in full would leave a balance in the financial assistance program of \$62,787.70

Financial Assistance Program starting balance 2023/24	\$200,000.00
Annual fees & charges annual exemptions granted	\$112,348.70
Granted under delegated authority to July 2025	\$ 1,306.00
Available balance as at 1 August 2025	\$ 86,345.30
Round 1 Financial request applications received to 24/7/2025	\$ 23,557.60
Remaining balance if all approved	\$ 62,787.70

Recommendation

That Council having considered the current requests for financial assistance, make appropriate recommendations on the level of funding to be provided to each of these applications from the Financial Assistance program.

Council Resolution

That Council having considered the current requests for financial assistance, grant all requests for financial assistance as listed.

Moved Cr. Armstrong, Seconded Cr. Crisp

CARRIED UNANIMOUSLY

At 05:44 pm Councillor Susan Nichols returned to Council Chambers.

At 05:44 pm Councillor Brian Beaumont returned to Council Chambers.

9.9 DELEGATED AUTHORITY REPORT - JULY 2025

File Number: RPT/25/449

Responsible Officer: Ken Ross - General Manager
Responsible Division: Office of the General Manager
Reporting Officer: Gayle Marsden - Executive Assistant

Objective: 3.0 Wentworth Shire is a community that works to enhance and protect its physical and natural environment

Strategy: 3.1 An urban environment that maintains and enhances our sense of identity and place

Summary

For the month of July 2025, a total of fourteen (14) Development Applications were determined under delegated authority by the General Manager.

The estimated value of the determined developments was \$4,024,103.77. This brings the year to date total to fourteen (14) Development Applications with an estimated development value of \$4,024,103.77.

Recommendation

That Council receives and notes the report for the Delegated Authority Approvals for the month of July 2025.

Council Resolution

That Council receives and notes the report for the Delegated Authority Approvals for the month of July 2025.

Moved Cr. Armstrong, Seconded Cr. Crisp

CARRIED UNANIMOUSLY

9.10 DA2024/134 EXTENSION TO EXISTING RURAL INDUSTRY 623 RIVER ROAD LOT 989 DP 756961 & 28 JINDALEE ROAD LOT 1 DP 1264484 COOMEALLA

File Number: RPT/25/455

Responsible Officer: Ken Ross - General Manager
Responsible Division: Office of the General Manager
Reporting Officer: Kerrie Copley - Planning Officer

Objective: 3.0 Wentworth Shire is a community that works to enhance and protect its physical and natural environment

Strategy: 3.1 An urban environment that maintains and enhances our sense of identity and place

Summary

A development application (DA2024/134) was received by Council on 14 October 2024 for an extension to existing rural industry of 623 River Road Lot 989 DP 756961 & 28 Jindalee Road Lot 1 DP 1264484 Coomealla.

Recommendation

That Council:

1. Determine DA2024/134 Extension to Existing Rural Industry 623 River Road Lot 989 DP 756961 & 28 Jindalee Road Lot 1 DP 1264484 Coomealla, by way of refusal for the following reasons:
 - a) Required concurrence provided as a refusal.
 - b) Council, as the consent authority cannot approve development without concurrence from the approval body under clause 4.47(4) of the *Environmental Planning & Assessment Act 1979*.
2. Call a division in accordance with S375A of the Local Government Act 1993 (NSW)

Council Resolution

That Council:

1. Determine DA2024/134 Extension to Existing Rural Industry 623 River Road Lot 989 DP 756961 & 28 Jindalee Road Lot 1 DP 1264484 Coomealla, by way of refusal for the following reasons:
 - a) Required concurrence provided as a refusal.
 - b) Council, as the consent authority cannot approve development without concurrence from the approval body under clause 4.47(4) of the *Environmental Planning & Assessment Act 1979*.
2. Call a division in accordance with S375A of the Local Government Act 1993 (NSW)

Moved Cr. Crisp, Seconded Cr. Beaumont

CARRIED UNANIMOUSLY

In accordance with Section 375A of the Local Government Act the Mayor called for a division.

For the Motion : *Clr.s Armstrong, Beaumont, Crisp, Evans, Linklater, Nichols, Rodda, Starick and Weeding.*

Against the Motion: *Nil.*

9.11 PROJECT & WORKS REPORT AUGUST 2025

File Number: RPT/25/456

Responsible Officer: Geoff Gunn - Director Roads and Engineering

Responsible Division: Roads and Engineering

Reporting Officer: Megan Jackson - Roads & Engineering Administration Officer

Objective: 3.0 Wentworth Shire is a community that works to enhance and protect its physical and natural environment

Strategy: 3.5 Infrastructure meets the needs of our growing Shire

Summary

This report provides a summary of the projects and major works undertaken by the Roads and Engineering Department which have been completed during the months of July 2025 and the planned activities for August 2025.

Recommendation

That Council receives and notes the major works undertaken in July 2025 and the scheduled works for the following month.

Council Resolution

That Council receives and notes the major works undertaken in July 2025 and the scheduled works for the following month.

Moved Cr. Starick, Seconded Cr. Weeding

CARRIED UNANIMOUSLY

9.12 FUNDING REQUEST - SPIRIT OF CRICKET

File Number: RPT/25/470

Responsible Officer: Ken Ross - General Manager
Responsible Division: Office of the General Manager
Reporting Officer: Gayle Marsden - Executive Assistant

Objective: 1.0 Wentworth Shire is a vibrant, growing and thriving region
Strategy: 1.2 Promote the Wentworth Region as a desirable visitor and tourism destination

Summary

Council is in receipt of a request for sponsorship for the Global Spirit of Cricket Festival to be held over two tournaments from 16 to 30 September 2025. The festival caters to Over 35 and Over 50's Masters Cricket players and will be held at various venues including Wentworth Shire Council venues, McLeod Oval and Carramar Oval. The festival will be broadcast by "Willow", North America's leading cricket broadcaster. The broadcast will be 60+ hours live high-definition coverage, streamed across USA & Canada as well as Australia & New Zealand.

Recommendation

That Council consider the options available regarding sponsorship for the Global Spirit of Cricket Festival.

That Council consider the options available regarding sponsorship for the Global Spirit of Cricket Festival provide sponsorship of \$7500.00 (ex GST)

Moved Cr. Armstrong, Seconded Cr. Evans

Amendment

That Council consider the options available regarding sponsorship for the Global Spirit of Cricket Festival provide sponsorship of \$7500.00 (ex GST) and provide a fee waiver for McLeod Oval & George Gordon Oval fees.

Moved Cr. Crisp, Seconded Cr. Nichols

CARRIED UNANIMOUSLY

Council Resolution

That Council having considered the options available regarding sponsorship for the Global Spirit of Cricket Festival provide sponsorship of \$7500.00 (ex GST) and provide a fee waiver for McLeod Oval & George Gordon Oval fees.

Moved Cr. Crisp, Seconded Cr. Nichols

CARRIED UNANIMOUSLY

9.13 INTEGRATED TRANSPORT & LAND USE STRATEGY

File Number: RPT/25/471

Responsible Officer: Geoff Gunn - Director Roads and Engineering

Responsible Division: Roads and Engineering

Reporting Officer: Samantha Wall - Projects Administration

Objective: 3.0 Wentworth Shire is a community that works to enhance and protect its physical and natural environment

Strategy: 3.2 Our public assets are well maintained and able to meet the growing population demands

Summary

This report provides information as requested by Mayoral Minute at the May 2025 Council meeting regarding transport related matters to enable Council to review, plan, prioritise and advocate effectively for necessary infrastructure

Recommendation

That Council notes the contents of this report.

Council Resolution

That Council notes the contents of this report.

Moved Cr. Armstrong, Seconded Cr. Starick

CARRIED UNANIMOUSLY

10 NOTICES OF MOTIONS / QUESTIONS WITH NOTICE

10.1 STATUS REPORT ON PREVIOUS COUNCIL RESOLUTIONS

File Number: RPT/25/469

Motion

That Council staff add to the Council Meeting agenda a permanent item Status Report on previous Resolutions and that the General Manager provide an update on actions completed in regards to the outstanding resolutions until the resolutions are closed.

Council Resolution

That Council staff add to the Council Meeting agenda a permanent item Status Report on previous Resolutions and that the General Manager provide an update on actions completed in regards to the outstanding resolutions until the resolutions are closed.

Moved Cr. Starick, Seconded Cr. Weeding

CARRIED UNANIMOUSLY

11 CONFIDENTIAL BUSINESS – ADJOURNMENT INTO CLOSED SESSION

Despite the right of members of the public to attend meetings of a council, the council may choose to close to the public, parts of the meeting that involve the discussion or receipt of certain matters as prescribed under section 10A(2) of the Local Government Act.

With the exception of matters concerning particular individuals (other than councillors) (10A(2)(a)), matters involving the personal hardship of a resident or ratepayer (10A(2)(b)) or matters that would disclose a trade secret (10A(2)(d)(iii)), council must be satisfied that discussion of the matter in an open meeting would, on balance, be contrary to the public interest.

The Act requires council to close the meeting for only so much of the discussion as is necessary to preserve the relevant confidentiality, privilege or security being protected. (section 10B(1)(a))

Section 10A(4) of the Act provides that a council may allow members of the public to make representations to or at a meeting, before any part of the meeting is closed to the public, as to whether that part of the meeting should be closed.

Section 10B(4) of the Act stipulates that for the purpose of determining whether the discussion of a matter in an open meeting would be contrary to the public interest, it is irrelevant that:-

- (a) a person may misinterpret or misunderstand the discussion, or
- (b) the discussion of the matter may -
 - (i) cause embarrassment to the council or committee concerned, or to councillors or to employees of the council, or
 - (ii) cause a loss of confidence in the council or committee.

Recommendation

That Council adjourns into Closed Session, the recording of the meeting be suspended, and members of the press and public be excluded from the Closed Session, and that access to the correspondence and reports relating to the items considered during the course of the Closed Session be withheld unless declassified by separate resolution.

This action is taken in accordance with Section 10A(2) of the Local Government Act, 1993 as the items listed come within the following provisions:-

12.1 Buronga Landfill Expansion - Project Management. (RPT/25/444)

This item is classified CONFIDENTIAL under the provisions of Section 10A(2) of the Local Government Act 1993, which permits the meeting to be closed to the public for business relating to (c) information that would, if disclosed, confer a commercial advantage on a person with whom the Council is conducting (or proposes to conduct) business. On balance, the public interest in preserving the confidentiality of information about the tender outweighs the public interest in maintaining openness and transparency in council decision-making because disclosure of this information would reveal pricing and confidential information submitted via the tender process which if disclosed would prevent council from achieving its 'value for money' objectives.

12.2 Water Account Reduction Request - P536/201. (RPT/25/421)

This item is classified CONFIDENTIAL under the provisions of Section 10A(2) of the Local Government Act 1993, which permits the meeting to be closed to the public for business relating to (b) discussion in relation to the personal hardship of a resident or ratepayer.

Council Resolution

That Council adjourns into Closed Session, the recording of the meeting be suspended, and members of the press and public be excluded from the Closed Session, and that access to the correspondence and reports relating to the items considered during the course of the Closed Session be withheld unless declassified by separate resolution.

Moved Cr. Crisp, Seconded Cr. Beaumont

CARRIED UNANIMOUSLY

12 OPEN COUNCIL - REPORT FROM CLOSED COUNCIL

12.1 BURONGA LANDFILL EXPANSION - PROJECT MANAGEMENT

File Number: RPT/25/444

Responsible Officer: Geoff Gunn - Director Roads and Engineering

Responsible Division: Roads and Engineering

Reporting Officer: Samantha Wall - Projects Administration

Objective: 3.0 Wentworth Shire is a community that works to enhance and protect its physical and natural environment

Strategy: 3.2 Our public assets are well maintained and able to meet the growing population demands

REASON FOR CONFIDENTIALITY

This item is classified CONFIDENTIAL under the provisions of Section 10A(2) of the Local Government Act 1993, which permits the meeting to be closed to the public for business relating to (c) information that would, if disclosed, confer a commercial advantage on a person with whom the Council is conducting (or proposes to conduct) business. On balance, the public interest in preserving the confidentiality of information about the tender outweighs the public interest in maintaining openness and transparency in council decision-making because disclosure of this information would reveal pricing and confidential information submitted via the tender process which if disclosed would prevent council from achieving its 'value for money' objectives.

The General Manager advised that Council approved an extension of \$195,000.00 inc GST to the contract for the Buronga Landfill Expansion – Project Management Tender No. PT2324/18 with Tonkin Consulting Pty Ltd.

12.2 WATER ACCOUNT REDUCTION REQUEST - P536/201

File Number: RPT/25/421

Responsible Officer: Simon Rule - Director Corporate Services

Responsible Division: Corporate Services

Reporting Officer: Vanessa Lock - Finance Officer

Objective: 4.0 Wentworth Shire is supported by strong and ethical civic leadership with all activities conducted in an open, transparent and inclusive manner

Strategy: 4.3 Provide a governance framework that is transparent and builds trust in local leadership

REASON FOR CONFIDENTIALITY

This item is classified CONFIDENTIAL under the provisions of Section 10A(2) of the Local Government Act 1993, which permits the meeting to be closed to the public for business relating to (b) discussion in relation to the personal hardship of a resident or ratepayer.

The General Manager advises that Council authorised that the amount of water use charges of \$18,859.18 to be waived based on the previous average usage for property assessment P536/201.

13 CONCLUSION OF THE MEETING

The meeting concluded at 6:37pm.

NEXT MEETING

17 September 2025

.....
CHAIR

6 OUTSTANDING MATTERS FROM PREVIOUS MEETINGS

6.1 STATUS REPORT ON PREVIOUS COUNCIL RESOLUTIONS

File Number: RPT/25/523

Responsible Officer: Ken Ross - General Manager
 Responsible Division: Office of the General Manager
 Reporting Officer: Gayle Marsden - Executive Assistant

Objective: 4.0 Wentworth Shire is supported by strong and ethical civic leadership with all activities conducted in an open, transparent and inclusive manner

Strategy: 4.3 Provide a governance framework that is transparent and builds trust in local leadership

Summary

The Status Report on previous Council Resolutions provides details of actions that remain outstanding.

Officer Recommendation

That Council notes the list of outstanding action items for Council Resolutions as at 17 September 2025.

Attachments

1. Status Report on Previous Council Resolutions [↓](#)

Division: Ordinary Council Committee: Officer: Outstanding Action Items Report Date From: Date To: Printed: Monday, 8 September 2025 2:25:47 PM				
Meeting	Item	Title	Item	Action Record (latest first)
Ordinary Council 19/03/2025	9.18	FOGO & Recycling introduction	<u>Council Resolution</u> That Council: <ul style="list-style-type: none"> a) Approves the introduction of Food Organics & Garden Organics (FOGO) and Recycling kerbside waste collection services in conjunction with general kerbside waste collection as part of a new kerbside contract to commence in July 2026 following the expiry of the current contract end June 2026 b) as per Section 55(3)(i) of the <i>Local Government Act 1993</i> (NSW) that Council enter into direct negotiations with Council's existing contractor with the intention of entering into a contract for waste collection services as a satisfactory result would not be achieved by inviting tenders as other tenderers are likely to be uncompetitive and there is a likelihood of an unavailability of other reliable tenders. c) Approves a community education process to be facilitated by the Riverina & Murray Joint Organisation for a three bin system rollout Moved Cr. Crisp, Seconded Cr. Armstrong <u>CARRIED UNANIMOUSLY</u>	08 Sep 2025 9:27am Wall, Samantha Ongoing
Ordinary Council 23/06/2025	10.1	Notice Of Motion - Audit of Playground Equipment Within Wentworth Shire Council	<u>Council Resolution</u> That Council undertake an audit of playground equipment in the shire and actively seek grant funding to upgrade facilities as identified in said audit as required Moved Cr. Rodda, Seconded Cr. Weeding	08 Sep 2025 9:27am Wall, Samantha Ongoing

Division: Ordinary Council Committee: Officer: Outstanding Action Items Report Date From: Date To: Printed: Monday, 8 September 2025 2:25:47 PM			
Ordinary Council 20/08/2025	9.2	Union Picnic Day Council Resolution That Council: a) Approve Tuesday 4 November 2025 as the Award holiday known as Union Picnic Day for those employees who are financial members of the United Services Union b) Authorise the closure of Council Offices, Council Depots, Libraries, Landfills and Visitor Information Centre c) Require Non-union members to apply for 4 November 2025 from leave entitlements to enable the above arrangements Moved Cr. Armstrong, Seconded Cr. Crisp CARRIED UNANIMOUSLY	05 Sep 2025 9:51am Norris, Glen All staff notified of the union picnic day with non members required to take leave. Communication and all staff advised of the closure. Completed.
Ordinary Council 20/08/2025	9.8	AF003 Requests for Financial Assistance Council Resolution That Council having considered the current requests for financial assistance, grant all requests for financial assistance as listed. Moved Cr. Armstrong, Seconded Cr. Crisp CARRIED UNANIMOUSLY	08 Sep 2025 9:13am Fraser, Annette All Recipients have been notified via email. Completed
Ordinary Council 20/08/2025	9.10	DA2024/134 Extension to Existing Rural Industry 623 River Road Lot 989 DP 756961 & 28 Council Resolution That Council:	08 Sep 2025 9:18am Copley, Kerrie Development application determined & applicant & objectors notified. Complete

Division: Ordinary Council Committee: Officer: Outstanding Action Items Report Date From: Date To: Printed: Monday, 8 September 2025 2:25:47 PM			
	Jindalee Road Lot 1 DP 1264484 Coomealla	<p>1. Determine DA2024/134 Extension to Existing Rural Industry 623 River Road Lot 989 DP 756961 & 28 Jindalee Road Lot 1 DP 1264484 Coomealla, by way of refusal for the following reasons:</p> <p>a) Required concurrence provided as a refusal.</p> <p>b) Council, as the consent authority cannot approve development without concurrence from the approval body under clause 4.47(4) of the <i>Environmental Planning & Assessment Act 1979</i>.</p> <p>2. Call a division in accordance with S375A of the Local Government Act 1993 (NSW)</p> <p>Moved Cr. Crisp, Seconded Cr. Beaumont <u>CARRIED UNANIMOUSLY</u></p>	
Ordinary Council 20/08/2025	9.12 Funding Request - Spirit Of Cricket	<p>That Council consider the options available regarding sponsorship for the Global Spirit of Cricket Festival provide sponsorship of \$7500.00 (ex GST)</p> <p>Moved Cr. Armstrong, Seconded Cr. Evans</p>	08 Sep 2025 2:20pm Carter, Ebony Letter advising outcome sent. Complete
Ordinary Council 20/08/2025	10.1 Status Report on Previous Council Resolutions	<p><u>Council Resolution</u></p> <p>That Council staff add to the Council Meeting agenda a permanent item Status Report on previous Resolutions and that the General Manager provide an update on actions completed in regards to the outstanding resolutions until the resolutions are closed.</p> <p>Moved Cr. Starick, Seconded Cr. Weeding <u>CARRIED UNANIMOUSLY</u></p>	08 Sep 2025 2:22pm Carter, Ebony Reports commenced September 2025 Council Meeting. Complete

7 MAYORAL AND COUNCILLOR REPORTS

7.1 MAYORAL REPORT SEPTEMBER 2025

File Number: RPT/25/492

Summary

The purpose of this report is to advise Council of meetings, conferences and appointments undertaken by Mayor Linklater from 21 August 2025 – 17 September 2025.

Recommendation

That Council receives and notes the information contained in the Mayoral report for August 2025.

Report

The following table lists the meetings attended by Mayor Linklater for the period of 21 August 2025 – 17 September 2025.

Date	Meeting	Location
21 Aug 2025	Far West Strategic Regional Integrated Transport Plan meeting	Wentworth
25 Aug 2025	Mayoral Meeting	Wentworth
26 Aug 2025	MRCC and Agricultural Industries Representatives Working Group	Mildura
27 Aug 2025	RZ Resources/Japanese Delegation	Wentworth
28 Aug 2025	Lake Victoria Wind Farm meeting	Wentworth
29 Aug 2025	Wentworth Hospital Redevelopment Tour	Wentworth
30 Aug 2025	138 th Wentworth Show Official Opening	Wentworth
01 Sept 2025	Mayoral Meeting	Wentworth
01 Sept 2025	5 Year Celebration – Wentworth CHAC Clinic	Wentworth
03 Sept 2025	Launch of Spring 2025 Issue – Mildura Living	Mildura
08 Sept 2025	Mayoral Meeting	Wentworth
11 Sept 2025	Open Day Dareton Men's Shed	Coomealla
13 Sept 2025	Opening of the Country Music Festival	Wentworth
15 Sept 2025	Buronga Landfill Site Tour	Buronga
15 Sept 2025	Mayoral Meeting	Wentworth
16 Sept 2025	TOL + FOSO Briefing	Mildura
17 Sept 2025	Citizenship Ceremony	Wentworth
17 Sept 2025	Premeeting Briefing	Wentworth
17 Sept 2025	Ordinary Council Meeting	Wentworth

Attachments

Nil

8 REPORTS FROM COMMITTEES

8.1 AUDIT, RISK AND IMPROVEMENT COMMITTEE - 15 AUGUST 2025

File Number: RPT/25/504

Responsible Officer: Simon Rule - Director Corporate Services

Responsible Division: Corporate Services

Reporting Officer: Simon Rule - Director Corporate Services

Objective: 4.0 Wentworth Shire is supported by strong and ethical civic leadership with all activities conducted in an open, transparent and inclusive manner

Strategy: 4.3 Provide a governance framework that is transparent and builds trust in local leadership

Summary

A meeting of the Audit, Risk and Improvement Committee was held on 15 August 2025 and the Minutes of the meeting are attached to this report for the information of Councillors.

The Committee considered the following items of business:

- Audit Office of NSW Update
- Internal Audit Extreme & High Risk Recommendations Update
- Internal Audit Quarterly Update
- Review of Internal Audit Charter
- Review of Committee Terms of Reference
- Annual Report
- Proposed 2025-2026 Work Plan
- Quarterly Operational Plan Progress Report
- Quarterly Budget Review – 4th Quarter 2024-2025
- Quarterly Risk Report
- Work Health & Safety Report
- Quarterly Fraud Report
- Child Safe Standards Implementation Update
- Quarterly report on Legislative Updates

Officer Recommendation

That Council receives and notes the draft minutes of the Audit, Risk and Improvement Committee Meeting held on 15 August 2025.

Additional Information

The purpose of this report is to provide Council with a summary of matters considered by the Audit, Risk and Improvement Committee (ARIC) at its meeting held on 15 August 2025, and to demonstrate how the Committee's work aligns with the requirements of the *Guidelines for Risk Management and Internal Audit for Local Government in NSW*.

Under section 428A of the *Local Government Act 1993* (NSW) and the associated Guidelines, the ARIC is required to oversee Council's governance, risk management, compliance, financial management, service reviews and internal audit functions. The Committee is also required to operate in accordance with an adopted Terms of Reference and to ensure that its activities support the General Manager's annual attestation of compliance.

At the meeting the Committee considered the following items:

- Audit Office of NSW Update
- Internal Audit Extreme & High Risk Recommendations Update
- Internal Audit Quarterly Update
- Review of Internal Audit Charter
- Review of Committee Terms of Reference
- Annual Report
- Proposed 2025-2026 Work Plan
- Quarterly Operational Plan Progress Report
- Quarterly Budget Review – 4th Quarter 2024-2025
- Quarterly Risk Report
- Work Health & Safety Report
- Quarterly Fraud Report
- Child Safe Standards Implementation Update
- Quarterly report on Legislative Updates

The table below sets out the relationship between the Committee's agenda items and the mandatory elements of the Guidelines

Agenda Item	Relevant Guideline Requirement	Comments
Audit Office of NSW Update	ARIC oversight of financial management, external accountability, compliance	Ensures Committee is informed on external audit activities and financial governance matters.
Internal Audit – Extreme & High Risk Recommendations Update	Internal audit follow-up; ARIC oversight of risk management	Focuses on management's implementation of audit recommendations addressing critical risks.

Agenda Item	Relevant Guideline Requirement	Comments
Internal Audit Quarterly Update	Internal audit reporting and work plan monitoring	Provides assurance that the internal audit program is being delivered effectively.
Review of Internal Audit Charter	Internal Audit Charter requirement	Ensures the Charter remains aligned with the OLG model and international standards.
Review of Committee Terms of Reference	ARIC Terms of Reference requirement	Ensures the ToR remains current and consistent with statutory obligations.
Annual Report	Annual attestation of ARIC operations	Supports transparency and Council's reporting obligations.
Proposed 2025–2026 Work Plan	ARIC work planning requirement	Ensures a forward program of work is in place, aligned with Council's risks and priorities.
Quarterly Operational Plan Progress Report	Oversight of strategic and operational delivery	Provides assurance on implementation of Council's strategic and delivery program objectives.
Quarterly Budget Review – Q4 2024–25	Oversight of financial management	Ensures financial performance and sustainability are appropriately monitored.
Quarterly Risk Report	Risk management framework oversight	Enables Committee to monitor the effectiveness of risk management arrangements.
Work Health & Safety Report	Governance, compliance and risk oversight	Assists ARIC in monitoring statutory WHS obligations and controls.
Quarterly Fraud Report	Fraud control arrangements oversight	Provides visibility of integrity risks and fraud control measures.
Child Safe Standards Implementation Update	Governance and compliance oversight	Ensures Council is progressing towards statutory child safety obligations.
Quarterly Report on Legislative Updates	Oversight of compliance	Keeps Committee informed of regulatory changes impacting Council.

To support Council's assurance framework, the following compliance matrix demonstrates how the ARIC meeting addressed the key requirements of the Guidelines.

Guideline Requirement	Met at this Meeting?	Relevant Agenda Item(s)
ARIC Terms of Reference reviewed	✓	Review of Committee Terms of Reference
Internal Audit Charter reviewed	✓	Review of Internal Audit Charter
Internal Audit work plan monitored	✓	Internal Audit Quarterly Update; Proposed 2025–2026 Work Plan
Audit recommendations followed up	✓	Internal Audit Extreme & High Risk Recommendations Update
Risk management framework	✓	Quarterly Risk Report; WHS Report; Fraud

Guideline Requirement	Met at this Meeting?	Relevant Agenda Item(s)
oversight		Report
Compliance oversight	✓	Legislative Update; Child Safe Standards Implementation
Fraud control oversight	✓	Quarterly Fraud Report
Financial management oversight	✓	Audit Office of NSW Update; Quarterly Budget Review
Governance and delivery program oversight	✓	Operational Plan Progress Report; Annual Report
Forward work planning undertaken	✓	Proposed 2025–2026 Work Plan
Support for GM attestation in Annual Report	✓	Annual Report; all items collectively contribute

The Audit, Risk and Improvement Committee continues to operate in accordance with the requirements of the *Guidelines for Risk Management and Internal Audit for Local Government in NSW*. The August meeting addressed all key areas of compliance, providing assurance to Council regarding its governance, risk, compliance, financial and audit functions.

Attachments

1. Minutes ARIC 15 August 2025 [↓](#)



**AUDIT, RISK AND IMPROVEMENT
COMMITTEE MEETING
MINUTES**

15 AUGUST 2025

AUDIT, RISK AND IMPROVEMENT COMMITTEE MEETING MINUTES 15 AUGUST 2025

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AUDIT, RISK AND IMPROVEMENT COMMITTEE MEETING MINUTES**15 AUGUST 2025**

1 OPENING OF MEETING

The Meeting opened at 10:06am

2 PRESENT**MEMBERS**

Rosanne Kava (Chair)
Diane Schmidt
Caroline Smith
Councillor Jody Starick (Non-Voting)

OBSERVERS

Brett Hanger (Audit Partner Nexia)
Manuel Moncada (Audit Office of New South Wales)
Kathie Teasdale (Senior Partner RST Audit)
Paul Harrison (Internal Audit Manager RSD Audit)

STAFF OBSERVERS

Ken Ross (General Manager)
Simon Rule (Director Finance and Policy) (Online)
Gayle Marsden (GMEA)
Ned Lamond (Financial Services Coordinator)

3 APOLOGIES

Nil

4 DECLARATIONS OF PECUNIARY INTEREST AND CONFLICTS OF INTEREST

Nil

5 CONFIRMATION OF MINUTES OF PREVIOUS MEETING**Recommendation**

That the Minutes of the Audit, Risk and Improvement Committee Meeting held 9 May 2025 be confirmed as circulated.

Committee Resolution

That the Minutes of the Audit, Risk and Improvement Committee Meeting held 9 May 2025 be confirmed as circulated.

Moved CS Smith, Seconded DS Schmidt

CONSENSUS

6 OUTSTANDING MATTERS FROM PREVIOUS MEETINGS

AUDIT, RISK AND IMPROVEMENT COMMITTEE MEETING MINUTES 15 AUGUST 2025

7 REPORTS

7.1 OUTSTANDING ACTIONS LIST

File Number: RPT/25/415

Responsible Officer: Simon Rule - Director Corporate Services

Responsible Division: Corporate Services

Report Author: Simon Rule - Director Corporate Services

Summary

The purpose of this report is to report on the status of Outstanding Actions from Previous Meetings.

Recommendation

That the Committee recommends that Council notes the Outstanding Actions List.

That the Committee recommends that Council notes the Outstanding Actions List.

CONSENSUS

AUDIT, RISK AND IMPROVEMENT COMMITTEE MEETING MINUTES 15 AUGUST 2025

7.2 INTERNAL AUDIT EXTREME & HIGH RISK RECOMMENDATIONS UPDATE

File Number: RPT/25/387

Responsible Officer: Simon Rule - Director Corporate Services
Responsible Division: Corporate Services
Report Author: Simon Rule - Director Corporate Services

Summary

The Committee has requested a quarterly update on the progress of implementing Extreme and High Risk recommendations from internal audit reports.

Recommendation

That the Committee receives and notes the report.

That the Committee receives and notes the Internal Audit Extreme & High Risk Recommendations Update report.

CONSENSUS

AUDIT, RISK AND IMPROVEMENT COMMITTEE MEETING MINUTES 15 AUGUST 2025

7.3 AUDIT OFFICE UPDATE

File Number: RPT/25/386

Responsible Officer: Simon Rule - Director Corporate Services

Responsible Division: Corporate Services

Report Author: Simon Rule - Director Corporate Services

Summary

This report is a place holder to allow Council's external auditor, the Audit Office of New South Wales to update the Committee on a quarterly basis on any matter of importance. Included for discussion this quarter is the:

- Update on the progress of the Interim Audit.

Recommendation

That the Committee receives and notes the report.

That the Committee receives and notes the Audit Office Update report.

CONSENSUS

AUDIT, RISK AND IMPROVEMENT COMMITTEE MEETING MINUTES 15 AUGUST 2025

7.4 INTERNAL AUDIT QUARTERLY UPDATE

File Number: RPT/25/388

Responsible Officer: Simon Rule – Director Corporate Services
 Responsible Division: Corporate Services
 Report Author: Simon Rule – Director Corporate Services

Summary

This report provides an overview of the activities undertaken by Council's Internal Audit function during the last quarter. The Internal Audit program continues to support Council's commitment to good governance, risk management and continuous improvement by providing independent and objective assurance over key operations and processes.

During this quarter, the Internal Auditors successfully completed the Asset Management Audit. The overall objective of the audit was to assess and evaluate the effectiveness and efficiency of internal controls embedded with Council's asset management processes. Effectively managing assets allows for evidence-based decision making on the future of Council operations and service delivery.

In addition, the auditors conducted a follow up WHA Audit, with a specific focus on Incident and Hazard Report. The overall objective was to assess and evaluate the effectiveness and efficiency of internal controls embedded with Council's WHS incident reporting processes.

Recommendation

The Committee notes the Internal Audit Quarterly report and endorses the Strategic Internal Audit Plan 2026-2028

The Committee notes the Internal Audit Quarterly report and endorses the Strategic Internal Audit Plan 2026-2028, and requests that Internal Auditor consider addition scope of works for the two audits proposed for 2025-2026.

CONSENSUS

The Committee requested that RSD Audit consider the following additions to the proposed scope of works for the audits proposed for 2025-2026 depended on pricing:

- Waste Management
 - Undertake a review of the Landfill Pricing
- Purchasing/Procurement
 - Conflicts of Interest (Auditors indicated that this is already included in the Scope of Works)
 - Credit Checks for Contractors
 - Use of Credit Cards – why do Council use them.
- The Committee also requested that the action plan to guide the finalisation and formal adoption of the Asset Management Plans be presented to the Committee.

AUDIT, RISK AND IMPROVEMENT COMMITTEE MEETING MINUTES 15 AUGUST 2025

7.5 REVIEW OF INTERNAL AUDIT CHARTER

File Number: RPT/25/396

Responsible Officer: Simon Rule - Director Corporate Services

Responsible Division: Corporate Services

Report Author: Simon Rule - Director Corporate Services

Summary

The Guidelines for Risk Management and Internal Audit for local government in NSW requires the Audit, Risk and Improvement Committee to review Council's Internal Audit Charter annually in consultation with the General Manager and the Internal Audit Coordinator.

At the last review in August 2024 the Committee endorsed the revised Charter that had been updated to reflect the change made to the Model Internal Audit Charter.

Recommendation

That the Committee endorse the Internal Audit Charter.

That the Committee endorse the Internal Audit Charter as presented.

CONSENSUS

The Committee requested that the Director Corporate Services confirm the independence of the Internal Audit Function as required by the Charter at the next meeting.

AUDIT, RISK AND IMPROVEMENT COMMITTEE MEETING MINUTES 15 AUGUST 2025

7.6 COMMITTEE TERMS OF REFERENCE REVIEW

File Number: RPT/25/393

Responsible Officer: Simon Rule - Director Corporate Services
Responsible Division: Corporate Services
Report Author: Simon Rule - Director Corporate Services

Summary

At its meeting held on 26 July 2022 the Committee endorsed the Terms of Reference which are based on the model template developed by the Office of Local Government and form part of the guidelines. The Terms of Reference were subsequently adopted by Council at its Ordinary Council Meeting in August 2022.

The guidelines require that the Committee should review the terms of reference annually to ensure that they are still relevant. The Terms of Reference were reviewed by the Committee as its August 2024 meeting.

Any changes to the terms of reference will need to be approved by Council.

Recommendation

That the Committee recommends that Council receives and notes that the Terms of Reference for the Audit, Risk and Improvement Committee remain unchanged.

That the Committee recommends that Council receives and notes that the Terms of Reference for the Audit, Risk and Improvement Committee have been reviewed, with the following changes:

- a) Councillor Representative's name to be updated;
- b) The committee members receive the minutes within 3 weeks of the meeting.

CONSENSUS

AUDIT, RISK AND IMPROVEMENT COMMITTEE MEETING MINUTES 15 AUGUST 2025

7.7 ANNUAL REPORT

File Number: RPT/25/394

Responsible Officer: Simon Rule - Director Corporate Services
 Responsible Division: Corporate Services
 Report Author: Simon Rule - Director Corporate Services

Summary

The Committee's Terms of Reference state that the Committee will provide assessment to the governing body each year on the Committee's work and its opinion on how Council is performing. This will ensure that Council is fully informed of the Committee's work over the last 12 months.

It is important that the work of the Committee is regularly assessed, and that the Committee is accountable for its performance. This ensures that the Committee is making a valuable contribution to the Council and allows the Council to determine whether any changes to the Committee terms of reference or membership are required.

The Audit, Risk & Improvement Committee for Wentworth Shire Council presents its annual report to Council for 2024-2025. This report consolidates the work of internal audit and risk over the past 12 months and includes key areas over which the Committee has oversight.

The Committee is committed to supporting an internal audit function that operates as an independent, objective assurance and consulting activity designed to add value and improve Council's operations.

A summary of the Committee's work and key areas of oversight from throughout the year are presented in this report.

This report covers the activities of the Committee for year ended 30 June 2025. During this period the Committee met on five occasions:

- 11 August 2024
- 4 October 2024 (standalone meeting to review the Annual Financial Statements)
- 7 November 2024
- 14 February 2025
- 9 May 2025

Recommendation

That the Committee recommends that Council receives and notes the Annual report.

That the Committee recommends that Council receives and notes the Annual Report on activities 24/25 and notes that a service review of asset management has not been completed...

CONSENSUS

The Committee requested that it be noted that Cr Beaumont was the Councillor representative at the start of the year.

The Committee requested that Council consider a different format for future years.

AUDIT, RISK AND IMPROVEMENT COMMITTEE MEETING MINUTES 15 AUGUST 2025

7.8 PROPOSED 2025-2026 WORK PLAN

File Number: RPT/25/395

Responsible Officer: Simon Rule - Director Corporate Services
Responsible Division: Corporate Services
Report Author: Simon Rule - Director Corporate Services

Summary

The Committee must develop an annual work plan to guide its work over the next year. The Plan must be flexible enough to allow it to be reviewed and adjusted as necessary throughout the year in response to any changes to Councils risk or operations.

Consideration needs to be given to appropriate key performance indicators that can be used to measure the performance of the Committee and the value it is providing to Council.

Based on the discussion that takes place the Director Finance and Policy will develop a work plan for endorsement at the next meeting.

Recommendation

That the Committee recommends that Council endorses the Committee Work Plan for 2025-2026.

That the Committee has reviewed the 2025-2026 Work Plan and recommends that Council endorses the Committee Work Plan for 2025-2026 as amended.

CONSENSUS

The Committee requested that Council consider a different format for future years.

The Committee asked about Policy reviews, when are they happening and what is the role of the Committee in this process.

AUDIT, RISK AND IMPROVEMENT COMMITTEE MEETING MINUTES 15 AUGUST 2025

7.9 QUARTERLY OPERATIONAL PLAN PROGRESS REPORT

File Number: RPT/25/389

Responsible Officer: Simon Rule - Director Corporate Services
 Responsible Division: Corporate Services
 Report Author: Simon Rule - Director Corporate Services

Summary

In accordance with the Local Government Integrated Planning and Reporting Framework, Council develops a Four Year Delivery Program and a One Year Operational Plan which details the actions to be undertaken by Council to implement the strategies established in the Community Strategic Plan.

The *Local Government Act 1993* requires that progress is reported to Council with respect to the principal actions detailed in its Operational Plan at least every six months. To better align with the Quarterly Budget Review Process, the Operational Plan progress report is also compiled on a quarterly basis.

During the 4th Quarter the following occurred:

- The following actions have been completed
 - All annual actions
 - 2.3.8-Implementation of the Child Safe Standards
 - 3.2.7-Arumpo Road Upgrade
 - 3.2.8-Regional Emergency Road Repair Program.
 - 3.2.11-Loop Road
 - 3.2.12-Wamberra Road
 - 3.2.13-Alcheringa Drive
 - 3.5.7-Burong/Gol Gol Sporting Masterplan
 - 4.3.4-Monitor Compliance with NSW Modern Slavery obligations
- 23 specific actions remain outstanding and will be carried over into the new financial year for completion.

Recommendation

That the Committee receives and notes the report.

That the Committee receives and notes the Quarterly Operational Plan Progress report.

CONSENSUS

The Committee requested an update on proposed Service Reviews be presented to the next meeting.

AUDIT, RISK AND IMPROVEMENT COMMITTEE MEETING MINUTES 15 AUGUST 2025

7.10 JUNE QUARTERLY BUDGET REVIEW - FOURTH QUARTER 2024 - 2025

File Number: RPT/25/390

Responsible Officer: Simon Rule - Director Corporate Services

Responsible Division: Corporate Services

Report Author: Ned Lamond - Financial Services Coordinator

Summary

A full analysis of Council's Income, Operating Expenditure and Capital Expenditure has been undertaken. Several variations have been identified against the original budget as outlined in this report. Council's revenue and expenditure is reviewed on a quarterly basis to identify any potential areas requiring a variation.

Recommendation

That the Committee:

- a) Note the 2024/2025 Fourth Quarter Budget Review
- b) Note the proposed revised 2024/2025 changes to operational & capital budgets.

That the Committee:

- a) Note the 2024/2025 Fourth Quarter Budget Review
- b) Note the proposed revised 2024/2025 changes to operational & capital budgets.

CONSENSUS

AUDIT, RISK AND IMPROVEMENT COMMITTEE MEETING MINUTES 15 AUGUST 2025

7.11 QUARTERLY RISK REPORT

File Number: RPT/25/391

Responsible Officer: Simon Rule - Director Corporate Services
 Responsible Division: Corporate Services
 Report Author: Simon Rule - Director Corporate Services

Summary

This report provides an overview of the key extreme and high risks faced by Council and the steps being taken to mitigate them. The aim is to provide a comprehensive view of the risk landscape, covering all departments and functions.

This report is being presented to the Committee to discharge the following responsibilities:

- Support the Governing Body and the General Manager and to ensure that Council's risk management framework is appropriate and operationally effective. this can include:
 - Assessing whether risks at all levels are identified, assessed and regularly reviewed by Council
 - Advising the Governing Body and the General Manager on the adequacy of risk reports and documentation.
- Help to build risk management culture within Council, including facilitating and driving risk management at the strategic and operational level.

The focus in recent months has been on consolidating existing structures and progressively improving Council's capacity to manage risk effectively. The aim is to embed the current risk management framework, address gaps in risk management and develop a more robust and proactive risk culture.

Recommendation

That the Committee receives and notes the Quarterly Risk report.

That the Committee receives and notes the Quarterly Risk report.

CONSENSUS

The Committee requested that the report author add expected completion dates for risks identified in the report.

AUDIT, RISK AND IMPROVEMENT COMMITTEE MEETING MINUTES 15 AUGUST 2025

7.12 WORK HEALTH SAFETY REPORTING

File Number: RPT/25/365

Responsible Officer: Simon Rule - Director Corporate Services
Responsible Division: Corporate Services
Report Author: Deborah Zorzi - Governance Officer

Summary

Council has for two previous quarters provided reports to ARIC including presentation of some data to allow the Committee to review and note how Council has been addressing / reporting on its WHS risk.

Council's previous reporting and of trends in particular was somewhat constrained by the limitations of the then Work Health Safety Management System in place.

Implementation of a new WHS software system and the benefit of RSD Internal Audit findings on our WHS processes has provided an opportunity to develop an approach that allows for evaluation of WHS systems as a whole.

A template has been developed in an endeavour to achieve this objective.

Recommendation

That the Committee receives and notes the report and notes the template report format.

That the Committee receives and notes the report and notes the template report format.

CONSENSUS

AUDIT, RISK AND IMPROVEMENT COMMITTEE MEETING MINUTES 15 AUGUST 2025

7.13 QUARTERLY FRAUD REPORT

File Number: RPT/25/392

Responsible Officer: Simon Rule - Director Corporate Services

Responsible Division: Corporate Services

Report Author: Simon Rule - Director Corporate Services

Summary

Having made the appropriate inquiries the General Manager can report that no instances of Fraudulent activity or behaviour have been identified for the period 1 April 2025 to 30 June 2025.

Recommendation

That the Committee receives and notes the report.

That the Committee receives and notes the report and that no fraudulent activity or behaviour has been identified for the period 1 April 2025 to 30 June 2025.

CONSENSUS

AUDIT, RISK AND IMPROVEMENT COMMITTEE MEETING MINUTES 15 AUGUST 2025

7.14 CHILD SAFE STANDARDS IMPLEMENTATION UPDATE

File Number: RPT/25/367

Responsible Officer: Simon Rule - Director Corporate Services
Responsible Division: Corporate Services
Report Author: Deborah Zorzi - Governance Officer

Summary

Council has previously reported quarterly to ARIC on the strategies and processes Council has implemented as we build capability and embed the 10 Child Safe Standards into our practices.

Council's obligations as a 'child safe organisation' are set out under the *Children's Guardian Act 2019* NSW. Under Section 8D the General Manager, as head of our child safe organisation, must ensure Council implements the Child Safe Standards through systems, policies and processes and must ensure these are continuously reviewed and updated, in addition to ensuring the organisation implements a reportable conduct policy.

There is no specific period of time within which implementation must occur. The Children's Guardian has obligations under the legislation to support child safe organisations in capability building and is enabled by the legislation to monitor the operation of a child-safe organisation to ensure they are implementing the Child Safe Standards.

Council continues to review and update its systems, policies and processes and report to ARIC accordingly.

Recommendation

The Committee notes the report and Council's ongoing actions in implementing the 10 Child Safe Standards.

The Committee notes the report and Council's ongoing actions in implementing the 10 Child Safe Standards and that the next report should include a Self-Assessment and actions to date against the 10 Standards.

CONSENSUS

AUDIT, RISK AND IMPROVEMENT COMMITTEE MEETING MINUTES 15 AUGUST 2025

7.15 QUARTERLY LEGISLATIVE UPDATE

File Number: RPT/25/401

Responsible Officer: Simon Rule - Director Corporate Services
Responsible Division: Corporate Services
Report Author: Mardi Cleggett - Governance Officer

Summary

The Committee has requested a quarterly report on new NSW legislation, or substantial changes to existing legislation to help inform their deliberations.

This report provides details on statutory instruments during the period April to June 2025, either new, substantial and upcoming changes to relevant legislation that impact Council's legislative operating environment. There was one amendment that affected Council across the quarter.

There were no parliament sitting days in April, and minimal sitting days across May and June.

Recommendation

That the Committee receives and notes the report.

That the Committee receives and notes the Quarterly Legislative Update report.

CONSENSUS

AUDIT, RISK AND IMPROVEMENT COMMITTEE MEETING MINUTES**15 AUGUST 2025**

8 ACTIONS

Actions from this meeting are:

The Committee requested presentations/updates on the following topic during the course of the next 12 months:

- Cyber Security (In conjunction with the completed self assessments against the NSW Local Government Cyber Security Guidelines & the Essential Eight)
- Waste Management/Buronga Landfill Financial Whole of Life Modelling
- Water & Sewer
- PS Ruby
- FOSO (project update following presentation received at the Feb 2025 meeting)

Action Plan for implementation and approval of Asset Management Plan

The Committee requested that starting next meeting they would like to set aside 15 minutes prior to the commencement of the meeting for an in camera session with the Internal & External Auditors.

9 NEXT MEETING

26 September 2025 at 10am

14 November 2025 at 10am

6 February 2025 at 10am

8 May 2025 at 10am

10 CLOSURE

The meeting was declared closed at 12:45 pm.

9 REPORTS TO COUNCIL

9.1 GENERAL MANAGERS REPORT SEPTEMBER 2025

File Number: RPT/25/493

Responsible Officer: Ken Ross - General Manager
 Responsible Division: Office of the General Manager
 Reporting Officer: Ebony Carter - Business Support Officer

Objective: 4.0 Wentworth Shire is supported by strong and ethical civic leadership with all activities conducted in an open, transparent and inclusive manner

Strategy: 4.2 We value our civic leadership whose stewardship and decision making benefits present and future generations

Summary

The General Manager's report details information pertaining to meetings attended and general information which are of public interest, and which have not been reported elsewhere in this agenda. Items of note in this report are:

1. OLG Circulars

Circulars 25-18 to 25-21

2. Meetings

As listed.

3. Upcoming meetings or events

As listed.

4. Other items of note

- The General Manager is taking leave from 27 October 2025 to 24 November 2025. Under Council's Delegations Policy an Acting General Manager receives the General Managers Delegation by resolution of Council. As such the General Manager recommends to Council that Director Geoff Gunn be the Acting General Manager in his absence.
- Wentworth Shire Council has won the Statewide Mutual Award – 2025 Risk Management Excellence Awards – Regional, Rural & County Council for Technological Innovation for the Wentworth Visitor Centre

Recommendation

That Council:

- a) Receive and note the information contained within the September 2025 report from the General Manager
- b) Appoint Director Geoff Gunn as Acting General Manager from 27 October 2025 to 23 November 2025

Detailed Report

1. Circulars

Council Circular 25-18 Updated Ministerial Guidelines on Alcohol Free Zones

What's new or changing?

- The Ministerial Guidelines on Alcohol-Free Zones (the Guidelines) have been updated following an administrative review.
- The revised Guidelines incorporate updates to agency names, agency contact details and International Organization for Standardization references.
- The list of councils required to consult with the NSW Anti-Discrimination Board (the Board) on alcohol-free zone (AFZ) proposals has been removed from the Guidelines on advice from the Board.
- Guidelines headings and public notification requirements have been updated to align with the Local Government Act 1993 (LG Act) and contemporary publication practices.
- The Alcohol-Free Zones and Alcohol Prohibited Areas in NSW Fact Sheet (Fact Sheet) has also been updated to reflect the minor changes to the Guidelines.

Council Circular 25-19 Procurement Guidelines for NSW Local Government

What's new or changing?

- The Office of Local Government (OLG) is seeking feedback on draft Procurement Guidelines for NSW Local Government (Guidelines) to replace the outdated Tendering Guidelines 2009.
- The draft Guidelines outline best practice procurement principles and processes to enable delivery of quality outcomes that provide value for money while effectively managing risks.
- The Guidelines provide clarification on the interpretation and application of the Local Government Act 1993 (Act) and the Local Government (General) Regulation 2021 (Regulation) as they apply to procurement activities.
- The Guidelines will also give effect to recommendations made by the NSW Auditor General, address identified procurement risks, and address corruption risks identified in recent NSW Independent Commission Against Corruption investigations
- OLG is also inviting expressions of interest from procurement professionals to join a Procurement Working Group (Working Group).
- This group will provide input into the Guidelines and assist with the development of a range of comprehensive supplementary guidance materials and other procurement resources for councils. Information about the expression of interest process is provided in the attachment to this circular.

Council Circular 25-20 2025 Model Meeting Code

What's new or changing?

- Following extensive consultation, the new 2025 Model Code of Meeting Practice for Local Councils in NSW (2025 Model Meeting Code) has been finalised.
- The new 2025 Model Meeting Code has been published in the Government Gazette and is expected to be prescribed under the Local Government (General) Regulation 2021 (the Regulation) shortly.
- The new 2025 Model Meeting Code is available on the Model Code of Meeting Practice for Local Councils in NSW webpage on the Office of Local Government's (OLG) website at www.olg.nsw.gov.au.
- Among other changes, the mandatory provisions of the 2025 Model Meeting Code will prohibit pre-meeting briefings.
- Councils must also livestream meetings of the council and committees comprising wholly of councillors from 1 January 2026 using an audio-visual recording. Recordings of meetings must be published on the council's website for the balance of the council term or for 12 months, whichever is the later date.

- More detailed information about the changes to council meeting practices made by the 2025 Model Meeting Code is provided in the FAQ attached to this circular and available on the Model Code of Meeting Practice for Local Councils in NSW webpage on OLG's website.
- Council must adopt the new code before 1 January 2026. It is intended that the draft code will be presented to the October meeting of Council at which time it will be endorsed to enable community consultation for 28 days and then formally adopted at the December meeting of Council.

Council Circular 25-21 Commencement of Mutual Recognition Scheme

What's new or changing?

- As part of the NSW Vibrancy Reforms, the Office of Local Government (OLG) is developing a mutual recognition framework.
- This will allow an approval granted to a business under Section 68 of the Local Government Act 1993 by one council to be recognised across multiple local government areas.
- This will initially apply to approvals granted for the following mobile businesses:
 - food trucks
 - market stall holders
 - buskers
 - outdoor fitness trainers
- Councils are invited to provide input into the development of the mutual recognition framework by completing an online survey

2. Meetings

Following is a list of meetings or events attended by the General Manager for the period of 21 August 2025 – 17 September 2025

Date	Meeting	Location
21 Aug 2025	Far West Strategic Regional Integrated Transport Plan – Transport NSW	Wentworth
25 Aug 2025	Mayoral Meeting	Wentworth
25 Aug 2025	PSG Lightstate FOSO	Mildura
26 Aug 2025	FWREMC Meeting	Online
29 Aug 2025	Wentworth Hospital Redevelopment Tour	Wentworth
01 Sept 2025	Mayoral Meeting	Wentworth
03 Sept 2025	SW REZ Regional Coordination Forum	Online
05 Sept 2025	PCG Lightstate FOSO	Mildura
08 Sept 2025	Menindee Fish Passage Technical Advisory Group Meeting	Online
15 Sept 2025	Buronga Landfill Site Tour	Buronga
15 Sept 2025	Mayoral Meeting	Wentworth
16 Sept 2025	TOL + FOSO Briefing	Mildura
16 Sept 2025	NSW ICAC Workshop – Building a culture of integrity	Wentworth
17 Sept 2025	Citizenship Ceremony	Wentworth

17 Sept 2025	Premeeting Briefing	Wentworth
17 Sept 2025	Ordinary Council meeting	Wentworth

3. Events

Following is a list of events, conferences, or committee meetings, including out of region meetings where the Shire has been requested to attend in an official capacity from 16 October 2025 – 19 November 2025.

Date	Meeting	Proposed Attendees	Location
16 Oct 2025	Wentworth Shire Interagency Group	Cr Rodda	Buronga
29 Oct 2025	MRCC and Agricultural Industries Representatives Working Group	Mayor Linklater	Mildura
03 Nov 2025	Wentworth Regional Tourism INC	Cr Rodda	Coomealla
11 Nov 2025	Australian Inland Botanical Gardens Meeting	Crs Rodda & Starick	Mildura
12 Nov 2025	Flood Risk Committee Meeting	Crs Nichols, Evans, Linklater and Acting General Manager	Wentworth
12 Nov 2025	LRC and LEMC Meeting	Acting General Manager	Wentworth
13 Nov 2025	Staff Consultative/WHS Committee Meeting	Acting General Manager	Wentworth

4. Other Items of Note

Attachments

1. Council Circular 25-18 - Updated Ministerial Guidelines on Alcohol Free Zones[↓](#)
2. Council Circular 25-19 - Procurement Guidelines for NSW Local Government[↓](#)
3. Council Circular 25-20 - Model Meeting Code[↓](#)
4. Council Circular 25-21 - Commencement of Mutual Recognition Scheme[↓](#)

Department of Planning, Housing and Infrastructure
Office of Local Government



Circular to Councils

Subject	Updated Ministerial Guidelines on Alcohol Free Zones
Circular Details	Circular 25-18 / 14 August 2025 / A958894
Previous Circular	N/A
Who should read this	Councillors / General Managers / All council staff
Contact	Sector Policy and Frameworks / (02) 4428 4100 / olg@olg.nsw.gov.au
Action required	Information / Council to Implement

What's new or changing?

- The Ministerial Guidelines on Alcohol-Free Zones (the Guidelines) have been updated following an administrative review.
- The revised Guidelines incorporate updates to agency names, agency contact details and International Organization for Standardization references.
- The list of councils required to consult with the NSW Anti-Discrimination Board (the Board) on alcohol-free zone (AFZ) proposals has been removed from the Guidelines on advice from the Board.
- Guidelines headings and public notification requirements have been updated to align with the *Local Government Act 1993* (LG Act) and contemporary publication practices.
- The Alcohol-Free Zones and Alcohol Prohibited Areas in NSW Fact Sheet (Fact Sheet) has also been updated to reflect the minor changes to the Guidelines.

What will this mean for council?

- The Guidelines have been prepared under section 646(1) of the LG Act and outline councils' obligations associated with establishment, operation and suspension of alcohol-free zones (AFZs).



- The Fact Sheet provides additional guidance to councils on both AFZs and Alcohol Prohibited Areas (APAs), including key differences and council best practice.
- The revised Guidelines do not list any councils that **must** consult the Board regarding AFZ/APA proposals under Section 644A(3) and 646(3) of the Act.
- The revised Guidelines provide guidance on public notification in line with contemporary publication practices.
- All councils may still consult with the Board regarding AFZ/APA proposals and continue to ensure that their actions, including in the management of AFZ/APAs, do not discriminate against individuals or groups, and should continue to consult with interested parties.

Key points

- The Guidelines have undergone an administrative update and replace the February 2009 Guidelines.
- The Guidelines outline councils' obligations associated with establishment, operation and suspension of AFZs.
- The Fact Sheet has also been updated, providing councils with additional guidance on both AFZs and APAs.

Where to go for further information

A copy of the updated Guidelines is available on the Office of Local Government (OLG) website at <https://www.olg.nsw.gov.au/councils/policy-and-legislation/guidelines-and-policy-information-resources-for-councils/guidelines-codes-and-practice-notes/>.

A copy of the updated Fact Sheet is available on the OLG website at <https://www.olg.nsw.gov.au/councils/council-infrastructure/services-to-communities/alcohol-free-zones-alcohol-prohibited-areas/>.

NSW Office of Local Government

For further information on the Guidelines or Fact Sheet, contact OLG's Sector Policy and Frameworks Team on (02) 4428 4100 or by emailing olg@olg.nsw.gov.au.

Anti-Discrimination NSW

Anti-Discrimination NSW (ADNSW) is the NSW Government body that administers *the Anti-Discrimination Act 1977*. ADNSW provides free, confidential enquiries service is available for individuals and organisations seeking information about their rights and responsibilities.



For further information on ADNSW, contact the Enquiries and Complaints team on (02) 9268 5544 or 1800 670 812. ADNSW can also be contacted by emailing complaintsadb@justice.nsw.gov.au.

A blue ink signature of Brett Whitworth.

Brett Whitworth
Deputy Secretary
Office of Local Government



Department of Planning, Housing and Infrastructure
Office of Local Government

Procurement Guidelines for NSW Local Government

Subject/title	Procurement Guidelines for NSW Local Government and Procurement Working Group
Circular Details	Circular No 25-19 / 27 August 2025 / A896222
Previous Circular	<u><i>Circular 22-40 Amendments to the tendering provisions of the Local Government (General) Regulation 2021 and consultation of the development of new procurement guidelines for councils</i></u>
Who should read this	Councillors / General Managers / Council procurement staff
Contact	Council Governance / (02) 4428 4100 / olg@olg.nsw.gov.au
Action required	Response to OLG



What's new or changing?

- The Office of Local Government (OLG) is seeking feedback on draft Procurement Guidelines for NSW Local Government (Guidelines) to replace the outdated Tendering Guidelines 2009.
- The draft Guidelines outline best practice procurement principles and processes to enable delivery of quality outcomes that provide value for money while effectively managing risks.
- The Guidelines provide clarification on the interpretation and application of the *Local Government Act 1993* (Act) and the *Local Government (General) Regulation 2021* (Regulation) as they apply to procurement activities.
- The Guidelines will also give effect to recommendations made by the NSW Auditor General, address identified procurement risks, and address corruption risks identified in recent NSW Independent Commission Against Corruption investigations.
- OLG is also inviting expressions of interest from procurement professionals to join a Procurement Working Group (Working Group).

T 02 4428 4100 TTY 02 4428 4209, E olg@olg.nsw.gov.au
Locked Bag 3015 NOWRA NSW 2541
www.olg.nsw.gov.au



- This group will provide input into the Guidelines and assist with the development of a range of comprehensive supplementary guidance materials and other procurement resources for councils. Information about the expression of interest process is provided in the attachment to this circular.

What will this mean for council?

- Councils are requested to provide feedback on the Guidelines which cover the legislative framework, overarching best-practice principles of procurement and includes links to current available resources
- Participation in the Working Group is an opportunity to directly contribute to the development of the Guidelines and development of supplementary guidance materials and other resources that will benefit all councils.
- When finalised, the Guidelines and supplementary guidance materials will be issued under section 23A of the Act, meaning that councils will be required to consider them when exercising their functions in relation to procurement.

Key points

- A consultation draft of the Guidelines is available on the Office of Local Government (OLG) website at: www.olg.nsw.gov.au/councils/council-finance/consultation-on-new-procurement-guidelines-for-nsw-local-government/
- Feedback can be emailed to olg@olg.nsw.gov.au and should be labelled 'Procurement Guidelines Feedback' and marked to the attention of OLG's Council Governance Team.
- Submissions on the draft Guidelines will be accepted until **COB 10 October 2025**.
- Expressions of interest to join the Working Group can be emailed to olg@olg.nsw.gov.au and should be labelled 'Procurement Working Group Expression of Interest' and marked to the attention of OLG's Council Governance Team.
- Expressions of interest to join the Working Group will be accepted until **COB 10 October 2025**.
- OLG will be consulting further with councils on the content of each of the supplementary guidance materials as and when they are developed.

Where to go for further information

- A consultation draft of the Guidelines is available on the [OLG website](#).
- Information about the expression of interest process for membership of the Working Group is provided in the attachment to this circular.



- For further information, please contact OLG's Council Governance Team by telephone on 02 4428 4100 or by email at olg@olg.nsw.gov.au.

A handwritten signature in blue ink, appearing to read "Brett Whitworth".

Brett Whitworth
Deputy Secretary, Office of Local Government



Department of Planning, Housing and Infrastructure

Office of Local Government

Attachment

Expressions of interest for membership of procurement working group

- Expressions of Interest are sought from council procurement professionals to join a procurement working group (the Working Group).
- OLG is also seeking EOI's from key stakeholders.
- The Working Group will provide technical input into the Procurement Guidelines for NSW Local Government (Guidelines) and the development of supplementary guidance materials.
- OLG will be seeking the advice of the Working Group on the topics to be addressed in the supplementary guidance materials. Possible topics include the following:
 - Plain English guide to tendering requirements under the Regulation
 - Using procurement to deliver Community Strategic Plan outcomes (e.g. by supporting indigenous businesses, local businesses and disability enterprises)
 - Tendering for domestic waste management services
 - Tendering for labour hire and consultancy services
 - Joint procurement
 - Establishment and use of supplier lists
 - Utilisation of State Government pre-qualification schemes and standing offers/panel contracts established by prescribed entities (i.e. Local Government Procurement/Procurement Australia)
 - Asset disposal
 - Managing cyber security risks in procurement
 - Managing corruption risks in procurement.
- The expected commitment schedule is:
 - an initial discussion session to consider the proposed structure and to identify topics to be covered in the supplementary guidance materials, and
 - an additional 5 meetings to discuss content of the supplementary guidance materials, review feedback on them and proposed refinements.



T 02 4428 4100 TTY 02 4428 4209, E olg@olg.nsw.gov.au

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www.olg.nsw.gov.au

Please note: this schedule is provisional and subject to confirmation. There may also be a requirement for some actions to be undertaken outside of Working Group meetings.

Procurement professionals interested in joining the Working Group and who have the capacity and technical expertise to participate are encouraged to email a brief description of their procurement experience, knowledge and skills, and any specific

- area of interest to OLG's Council Governance Team at olg@olg.nsw.gov.au by **COB 10 October 2025**.

Expressions of interest should be labelled 'Procurement Working Group EOI' and marked to the attention of OLG's Council Governance Team.

Final membership of the Working Group will be determined by OLG. Both successful and unsuccessful applicants will be advised of the outcome.

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Department of Planning, Housing and Infrastructure
Office of Local Government



Circular to Councils

Subject/title	2025 Model Meeting Code
Circular Details	Circular No 25-20 / 29 August 2025 / A975455
Previous Circular	<u>Council Circular 24-23 Consultation on reforms to council meeting practices</u>
Who should read this	Mayors / Councillors / General Managers / Joint Organisation Executive Officers / Council governance staff
Contact	Council Governance Team / 02 4428 4100 / olg@olg.nsw.gov.au
Action required	Council to Implement

What's new or changing?

- Following extensive consultation, the new 2025 Model Code of Meeting Practice for Local Councils in NSW (2025 Model Meeting Code) has been finalised.
- The new 2025 Model Meeting Code has been published in the Government Gazette and is expected to be prescribed under the Local Government (General) Regulation 2021 (the Regulation) shortly.
- The new 2025 Model Meeting Code is available on the [Model Code of Meeting Practice for Local Councils in NSW](#) webpage on the Office of Local Government's (OLG) website at www.olg.nsw.gov.au.
- Among other changes, the mandatory provisions of the 2025 Model Meeting Code will prohibit pre-meeting briefings.
- Councils must also livestream meetings of the council and committees comprising wholly of councillors from 1 January 2026 using an audio-visual recording. Recordings of meetings must be published on the council's website for the balance of the council term or for 12 months, whichever is the later date.
- More detailed information about the changes to council meeting practices made by the 2025 Model Meeting Code is provided in the FAQ attached to this circular and available



on the [Model Code of Meeting Practice for Local Councils in NSW](#) webpage on OLG's website.

What will this mean for council?

- Councils must adopt a code of meeting practice that incorporates the mandatory provisions of the 2025 Model Meeting Code no later than 31 December 2025.
- Transitional provisions in the Regulation will provide that if a council does not adopt a code of meeting practice that incorporates the mandatory provisions of the 2025 Model Meeting Code by 31 December 2025, from 1 January 2026, any provision of the council's code of meeting practice that is inconsistent with a mandatory provision of the 2025 Model Meeting Code will be automatically overridden by the relevant mandatory provision of the 2025 Model Meeting Code.
- Under section 361 of the *Local Government Act 1993* (the Act), before adopting a new code of meeting practice, councils must first exhibit a draft of the code of meeting practice for at least 28 days and provide members of the community at least 42 days in which to comment on the draft code.

Key points

- The 2025 Model Meeting Code has two elements:
 - mandatory provisions (indicated in black font), and
 - non-mandatory provisions (indicated in red font) covering areas of meeting practice that are common to most councils but where there may be a need for some variation in practice between councils based on local circumstances. The non-mandatory provisions also operate to set a benchmark based on what OLG sees as best practice for the relevant area of practice.
- The 2025 Model Meeting Code also applies to meetings of the boards of joint organisations and county councils. The provisions that are specific to meetings of boards of joint organisations are indicated in blue font.
- In adopting the 2025 Model Meeting Code, joint organisations should adapt it to substitute the terms “board” for “council”, “chairperson” for “mayor”, “voting representative” for “councillor” and “executive officer” for “general manager”.
- In adopting the 2025 Model Meeting Code, county councils should adapt it to substitute the term “chairperson” for “mayor” and “member” for “councillor”.



Where to go for further information

- The 2025 Model Meeting Code is available on the Model Code of Meeting Practice for Local Councils in NSW webpage of OLG's website at www.olg.nsw.gov.au.
- More information about the 2025 Model Meeting Code and guidance on its adoption is provided in the FAQ attached to this circular and available on the Model Code of Meeting Practice for Local Councils in NSW webpage of OLG's website.
- A webinar will be held in October to support councils in adopting the new Model Code of Meeting Practice. Notice will be provided to enable councils to register.
- For more information, contact the Council Governance Team by telephone on 02 4428 4100 or by email at olg@olg.nsw.gov.au.

A blue ink signature of Brett Whitworth.

Brett Whitworth
Deputy Secretary
Office of Local Government

2025 Model Meeting Code - FAQ

Implementation of the 2025 Model Meeting Code

When must the 2025 Model Meeting Code be adopted?

- Councils must adopt a code of meeting practice that incorporates the mandatory provisions of the 2025 Model Meeting Code no later than 31 December 2025.

What happens if the 2025 Model Meeting Code is not adopted by 31 December 2025?

- Transitional provisions in the Local Government (General) Regulation 2021 (the Regulation) provide that if a council does not adopt a code of meeting practice that incorporates the mandatory provisions of the 2025 Model Meeting Code by 31 December 2025, then from 1 January 2026, any provision of the council's code of meeting practice that is inconsistent with a mandatory provision of the 2025 Model Meeting Code will be automatically overridden by the relevant mandatory provision of the 2025 Model Meeting Code.

Are councils required to adopt the non-mandatory provisions of the 2025 Model Meeting Code?

- No. The non-mandatory provisions of the 2025 Model Meeting Code cover areas of meeting practice that are common to most councils but where there may be a need for some variation in practice between councils based on local circumstances. The non-mandatory provisions also operate to set a benchmark based on what OLG sees as best practice for the relevant area of practice.
- Councils are free to omit the non-mandatory provisions or to adapt them to meet their needs.

Can councils include supplementary provisions in their adopted code of meeting practice?

- Yes. There is nothing to prevent councils from including supplementary provisions in their adopted code of meeting practice to meet their needs, provided the supplementary provisions are not inconsistent with the mandatory provisions of the 2025 Model Meeting Code.

2025 Model Meeting Code - FAQ

**Are joint organisations and county councils required to adopt the 2025 Model Meeting Code?**

- Yes. The 2025 Model Meeting Code also applies to meetings of the boards of joint organisations and county councils.
- The provisions of the 2025 Model Meeting Code that are specific to meetings of boards of joint organisations are indicated in blue font.
- In adopting the 2025 Model Meeting Code, joint organisations should adapt it to substitute the terms “board” for “council”, “chairperson” for “mayor”, “voting representative” for “councillor” and “executive officer” for “general manager”.
- In adopting the 2025 Model Meeting Code, county councils should adapt it to substitute the term “chairperson” for “mayor” and “member” for “councillor”.

What consultation must councils do before adopting a code of meeting practice?

- Under section 361 of the *Local Government Act 1993* (the Act), before adopting a new code of meeting practice, councils must first exhibit a draft of the code of meeting practice for at least 28 days and provide members of the community at least 42 days in which to comment on the draft code.
- This requirement does not apply to joint organisations.

What are the key changes?

A key focus of the changes made to the 2025 Model Meeting Code is to ensure meetings are conducted in a dignified and orderly way befitting to a chamber of democracy and to promote community confidence in councils and their decisions.

The following is a summary of the key changes. It is not an exhaustive list of all the changes that have been made.

Extraordinary meetings

- The mayor may now call an extraordinary meeting without the need to obtain the signature of two councillors.

Dealing with urgent business at meetings

- The process for dealing with urgent business at both ordinary and extraordinary meetings has been simplified.
- Business may be considered at a meeting at which all councillors are present, even though due notice has not been given of the business, if the council resolves

2025 Model Meeting Code - FAQ



to deal with the business on the grounds that it is urgent and requires a decision by the council before the next scheduled ordinary meeting of the council. The resolution must state the reasons for the urgency.

- If all councillors are not present at the meeting, the chairperson must also rule that the business is urgent and requires a decision by the council before the next scheduled ordinary meeting.

Prohibition on pre-meeting briefing sessions

- The 2025 Model Meeting Code prohibits briefing sessions being held to brief councillors on business listed on the agenda for meetings of the council or committees of the council.
- The prohibition on briefing sessions does not prevent a councillor from requesting information from the general manager about a matter to be considered at a meeting, provided the information is also available to the public. The information must be provided in a way that does not involve any discussion of the information.

Public forums

- The public forum provisions are now mandatory but leave it to councils to determine whether to hold public forums before council and committee meetings.
- Councils are also free to determine the rules under which public forums are to be conducted and when they are to be held. OLG will be issuing model best practice public forum rules that councils can use if they choose to.
- Public forums must be livestreamed.

Councillors' attendance at meetings by audio-visual link

- The provisions governing attendance by councillors at meetings by audio-visual link have been made mandatory and the option to attend meetings by audio-visual link has been restricted to where councillors are prevented from attending a meeting in person because of ill-health or other medical reasons or because of unforeseen caring responsibilities.

Absences from council meetings

- Changes have been made to the provisions governing absences from meetings.
- Where councillors are unable to attend one or more meetings of the council or committees of the council, the new provisions encourage them to:
 - submit an apology for the meetings they are unable to attend,
 - state the reasons for their absence from the meetings, and

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- request that the council grant them a leave of absence from the relevant meetings.
- Where a councillor makes an apology, the council must determine by resolution whether to grant the councillor a leave of absence for the meeting. Councils are required to act reasonably when deciding whether to grant a leave of absence to a councillor. To ensure accountability, if the council resolves not to grant a leave of absence for the meeting, it must state the reasons for its decision in its resolution.

Livestreaming meetings

- As of 1 January 2026, councils are required to livestream their meetings using an audio-visual recording.
- Recordings of meetings must be published on the council's website for the balance of the council's term or for 12 months, whichever is the later date.
- OLG will be issuing updated guidance on the livestreaming of meetings.

New rules of etiquette at meetings

- Councils may determine standards of dress for councillors when attending meetings.
- Where physically able to, councillors and staff are encouraged to stand when the mayor enters the chamber and when addressing the meeting.
- The 2025 Model Meeting Code prescribes modes of address.

Mayoral minutes

- The restrictions on mayoral minutes under the previous code have been removed. A mayoral minute may be put to a meeting without notice on any matter or topic that the mayor determines should be considered at the meeting.

Rules of debate

- The rules of debate have been simplified and the rules governing the foreshadowing of motions and amendments have been removed. It remains open to councillors to foreshadow that they intend to move an amendment during the debate, but there are no longer formal rules governing this.
- An amendment has been made to clarify that there is nothing to prevent a further motion from being moved at a meeting on the same item of business where the original motion is lost, provided the motion is not substantially the same as the one that was lost.

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- Councils will no longer have the option of reducing the duration of speeches to less than 5 minutes. However, councils continue to have other options to expedite business at meetings such as moving that a motion be put where the necessary conditions have been satisfied and to resolve to deal with items by exception.

Voting on planning decisions

- Consistent with the Independent Commission Against Corruption's (ICAC) recommendations, a council or a council committee must not make a final planning decision at a meeting without receiving a staff report containing an assessment and recommendation in relation to the matter put before the council for a decision.
- Where the council or a council committee makes a planning decision that is inconsistent with the recommendation made in a staff report, it must provide reasons for its decision and why it did not adopt the staff recommendation.

Representations by the public on the closure of meetings

- In the interests of simplifying the code, the rules governing representations by the public on the closure of meetings have been removed. However, there is nothing to prevent councils from adopting their own rules on this. OLG will be issuing model best practice rules for public representations that councils can use if they choose to.

Making information considered at closed meetings public

- Consistent with ICAC's recommendation, the general manager must publish business papers for items of business considered during meetings that have been closed to public on the council's website as soon as practicable after the information contained in the business papers ceases to be confidential.
- Before publishing this information, the general manager must consult with the council and any other affected persons and provide reasons for why the information has ceased to be confidential.

Dealing with disorder

- Councils will be required to determine on the adoption of the new code and at the commencement of each council term, whether to authorise the person presiding at a meeting to exercise a power of expulsion.
- The definition of acts of disorder by councillors have changed. The following constitute acts of disorder under the Regulation and the 2025 Model Meeting Code:

2025 Model Meeting Code - FAQ



- contravening the Act, the Regulation, or the council's code of meeting practice,
 - assaulting, or threatening to assault, another councillor or person present at the meeting,
 - moving or attempting to move a motion or an amendment that has an unlawful purpose, or deals with a matter that is outside the jurisdiction of the council or committee or addressing or attempting to address the council or committee on or such a motion, amendment or matter,
 - using offensive or disorderly words,
 - making gestures or otherwise behaving in a way that is sexist, racist, homophobic or otherwise discriminatory, or if the behaviour occurred in the Legislative Assembly, would be considered disorderly,
 - imputing improper motives, or unfavourably personally reflecting, on another council official or a person present at the meeting, or
 - saying or doing anything that would promote disorder at the meeting or is otherwise inconsistent with maintaining order at the meeting.
- Where a councillor fails to remedy an act of disorder at the meeting at which it occurs, they can be required to do so at each subsequent meeting until they remedy the act of disorder. On each occasion the councillor fails to comply with a direction by the chairperson to remedy an act of disorder, they can be expelled from the meeting and each subsequent meeting until they comply.
- Members of the public can be expelled from meetings for engaging in disorderly conduct. Disorderly conduct includes:
 - speaking at meetings without being invited to,
 - bringing flags, signs or protest symbols to meetings,
 - disrupting meetings,
 - making unauthorised recordings of meetings.
- The 2025 Model Meeting Code notes that failure by a councillor or members of the public to leave a meeting when expelled is an offence under section 660 of the Act. Section 660 provides that a person who wilfully obstructs a council, councillor, employee of a council or a duly authorised person in the exercise of any function under the Act, or Regulation is guilty of an offence. An offence under section 660 carries a maximum fine of \$2,100.

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Committees

- Meetings of committees of a council whose membership comprises only of councillors must be conducted in accordance with the council's adopted meeting code. Such committees will no longer have the option of determining that rules under the council's meeting code do not apply to them.

Department of Planning, Housing and Infrastructure
Office of Local Government



Circular to Councils

Subject	Commencement of Mutual Recognition Scheme
Circular Details	Council Circular 25-21 / 5 September 2025 / A952303
Previous Circular	<u><i>Council Circular 24-18 Mutual Recognition – Councils' Local Approvals for mobile businesses</i></u>
Who should read this	Councillors / General Managers / All council staff / Environmental Health teams / Local business approval teams
Contact	OLG Sector Policy and Frameworks Team / 02 4428 4100 / olg@olg.nsw.gov.au
Action required	Information / Council to Implement

What's new or changing?

- The Mutual Recognition Scheme is now available to all NSW councils, facilitated by amendments to the *Local Government Act 1993* and Local Government (General) Regulation 2021.
- The Mutual Recognition Scheme has been designed to simplify the approval process and reduce the administrative and cost burden on councils and mobile businesses.
- Instead of requiring a mobile business to obtain separate 'Section 68' approval from each council where they intend to operate, holders of eligible approvals may seek to have a current approval recognised by other councils.
- Council participation in mutual recognition is non-mandatory; however, councils are encouraged to recognise approvals to reduce the administrative burden associated and improve economic outcomes in their area.
- The Mutual Recognition Scheme contains the following provisions:
 - Authorise councils to recognise an approval issued by another council under Part D or Part F7 of Section 68 of the *Local Government Act 1993*
 - Prescribe particulars to be inserted by a council on a Recognition Certificate
 - Apply any enforcement powers for Section 68 approvals to recognition of approvals



- Establish an offence that can be applied against a person that has had an approval revoked and has not notified the councils who have recognised the approval.
- To support the new Mutual Recognition Scheme, the Office of Local Government (OLG) has developed Mutual Recognition Guidelines (Guidelines), FAQ's, explanatory videos, best practice forms and a model council policy template.
- The Guidelines and supplementary suite of resources can be accessed via the OLG website <https://www.olg.nsw.gov.au/programs-and-initiatives/mutual-recognition/>

What will this mean for council?

- The Mutual Recognition Scheme has commenced. All current and new approvals issued under Section 68 Part D or Part F7 of the *Local Government Act 1993* are eligible for mutual recognition requests.
- Councils are not required to formally opt-in to participate in the Mutual Recognition Scheme and have discretion to participate in the Mutual Recognition Scheme.
- Councils who participate in the Mutual Recognition Scheme may need to review suitability of existing forms, processes, policies and fees for managing mutual recognition requests.
- Guidelines and supporting material is available on the OLG website: <https://www.olg.nsw.gov.au/programs-and-initiatives/mutual-recognition/>.

Key points

- Mutual recognition is immediately available to all councils and holders of eligible approvals (Section 68 Part D or Part F7).
- OLG has developed Guidelines and a suite of resource materials to assist councils and businesses interpret, implement and use the Mutual Recognition Scheme.
- The development of the Mutual Recognition Scheme and the supporting Guidelines has been a collaborative effort, informed through engagement with various NSW Government agencies, local councils and the mobile business sector.

Where to go for further information

- For further information go to <https://www.olg.nsw.gov.au/programs-and-initiatives/mutual-recognition/>, or contact the Sector Policy and Frameworks team on 02 4428 4100 or via email at olg@olg.nsw.gov.au

A handwritten signature in blue ink, appearing to read 'Brett Whitworth'.

Brett Whitworth
Deputy Secretary, Office of Local Government

9.2 COUNCIL MEETING DATES AND TIMES

File Number: RPT/25/487

Responsible Officer: Ken Ross - General Manager
 Responsible Division: Office of the General Manager
 Reporting Officer: Gayle Marsden - Executive Assistant

Objective: 4.0 Wentworth Shire is supported by strong and ethical civic leadership with all activities conducted in an open, transparent and inclusive manner

Strategy: 4.2 We value our civic leadership whose stewardship and decision making benefits present and future generations

Summary

The purpose of this report is to set the date and time for the Ordinary Meetings of Council for the next twelve months.

Recommendation

That Council determines the following in relation to Ordinary Meetings of Council:

1. Ordinary Council meetings will be held on a day to be determined in all months excluding June
2. The May & June 2025 meeting will be held on the selected day in each month
3. The January meeting will/will not be held
4. All Ordinary meetings of Council will commence at a time to be determined

Detailed Report

Purpose

The purpose of this report is to set the date and time of Ordinary Meetings of Council up to the next statutory meeting to be held in September 2026.

Background

Section 365 of the *Local Government Act 1993* requires that Council meets at least ten times each year, each time in a different month.

The *Local Government Act 1993* or the *Local Government (General) Regulations 2021* does not cover the time a Council meeting should start.

The meeting time and dates for Ordinary Council meetings are required to be advertised in accordance with the requirements of the *Local Government Act 1993*.

If an Ordinary Meeting of Council clashes with an event, Council may alter the date of a particular Council Meeting by resolution of Council. It is also possible for Council to call an Extraordinary meeting of Council for a specific reason on a different day and time from that of the Ordinary meeting of Council.

In the past the May meeting has been moved forward 1 week and the June meeting moved back a week to ensure the draft Operational Plan, endorsed at the May meeting, has been on public exhibition for the required 28 days.

Report Detail

There are virtually no restrictions of what Council is able to resolve other than ensuring that at least ten meetings are held in the year. Council must decide the following:

- 1) The time of the Council meetings (currently 5:00pm).

- 2) The date and the day of the month of Council meetings (currently third Wednesday)
- 3) Whether a meeting will be held each month (the December & January meetings have in the past been discussed in relation to this). Should the same days be chosen as the previous term of Council the December meeting would fall on 17 December 2025. An option would be to move this meeting forward one week to the 11 December 2024. The January meeting would fall on the 15 January 2025 with staff having to have all reports written and approved by 3 January 2024 after returning to work from the Christmas shut down on 30 January 2024 and having the 1 January public holiday off. The January meeting may be moved back to giving staff a more reasonable timeframe to write reports or not hold a January meeting as many people take holidays. Previous years the December meeting has been moved forward a week and the January meeting has not been held.
- 4) Previously the date for the May meeting has been moved forward a week and the June meeting moved back a week to allow the draft Operational Plan, endorsed at the May meeting, to be on public exhibition for the required 28 days.

Should Council choose for meetings to occur at the same time (third Wednesday of the month) and in line with the above, meeting dates would be:

15 October 2025
 19 November 2025
 10 December 2025 (brought forward 1 week)
 18 February 2026
 18 March 2026
 15 April 2025
 13 May 2026 (brought forward 1 week)
 24 June 2026
 15 July 2026
 19 August 2026
 16 September 2026

Conclusion

Council is required to set the date and time of Ordinary Meetings of Council up to the next statutory meeting to be held in September 2026.

Attachments

Nil

9.3 IN PRINCIPLE SUPPORT FOR THE IMPLEMENTATION OF THE NATIONAL CARP CONTROL PLAN AND ITS RECOMMENDATIONS

File Number: RPT/25/502

Responsible Officer: Ken Ross - General Manager
 Responsible Division: Office of the General Manager
 Reporting Officer: Gayle Marsden - Executive Assistant

Objective: 3.0 Wentworth Shire is a community that works to enhance and protect its physical and natural environment

Strategy: 3.3 Minimise the impact on our natural environment

Summary

Council has received the following information from the Murray Darling Association. This Motion seeks Council's in principle support for the funding and implementation of the National Carp Control Plan (NCCP) and its recommendations by the Federal Minister for Agriculture Fisheries and Forestry, the Hon Julie Collins MP.

The Australian Government began investigating the use of the *Cyprinid Herpesvirus 3* (the Carp Virus) in 2016, culminating after 6 years research by the Fisheries Research and Development Corporation (FRDC) in the NCCP.

European Carp contribute to environmental degradation in the Basin and impact native fish species. Through their feeding habits, Carp impact aquatic plant, native fish eggs, small fish, and zooplankton populations in our waterways. The end result of one or a combination of these impacts is reduced water quality and/or reduced abundance and diversity of native plant and fish species.

In response to concerns raised by Councils and Local Government Areas (LGA's) across the Basin regarding European Carp and water quality, the Murray Darling Association Inc. (MDA) has prepared correspondence to the Minister for Agriculture Fisheries and Forestry, the Hon Julie Collins MP.

The letter outlines the impact of the invasive European Carp in the Murray-Darling Basin's Waterways and advises of the in principle support for the funding and implementation of the National Carp Control Plan and all of its recommendations by the Councils and LGA's of the Basin.

Recommendation

That Council:

- a) Council supports, in principle, the Murray Darling Association's urgent call for the Federal Government to fund and implement the National Carp Control Plan and its recommendations.
- b) Council endorse the Letter to the Minister as attached to this report.
- c) The attached Letter to the Minister be signed by Council and sent to the Minister for Agriculture, Fisheries and Forestry, the Hon Julie Collins MP, with a copy to be sent to the MDA for their records.

Detailed Report

Purpose

The purpose of this report is to for Council to consider the information provided by the Murray Darling Association in regard to the National Carp Control Plan.

Report Detail

The letter to the Minister for Agriculture, Forestry and Fisheries (Letter to the Minister) provides Council's in principle support for the funding and implementation of the NCCP and its recommendations.

This draft motion does not propose that any Council or LGA fund, in part or in full, the implementation of the NCCP and its recommendations.

Options

OPTION 1

As per Recommended

OPTION 2

Council make any amendments to the Letter to the Minister for Agriculture, Forestry and Fisheries, The Hon Julie Collins MP prior to distribution.

Policy Implications

The Letter to the Minister draws on available data and research from the research conducted by the Fisheries Research and Development Corporation (FRDC) on behalf of the Australian Government from 2016 that culminated in the 2022-released NCCP.

The FRDC undertook extensive consultation, detailed investigations and targeted research. Eleven research institutions and over 40 research scientists contributed. The FRDC also consulted with policy and expert scientific workgroups. Explore their findings on this page.

Financial Implications and Risk

The Letter to the Minister, as per the Motion's Recommendation, has no financial cost.

Environmental implications and risk

- Risks associated with Carp Biocontrol:
 - Water Quality risks
 - Decomposing carp have potential to negatively affect water quality
 - Can deplete dissolved oxygen in the water
 - Can release nutrients and ammonia that can fuel algal blooms
 - Carp density below approx. 300 kg/ha, and water is flowing (most regulated river channels of the Southern Basin): **Key water parameters are unlikely to be seriously impaired.**
 - Carp density exceeds approx. 300kg/ha, and the water is still/slow-moving: Potential for low dissolved oxygen conditions and harmful algal blooms to develop. Likely to prevail in disconnected waterbodies (wetlands, lakes, reservoirs et cetera.)
 - Main river channel habitats unlikely to experience negative water-quality impacts following carp kills.
 - Shallow, off-channel habitats and unregulated dryland rivers may, particularly where carp densities exceed 300 kg/ha.
 - In higher – risk habitats, two important risk mitigation options (manual collecting of carcasses, use of water releases to flush away dead carp) are difficult to implement.
 - If released, planning will need to incorporate surveillance and rapid-response measures across carp's mainland eastern Australian

distribution, focussing on off-channel areas with carp biomass of 300kg/ha or greater.

Moderate Low Risk: If successful, the Carp virus could reduce carp populations by approximately 40-60%. Releasing the **virus** would most **likely**, **cause** an **initial major outbreak** followed by **ongoing seasonal outbreaks** that suppress the carp population.

Reputation / Community implication and risk

Minor Low Risk: Council may receive pushback from concerned citizens, animal rights activists.

Service Delivery Implications and Risk

No Risk: Council is not required to deliver the Carp Virus.

WHS / HR Implications and Risk

No Risk: Council is not required to handle the Carp Virus.

Conclusion

Council has been provided with information from the Murray Darling Association to consider whether to give in principle support for the implementation of the National Carp Control Plan and its recommendations.

Attachments

1. Templated Sample - MDA Letter to Minister Collins [↓](#)
2. National Carp Control Plan [↓](#)

DATE, 2025

The Hon Julie Collins MP
Minister for Agriculture, Fisheries and Forestry
03 6244 1222
Minister.collins@aff.gov.au

In principle support for the implementation of the National Carp Control Plan and its recommendations.

Dear Minister Collins,

On behalf of [Insert Council], I would like to advise you of our in principle support for the funding and implementation of the National Carp Control Plan and its recommendations.

It is well known that the Australian Government began investigating the use of the *Cyprinid Herpesvirus 3* (the Carp Virus) in 2016, culminating after 6 years research by the Fisheries Research and Development Corporation (FRDC) in the National Carp Control Plan, which provides an extensive body of research and analysis to inform decision making about the potential use of the Carp Virus for biological control of European Carp in Australia.

Since the 1960s, European Carp have affected native fish species, biodiversity and aquatic vegetation. They reduce water quality, damage riverbanks and contribute to [algae blooms](#). European Carp are adaptable and populations can increase quickly, and account for up to 90% of fish biomass in some areas of the Basin.

An invasive, widespread pest in the Murray–Darling Basin, they contribute to environmental degradation in the Basin and impact native fish species. Carp cause their main environmental impacts through their feeding habits., and as adults, they usually feed on the bottom of rivers and ponds.

Feeding by sucking soft sediment into their mouths, this habit (known as roiling) leads to a suspension of sediment in the water.

When carp are present in high densities, the resultant suspended sediment can result in a number of problems, including:

- direct deterioration of water quality due to sediment and increased nutrient levels
- reduced light penetration, resulting in reduced plant growth
- smothering of plants, invertebrates and fish eggs
- clogging of gills of other fish species
- inhibited visual feeding by other fish species.

The process of feeding can also result in fewer aquatic plants: carp will graze on plants directly and uproot plants during feeding. Carp are also effective grazers of surface films on plants and rocks.

Their direct impact on plants can also have a number of related impacts, including:

- reduced populations of invertebrates that are dependent on the plants
- reduced stability of bottom sediments through loss of aquatic vegetation.



Juvenile carp in particular also feed directly on zooplankton in the water. If zooplankton numbers are reduced, algal growth might increase, as the zooplankton normally feed on algae.

There are also records of carp feeding on fish eggs and on small fish.

The end result of one or a combination of these impacts will be **reduced water quality and/or reduced abundance and diversity of native species**.

Water quality is of particular concern to the communities, and industries of the Murray-Darling Basin, particularly in a future where the Basin must adapt to a changing climate, and, by the CSIRO's estimates, an up to 30% reduction in water available across the Murray-Darling Basin.

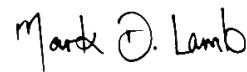
In addressing water quality there is no one solution, however the management of the invasive, and incredibly damaging European Carp in the waterways of the Murray-Darling Basin would provide invaluable benefits to the environment as a whole, particularly the basin's native water flora and fauna, as well as work towards the greater challenge of improving Australia's water quality.

As such, [Insert Council], on behalf of its communities hereby provides it's in principle support for the funding and implementation of the National Carp Control Plan and its recommendations.

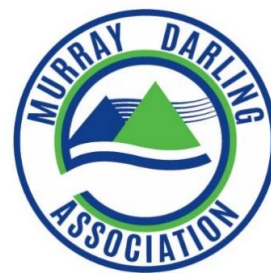
For further information, or to discuss the management of European Carp in the Basin, the National Carp Control Plan, please don't hesitate to contact the Murray Darling Association Chief Executive Officer, Mark Lamb via m.lamb@mda.asn.au and [0490 143 214](tel:0490143214), or the Murray Darling Association National President, Cr Shari Blumer, via sblumer@griffith.com.au and [0415 081 362](tel:0415081362).

Sincerely,

[NAME]
[POSITION]
[COUNCIL]

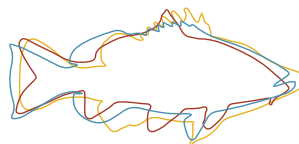


Mark D. Lamb
Chief Executive Officer
Murray Darling Association Inc.
[0490 143 214](tel:0490143214), [\(03\) 5480 3805](tel:0354803805)
m.lamb@mda.asn.au





Australian Government



NATIONAL CARP CONTROL PLAN



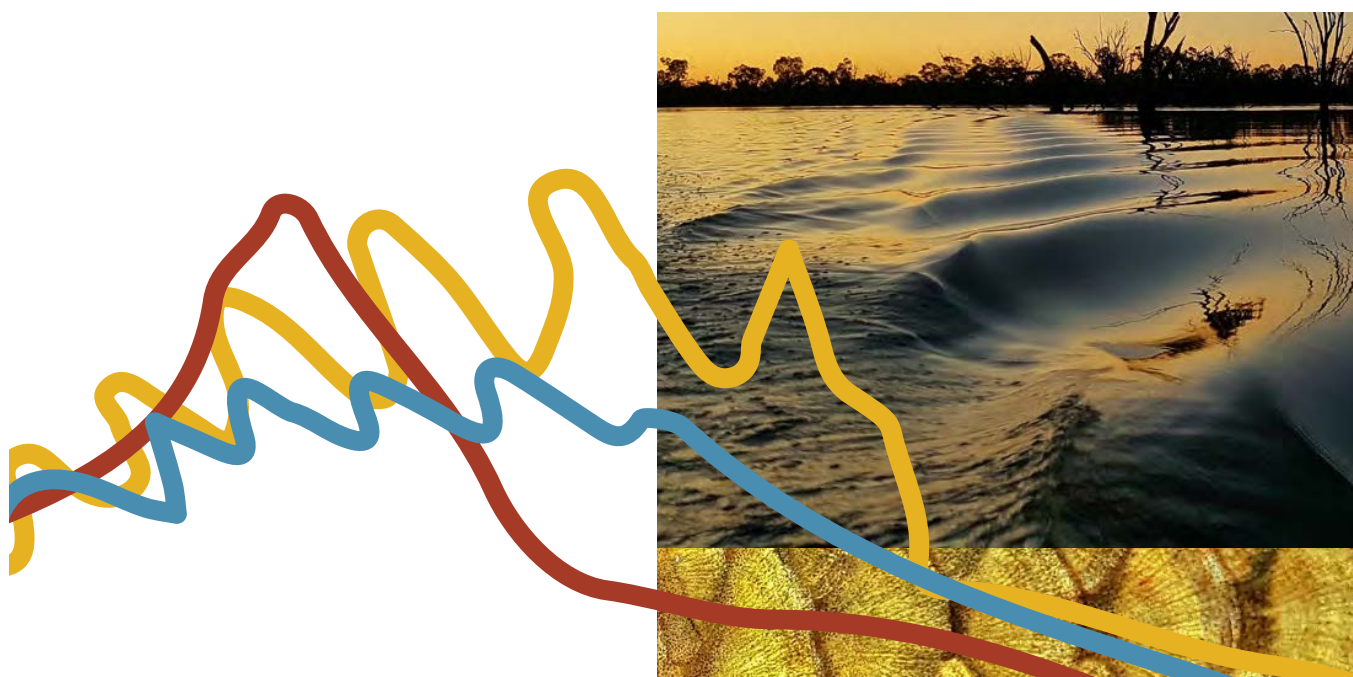
FRDC

Submitted to
the Department
of Agriculture,
Fisheries and Forestry
representing the
Australian Government

September 2022



The National Carp Control Plan



This document fulfils the requirements of a contract between the Fisheries Research and Development Corporation (FRDC) and the Australian Government to develop the National Carp Control Plan (NCCP). It will be used to inform decision making on whether to proceed with additional activities assessing the carp virus as a carp-control measure in Australia. The information and recommendations in this document represent the latest research and the associate limitations and assumptions of that research.



FRDC

Locked Bag 222, Deakin West ACT 2600

T: 02 6285 0400 E: frdc@frdc.com.au

The FRDC through investing in knowledge, innovation, and marketing aims to increase economic, social and environmental benefits for Australian fishing and aquaculture, and the wider community.

The FRDC is a co-funded partnership between its two stakeholders, the Australian Government and the fishing and aquaculture sectors,





Australian Government
Fisheries Research and Development Corporation

30 September 2022

The Fisheries Research and Development Corporation (FRDC) is pleased to present the National Carp Control Plan (NCCP, or the Plan) for consideration by the Australian Government.

The NCCP provides an extensive body of research and analysis to inform decision making about the potential use of a virus for biological control of European Carp, or common carp, in Australia. The Plan is the culmination of almost six years' work, including an extended interruption to laboratory studies during the COVID-19 pandemic. The research program underpinning the Plan involved 19 peer-reviewed studies and numerous planning investigations considering various aspects of carp biocontrol. This work represents the largest body of research ever undertaken to evaluate the possible use of a biological control agent for an aquatic pest. Results from this research provide an evidence base to help decision makers determine next steps regarding this important national issue.

Controlling an established pest fish that inhabits varied ecosystems across a vast swathe of south-eastern Australia presents a significant challenge. The Plan has taken a systems approach to dealing with this complex issue. Therefore, while the Plan's research outputs represent enduring contributions to knowledge for pest fish control, the broader process underpinning the Plan's development may also provide insights applicable to other issues at the interface of science, policy, and society.

Uncertainties regarding the release of the virus remain, but this is to be expected given the complexity of the work undertaken. The Plan identifies these uncertainties and sets out actions that may reduce them in an effort to assist further government decision making. Nonetheless, a decision on whether or not to release the virus will always involve some uncertainty. Decision makers will wish to consider residual uncertainties in the context of the scale of the carp problem, and in relation to other relevant factors such as costs, and the regulatory and policy environment.

We commend the Plan to your attention and look forward to the next stages of this important process.

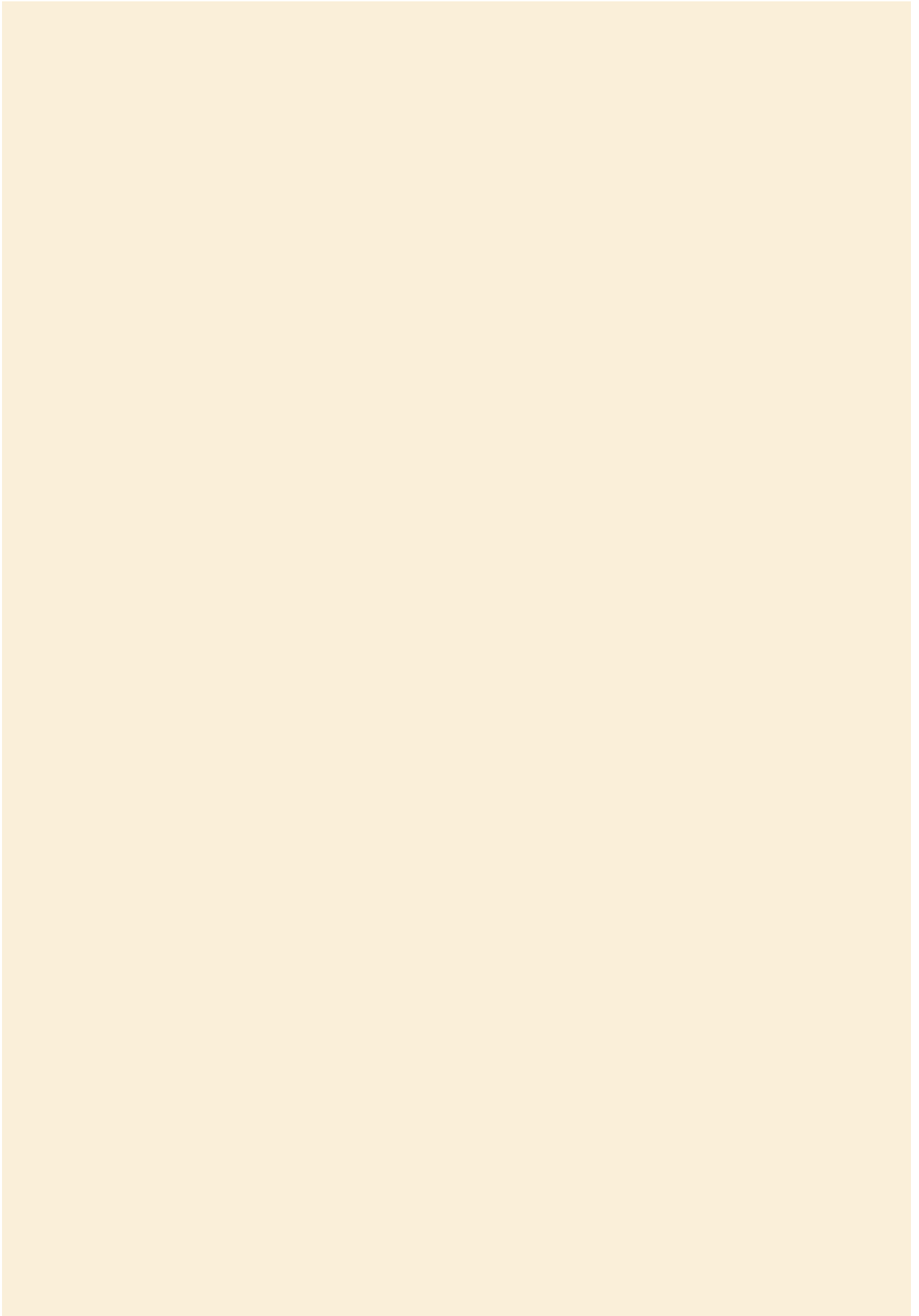
Yours sincerely

Patrick Hone
FRDC Managing Director



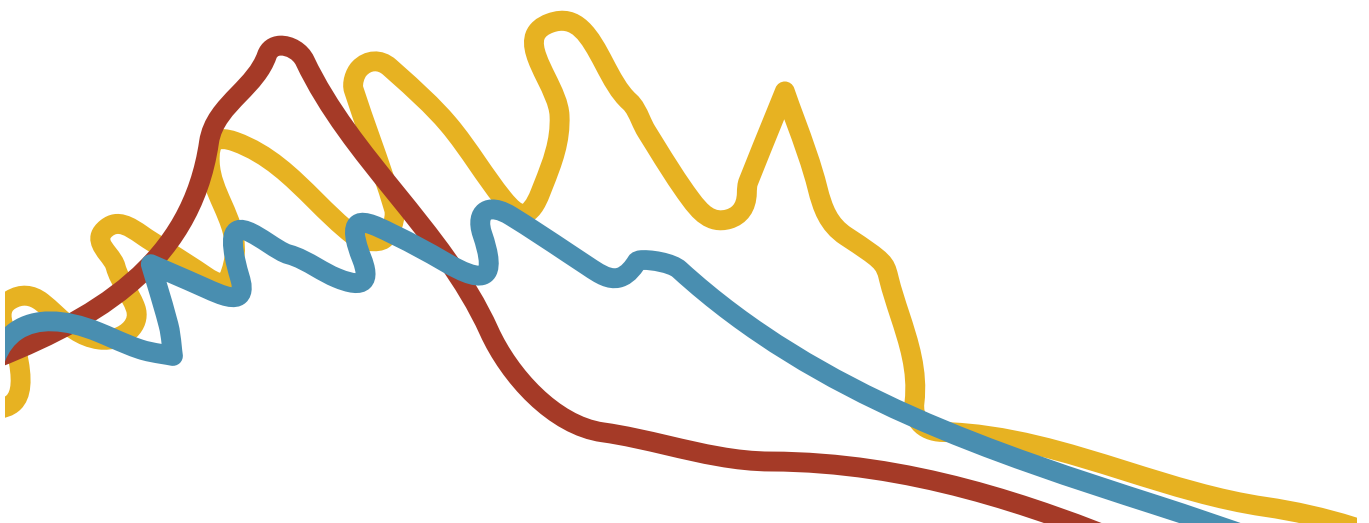
Fisheries Research and Development Corporation
Postal address: Locked Bag 222, Deakin West ACT 2600 Australia
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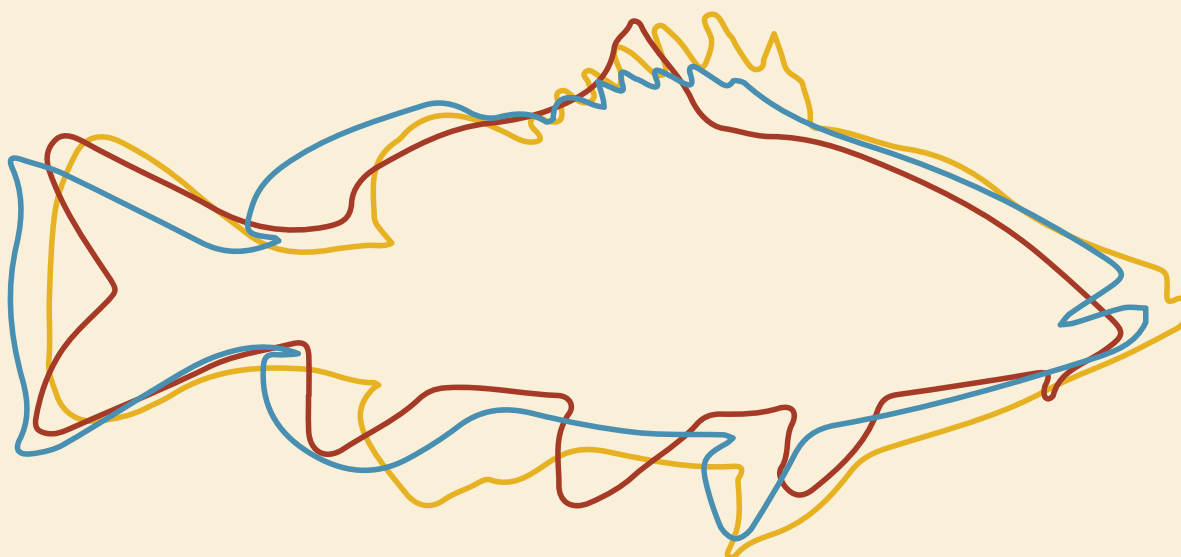






The National Carp Control Plan



**The National Carp Control Plan (NCCP)**

Fisheries Research and Development Corporation (FRDC)
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GLOSSARY

Aggregations/aggregating — groups of animals or fish gathering in close proximity to each other, often for a specific biological purpose.

Anoxia — in relation to waterbodies, anoxia is a condition in which no dissolved oxygen remains in the water (compare 'hypoxia').

Biological control/biocontrol — using pest species' 'natural enemies', such as disease-causing organisms, predators, or parasites, to control their numbers and reduce the economic, environmental, and social harm they cause.

Biological control/biocontrol agent — the organism used to attack a pest species in a biocontrol program (see 'biological control/biocontrol').

Biomass — the total mass of a particular species occurring in an area or habitat. Measuring a species' abundance in terms of biomass would typically involve a description such as 'the wetland contained 5 tonnes of carp', and contrasts with describing abundance in terms of the number of individuals present (e.g. 'the wetland contained 5000 carp'). Biomass may be expressed on a per-area basis (e.g. '50 kg of carp per hectare').

Blackwater events — occur when flooding washes organic material into waterways, where it is consumed by bacteria, leading to a rise in dissolved carbon in the water. During a blackwater event, the water appears black due to the release of dissolved carbon compounds, including tannins, as the organic matter decays, similar to the process of adding water to tea leaves. Rising levels of dissolved carbon causes a sudden depletion of dissolved oxygen in water, which is essential for aquatic organisms that need to breathe underwater. (Source: <https://www.waterquality.gov.au/issues/blackwater-events>.)

Cyanobacteria/cyanobacterial blooms — microorganisms that are related to bacteria but are capable of photosynthesis and can be toxic to other species. Cyanobacteria are commonly called 'blue-green algae'. Under suitable conditions, cyanobacteria can form large 'blooms', covering large areas of waterbodies and potentially harming human and animal health.

Cyprinid herpesvirus 3 (CyHV-3) — a double-stranded DNA virus belonging to the family Alloherpesviridae. Throughout this report, CyHV-3 is referred to as 'the carp virus'.

Dissolved oxygen — the amount of oxygen present in water, typically expressed as milligrams per litre (mg/L). Most gill-breathing aquatic animals require dissolved oxygen to stay above certain levels (which vary between species) to remain healthy.

Effectiveness (in the context of the NCCP) — the extent to which the carp virus will reduce carp abundance and the environmental damage they cause in natural ecosystems.

Epidemiology — the scientific discipline that studies disease at a population scale.

Genetic biocontrol — methods or technologies that use biology to change the genetics of a target species population to achieve control of that population.

Genetic resistance — occurs when organisms possess genes or gene variants (alleles) that give protection against a particular disease-causing organism (e.g. virus or bacteria).

Hypoxia — a condition in which an environment (e.g. waterbody) is deprived of an adequate supply of oxygen for plants or animals. In contrast to 'anoxia', which describes a condition with no oxygen, hypoxia refers to oxygen concentrations that are lower than optimal for some biological process, such as cellular respiration.

Immunity (herd) — is a form of population-level disease resistance that occurs when a sufficiently high proportion of the organisms in a population are protected against an infectious disease because they have either previously been infected and survived, or have received a vaccine. Essentially, the immune systems of these organisms are then 'primed' to recognise and fight the disease. Under herd immunity, even individuals who have not previously been infected or vaccinated receive protection, because there are insufficient susceptible individuals in the population for effective transmission. Herd immunity differs from genetic resistance, which is bestowed by genes or gene variants that make an individual invulnerable to a particular infection and/or disease.

Latent (relating to viral infection) — some viruses possess the ability to 'hide' from the immune system of an infected host, while remaining within the host's body. Latent infections generally do not cause clinical signs of disease, as the virus is dormant or resting. When conditions become suitable (e.g. the host becomes stressed), the latent virus may re-activate (see 'recrudescence') and recommence an active infection.

Legacy nutrients — nutrients that are retained in a natural system (e.g. in the sediments within a waterbody) for extended time periods following their initial addition to the system.

Naïve (relating to epidemiology/immunology) — an individual or immune system that has not previously been exposed to a particular antigen.

Oxbow — a curved or U-shaped lake formed when a meandering river section becomes isolated from the main channel.

Pathogen — a disease-causing organism, especially a microorganism.

Piscivorous (of an animal) — fish-eating.

Prey switching — when an animal (predator) changes its primary source of food.

Recrudescence — the re-activation of latent viral infection (see 'latency').

Serological — blood tests that look for antibodies to a particular disease-causing organism (pathogen).

Transmission (in the context of disease) — the transfer of a virus or other disease-causing organism from an infected to a susceptible individual.

Trojan Y Chromosome approach/technology — a form of genetic biocontrol which introduces sufficient Y chromosomes into a population to bias the sex ratio towards males, thereby reducing and eventually eliminating the reproductive success of the target species or population.

ABBREVIATIONS AND ACRONYMS

AIIMS	Australian Interagency Incident Management System
APVMA	Australian Pesticides and Veterinary Medicines Authority
BIMS	Biosecurity Incident Management System
CCA	Catchment Control Areas
CSIRO	Commonwealth Scientific and Industrial Research Organisation
CyHV-3	Cyprinid herpesvirus 3
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
ICS	Incident Control System
IMS	Incident Management Systems
kg/ha	kilograms per hectare
MDB	Murray-Darling Basin
MNES	Matters of National Environmental Significance
NCCP	National Carp Control Plan
OIE	World Organisation for Animal Health
RSPCA	Royal Society for the Prevention of Cruelty to Animals
WTP	willingness to pay



KEY POINTS

Introduced European Carp, or common carp, are a serious pest in Australia's fresh waters, damaging aquatic plants, muddying water, and harming native animals through predation and competition for food.

Research by the National Carp Control Plan (NCCP) has identified that carp occur at high densities across extensive areas of south-east Australia. The national biomass of carp ranges from 200,000 tonnes and possibly up to approximately 1 million tonnes under ideal breeding conditions featuring consecutive high rainfall years.

The NCCP was established to investigate the carp virus's potential to reduce carp populations at a continental scale. The NCCP completed an extensive research and investigations program involving 19 research projects and five investigations overseen by expert advisory groups and scientists. While many uncertainties remain, and preclude an unequivocal recommendation of feasibility at this point, NCCP research confirms that the carp virus has potential as a biocontrol agent. The body of evidence assembled by the NCCP research program is sufficient to enable Australian governments, should they choose, to proceed with additional targeted planning and research activities to inform an eventual decision on whether or not the virus should be used for biocontrol. Such a pathway could reduce, but would not eliminate, remaining uncertainties.

NCCP modelling indicates that, if successfully deployed, the virus could reduce and suppress carp populations by approximately 40–60% (and by up to 80% in less resilient carp populations). These modelled outcomes depend on some assumptions about how the carp virus will move through Australian carp populations, and on the potential development of resistance or immunity via several possible mechanisms. NCCP research indicates reduction of carp impacts may benefit from an integrated approach in which virus deployment is preceded by targeted harvesting, particularly in high-density carp populations. If the virus is eventually released as a biocontrol agent in Australia, an adaptive management approach is recommended which involves ongoing assessment of epidemiological performance to inform virus release operations. This approach would mitigate against departures from the predicted epidemiology.

Preliminary research indicates Australian carp may not possess the gene variants (alleles) that bestow heritable genetic resistance to the virus, meaning that the carp virus could potentially be effective for considerably more than 10 years. However, this work was exploratory, and did not constitute a comprehensive survey of Australian carp genetics. More broadly, the genetic basis for resistance to the carp virus remains imperfectly understood (though considerable international research in this area is ongoing). One uncertainty regarding genetic resistance is the role carp-Goldfish hybrids could play in its evolution. These hybrids are less susceptible than non-hybrid carp to the disease caused by the virus, and this relative invulnerability could bestow a selective advantage. Therefore, the rate at which genetic resistance to the virus would evolve among Australian carp remains largely uncertain, although the NCCP has developed the genetic tools to improve knowledge in this area. The potential emergence of herd immunity is also an uncertainty.

The carp virus will not infect humans or any other mammal, and there is considerable evidence the carp virus will not infect other non-target species (e.g. native fish). However, a very high level of confidence in the species-specificity of any biological control agent is required before its release. Additionally, concern regarding the virus's specificity to carp is relatively common in the Australian community. Unless addressed, such concerns could negatively affect social licence for carp biocontrol. For these reasons, additional non-target species susceptibility testing of selected fish species is recommended if governments wish to proceed with activities to inform an eventual decision on whether or not to proceed with carp biocontrol.

Broadscale and long-term water-quality impacts resulting from carp biocontrol operations are unlikely. Local water-quality impacts are likely under particular conditions, and in some ecosystem types (mainly those with low or no flows). Some aquatic habitats in the Murray-Darling Basin (MDB) already have water-quality parameters (particularly dissolved oxygen levels) that are marginal for native fish species. Further degradation of these parameters by decomposing carp could cause fish kills in these areas unless effectively managed. Carcass management strategies and methods can theoretically mitigate water-quality risks as demonstrated in NCCP case studies, noting that capacity to manipulate river flows specifically to benefit carcass management may often be limited or non-existent and physical collection of carcasses presents challenges.



If Australian governments choose to proceed with the additional activities required to inform a final decision, and this process eventually lead to virus release, implementation of carp virus biocontrol would likely involve two to three years of coordinated deployment focused initially on the MDB, with ongoing adaptive management beyond initial deployment.

A future carp biocontrol program would require investment. An NCCP case study of possible virus deployment in the Murray and Murrumbidgee systems roughly estimated that virus deployment and subsequent post-release management would cost around \$190 million (at 2019 costings). This area covers more than 30% of the carp biomass in Australia including the highest densities of carp. If governments choose to proceed with activities to inform decision making, more accurate and detailed costings will be required.

Although uncertainties and risks remain, these are likely to be reduced through a pathway of targeted further research, implementation planning, adoption of NCCP recommendations, and by development of detailed post-release monitoring plans and an implementation governance structure that enables adaptive management. At the national scale, further regulatory approvals will be required if governments proceed with the assessment pathway. Community consultation, public communications, and stakeholder engagement are also important given the possible impacts and high level of interest in carp biocontrol.





EXECUTIVE SUMMARY

The National Carp Control Plan (NCCP) was established to help governments make decisions about the potential use of a virus called Cyprinid herpesvirus 3 (CyHV-3, hereafter 'the carp virus' or 'the virus') to control European Carp, or common carp, *Cyprinus carpio* (hereafter 'carp'), in Australia. Controlling pest species by using their 'natural enemies' (such as viruses) is called 'biological control' or 'biocontrol'.

To inform a decision about carp biocontrol feasibility, the NCCP addresses the following questions:

1. Will biocontrol using the carp virus be effective?
2. What are the risks associated with carp biocontrol and how can they be managed?
3. How could carp biocontrol be implemented?

In addition to addressing these key feasibility questions, the NCCP provides a preliminary assessment of the impacts, costs, and benefits of carp biocontrol and provides conclusions and recommendations.

Will carp virus biocontrol be effective?

The carp problem is extensive: Carp are one of Australia's most significant pest species. They were introduced to Australia in the mid-19th century, and are now the dominant large-bodied fish in most Murray-Darling Basin (MDB) waterways. The species is also abundant in many eastern coastal rivers, while isolated populations occur in Western Australia.

Ecological impacts attributed to carp in Australian ecosystems include decreased water clarity, destruction of aquatic plants that provide food and habitat for native species, and food chain domination. Carp removal or reduction will not necessarily result in a direct reversal of these effects, but is nonetheless expected to bring environmental, economic, and social benefits.

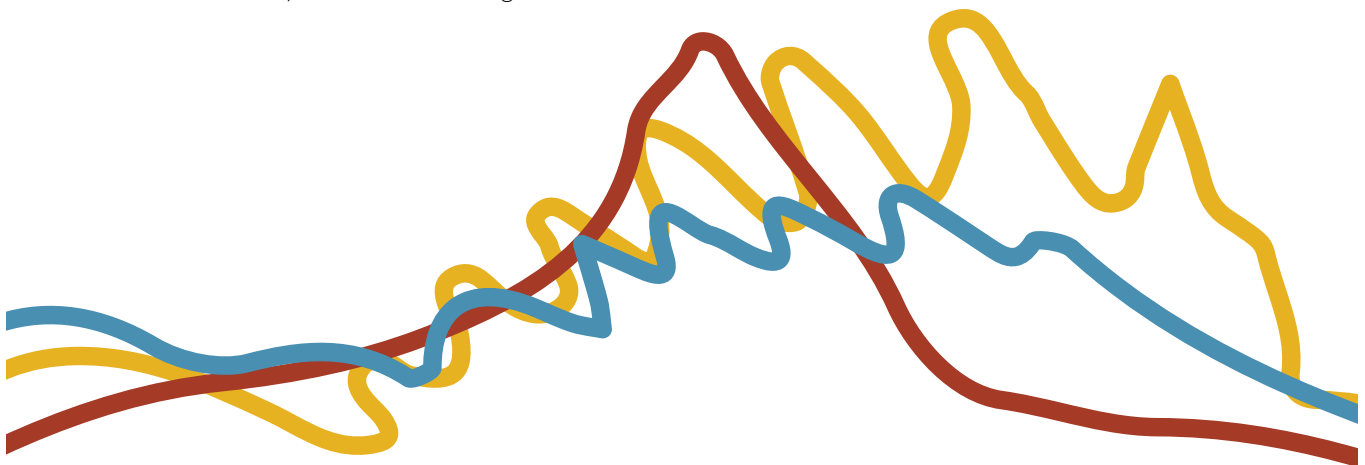
Controlling carp requires a clear understanding of their distribution and abundance in Australian waterways. To achieve this, the NCCP undertook the most comprehensive estimate of total carp biomass ever attempted. This research revealed that, over summer 2017-18, approximately 205,000 tonnes of carp were inhabiting mainland Australia (excluding Western Australia). Three consecutive flood years, which would favour carp population growth, could increase total carp biomass to approximately 1 million tonnes. Carp density is generally highest in lowland, regulated rivers, but can also be high in unregulated northern parts of the MDB.

Effective, long-term carp control is difficult. Carp are widespread, abundant and possess biological traits that mean their populations tend to rebuild rapidly following reductions. No 'silver bullet' for carp control currently exists, nor will biological control constitute such a solution.

Epidemiological modelling indicates that biocontrol could effectively reduce and suppress carp populations, especially if combined with other methods: Modelling conducted under the NCCP indicates that biocontrol using the carp virus could reduce carp populations by approximately 40–60% (and 60–80% in less resilient carp populations). These projected reductions are generalisations and both greater and lesser reductions are expected across the numerous carp sub-populations that constitute Australia’s total carp biomass. This modelling depends on assumptions regarding key epidemiological rates. These assumptions were informed by peer-reviewed science, and where possible tested using laboratory experiments. Nonetheless, further targeted research on the population structure of Australian carp, and on interactions between carp and the virus in natural or semi-natural settings (potentially conducted at an overseas institution) could further develop and refine understanding of the virus’s likely effectiveness as a biocontrol agent. Additionally, if virus release eventually proceeds, an adaptive management approach will be needed to maximise effectiveness and manage risks.

Carp in Australia undergo large ‘boom and bust’ population fluctuations, but the virus’s suppressive effects are expected to persist during conditions conducive to population increases. Furthermore, a ‘Carpageddon’ scenario featuring major, approximately simultaneous carp mortalities across a large geographic area is unlikely. NCCP research highlights that the virus is likely to produce substantial, seasonally restricted kills focused on targeted carp aggregation sites. The years following initial deployment should then produce ongoing kills comprised mainly of juvenile carp. Ensuring that sufficient carp within targeted sub-populations are infected during initial virus deployment would be critical for successful biocontrol implementation.

Controlling high-density carp populations may require a multi-method approach: High carp abundances and complex, interconnected population structures mean that the species is very resilient to control efforts. Consequently, any single control measure (including the virus) is unlikely to be successful across carp’s entire Australian range if used in isolation. While any level of carp reduction could be beneficial, NCCP modelling indicates that, in Australia’s highest-density carp sub-populations, a combined approach in which a portion of the total carp present are harvested before virus deployment offers a more rapid and effective opportunity to reduce carp densities and impacts below ecologically damaging levels. This multi-method approach would provide particular benefit in the lower Murray River where carp density is highest, and to a lesser extent, in the mid-Murray. Because the NCCP focused primarily on assessing the feasibility of viral biocontrol, the magnitude and timing of the fishing effort needed to attain effective carp reduction in high-density populations is unknown, but could be clarified by additional modelling.



Carp biocontrol risks

The carp virus will not affect humans or other mammals: The risk of direct human infection by the carp virus is extremely low. There is no indication that the virus has ever infected, or will ever infect, human beings or any other mammal. No additional investigation of this risk is warranted.

There is evidence that the carp virus will not infect or harm other non-human species, but further work is recommended: The World Organisation for Animal Health (OIE) notes that carp and carp hybrids (e.g. hybrids of carp and Goldfish) are currently the only species that fulfil its criteria for listing as susceptible to infection by the carp virus. The virus's DNA has been detected in a range of northern hemisphere freshwater fishes, a mussel, and a crustacean, but this does not necessarily indicate infection. Furthermore, international experience with the virus over more than two decades has not identified disease caused by the carp virus in any species other than European Carp, and carp hybrids, although viral DNA has been detected in numerous fish and invertebrate species. Australian testing by the Invasive Animals Cooperative Research Centre and CSIRO, with recent re-testing of Murray Cod and Silver Perch, found no evidence of infection in tested animals.

Despite the evidence supporting the virus's specificity to carp, the NCCP recommends some additional non-target species susceptibility testing before a decision is made regarding virus release. NCCP research identified that concerns regarding carp-virus species specificity were relatively common in the Australian community. Likewise, decision makers will need to know this issue has been investigated as thoroughly as is reasonably possible. Therefore, additional testing using an optimally designed viral challenge is recommended to improve confidence in the virus's specificity to carp before making decisions on virus release.

Broadscale and long-term water-quality impacts are unlikely, but impacts may occur in some habitat types: Research has identified and investigated likely impacts of decomposing carp on water quality. Water-quality impacts depend on dead-carp densities and their distribution in waterways, so water-quality research is built on carp mortality predictions generated by epidemiological modelling. Risks investigated included declines in dissolved oxygen, undesirable nutrient increases, harmful algae blooms, proliferation of disease-causing microbes, and impaired capacity to treat water. These variables are relevant for understanding the potential implications of carp kills for both ecosystem health and water use by humans and livestock.

In flowing river channels, carp decomposition is unlikely to compromise water quality beyond acceptable tolerances. However, in still or slow-flowing areas away from main channels, water quality could be reduced, especially when carp densities exceed 300 kilograms per hectare (kg/ha). Reducing high-density sub-populations by targeted physical removal prior to virus deployment could both enhance carp control success and mitigate risks to water quality by reducing the total number of dead carp resulting from disease outbreaks. Unregulated dryland rivers in the northern MDB face particular water-quality risks, as these waterways dry to isolated pools that provide drought refuges for threatened species, endure extended low- or zero-flow periods, and already experience impaired water quality. Virus-induced carp kills (with associated in-situ carcass decomposition) under cease-to-flow conditions in these systems could result in fish kills if not appropriately managed, yet detecting outbreaks and managing carp carcasses (for example, through physical collection) present particular challenges in these generally remote and sparsely populated areas.

Water treatment is unlikely to be compromised at the carp densities expected in most areas. However, water treatment and disinfection would become untenable at very high carp densities (approximately 2000 kg/ha). Carp densities of this magnitude are rare in Australian ecosystems, but could potentially occur in 'point-source' form if dead carp accumulate in small areas as a result of water currents or wind.

Proliferation of harmful bacteria, including those that cause botulism, is possible following carp kills, particularly if water quality more broadly is degraded. Outbreaks of bacterial disease have not been reported in Australia following fish kills, but this risk remains possible, and the biology of botulism outbreaks in particular makes predicting them difficult. Managing carp carcasses would provide the most effective mitigation measure against outbreaks of bacterial disease including botulism.

Carp biocontrol will have social and economic impacts: Carp biocontrol would have both positive and negative socio-economic impacts. Positive impacts would result primarily from improved aquatic ecosystem health following carp reductions. Beneficiaries of improved aquatic health include the tourism industry and a diverse range of river and waterway users, including recreational fishers.

Some stakeholder groups may experience negative impacts, or are already experiencing them in anticipation of implementation. NCCP social impact research outlines effects on commercial carp fishing businesses, tourism operators, native fish aquaculture businesses, and koi carp enthusiasts and businesses. For some stakeholder groups, negative impacts might be offset to some extent by opportunities that carp biocontrol could generate. For example, commercial fishers who target carp might play a valuable role in an integrated carp control program by fishing to reduce high-density carp populations prior to virus deployment.



Implementing carp biocontrol

The NCCP implementation strategy provides a high-level outline for virus deployment and biocontrol operations across carp's mainland eastern Australian distribution. The strategy is designed to clarify the feasibility of managing risks associated with carp biocontrol. Implementation would occur over 10 years with most activity focused on virus deployment and carcass management during the first two to three years.

National implementation objectives include:

- a. widespread reduction and suppression (for at least 5–10 years) of carp populations and the damage they cause in Australian aquatic ecosystems,
- b. management of environmental risks,
- c. management of risks to water quality for town water supply, stock and domestic water needs, irrigation, and cultural and recreational purposes, and
- d. effective and efficient virus deployment and carcass management, where the latter is required.

The NCCP implementation strategy provides national guidelines to achieve objective (a) and an approach and process to achieve objectives b to d (given these objectives will need to involve jurisdictions and more detailed planning).

Active virus deployment is critical for effective biocontrol: Deployment (if it eventually occurs) would require science, planning, coordination, and resources. Initial deployment would involve introduction of the virus into carp aggregations throughout each carp sub-population. Carp sub-populations and aggregations should be mapped prior to deployment. Sufficient numbers of infected carp would need to be introduced into each sub-population to (i) maximise initial knockdown, and (ii) enable ongoing transmission during subsequent years. Deployment during drier (but not drought) conditions that have reduced and concentrated carp populations at known aggregation locations is likely to maximise carp reductions.

Following initial deployment, infection, disease, and death is expected to move through an infected sub-population over approximately four to eight weeks, coinciding with water temperatures within the permissive range for the disease caused by the carp virus (approximately 16–28 °C) (Technical Paper 2; NCCP research project 4). Major carp kills occurring simultaneously across large geographic areas are not expected, as the demonstrated importance of physical contact as a transmission mechanism (NCCP research project 6) should ensure that the virus spreads relatively gradually through targeted sub-populations. After the initial virus deployment, ongoing strategic virus release may be required based on an adaptive management approach.

Carcass management strategies and methods could mitigate water-quality risks, but challenges remain: Numerous carcass management methods have been considered in NCCP case studies and investigations. Many strategies and methods involve strategic use of water regulation to flush, concentrate, and/or strand carcasses, thereby removing or reducing the need for manual carcass collection. However, river managers may not always have the freedom to manipulate flows specifically to benefit carp control operations. Manual carcass collection and removal will still be required at times and places where more mechanised strategies are not adequate and in-situ decomposition is likely to cause negative water-quality impacts. Manual collection of carcasses will, however, be challenging in remote areas or those where access is otherwise difficult.

Specific carcass management methods will depend on local characteristics and conditions, environmental sensitivities, river flow, and weather at the time of a carp kill. Employing an adaptive approach to biocontrol operations will promote the evolution of more effective carcass management methods as the program proceeds. Additionally, while the virus's biology indicates that it is unlikely to move rapidly or unpredictably across large areas, the possibility of unplanned outbreaks cannot be discounted, meaning surveillance will be an important component of effective carcass management strategies.

Coordinated management is necessary: Coordinated management is critical for the successful implementation of a national biocontrol program. Australia has successful operational coordination systems already in use (Incident Management Systems, or IMS). If deployment occurs, carp biocontrol will be a planned and managed event, rather than an emergency incident, but IMS can be readily adapted to the biocontrol context. Furthermore, IMS have been tested and proven through time, and are already used by all jurisdictions that would ultimately be involved in a possible carp biocontrol program.

Achieving integrated pest management: Viral biocontrol has been the NCCP's primary focus. However, best-practice pest management usually requires an integrated approach in which multiple control measures work together to reduce pest impacts. Although any carp reductions are likely to be advantageous, NCCP modelling indicates that a multi-method, integrated approach may be particularly beneficial to reducing carp impacts in very resilient, high-density carp populations (NCCP research project 4). Control approaches that could work in concert with the virus include genetic control technologies, and various forms of physical removal through harvesting. Of these two approaches, physical removal is currently the most readily applicable. NCCP research indicates that, while some genetic technologies offer potential for carp control in Australia in the longer term, considerable and ongoing investment, beyond the NCCP's scope, would be required to overcome substantial biological and logistical barriers to deployment (NCCP research project 3).



Regional case studies illustrate implementation can be effective at a cost: NCCP case studies identified regional risks, opportunities, and strategies for virus deployment and carcass management. Case studies concluded that risks could be managed by applying a range of measures and technologies with coordination across government agencies and regional stakeholders. Case-study results highlight the value of local-scale involvement in carp biocontrol planning and implementation.

Case studies identified a range of potential carcass management methods. Manual carcass removal will likely only be required at particularly sensitive sites. A case study covering the southern Murray and Murrumbidgee systems estimated costs at roughly \$190 million for a three-year virus deployment and management program. This cost estimate does not, however, include costs that may be involved in physically removing carp from high-density sub-populations prior to virus deployment.

Feasibility

Describing the feasibility of carp biocontrol using the virus requires a nuanced and qualified statement. Briefly restated, feasibility criteria are (i) effectiveness, (ii) risk identification and management, and (iii) implementation. When assessed against these criteria, results from NCCP research and investigations indicate feasibility, with qualifications. With strategic virus deployment, carp reductions of varying magnitudes and ongoing suppression appear achievable. From a risk perspective, water-quality impacts (for both ecosystem integrity and human/livestock use) appear manageable in many areas and habitat types, regional case studies have identified strategies for managing dead carp, and water treatment processes appear able to cope with all but the most extreme and unlikely dead carp loadings. To reframe these conclusions, no results have emerged to clearly indicate that further consideration of the virus as a biocontrol agent should cease.

Nonetheless, these broad indications of feasibility are subject to important uncertainties and caveats that preclude an outright and unqualified recommendation of feasibility. Some of these uncertainties could be reduced through targeted additional research, and this report includes suggestions for how this could occur (see next steps and recommendations that follow). Further investigation of the virus's specificity to carp is recommended as part of this additional research. Other uncertainties will likely be more difficult to resolve, and would need to be factored into an adaptive management framework if release eventually proceeds. Thus, while targeted further research is recommended, and could substantially improve the evidence base for decision making, it will not eliminate uncertainty or risk. Balancing these considerations, NCCP research provides sufficient evidence supporting the virus's potential as a biocontrol agent to continue with a pathway of activities to support an eventual decision on whether or not to proceed with virus release. Importantly, feasibility assessment under the NCCP has concentrated on the scientific and operational aspects of carp biocontrol; implementation costs and social and economic impacts reported here are approximate only, but will also be important considerations for decision makers.

Next steps and recommendations

If governments decide to proceed with further assessment and planning actions to support decision making on carp biocontrol the following activities are recommended.

GOVERNANCE

- Establish a national taskforce comprising state, territory, and local government representation to coordinate carp biocontrol implementation.
- Obtain Australian Pesticides and Veterinary Medicines Authority (APVMA) approval.
- Obtain other mandatory legislative approvals, including those required under the *Biosecurity Act 2015*, the *Biological Control Act 1984*, and relevant state and territory regulatory approvals.

A specific timeline for implementation is not provided as this will be determined by the Australian Government, along with state and territory governments, following their decisions about future carp biocontrol directions.

RESEARCH AND DEVELOPMENT FOR IMPLEMENTATION

The following implementation research is recommended should a decision be made to proceed towards the next assessment stages.

- Undertake additional non-target species susceptibility trials.
- Undertake field-based research aimed at understanding carp population structure and movements to inform epidemiological modelling and operational planning. This research would represent a 'zero-loss' investment, because knowledge of carp population structure would be required for any other future carp control measures, even if governments choose not to proceed with virus release.
- Undertake research on carp virus disease dynamics (particularly seasonal patterns of disease reactivation) under field conditions, or in experimental systems that simulate some of the variability found in nature. This research would enable further assessment of proposed virus release strategies and biocontrol efficacy. Within Australia, research using the virus can only take place in biosecure laboratories, so work of this nature would likely best be conducted internationally, in a location where the virus is already endemic.
- Develop methods for large-scale production, storage, and transport of the carp virus.
- Develop decision-support and mapping tools to support biocontrol operations.
- Assess the animal welfare implications of biological control using the carp virus.
- Clarify the carp virus's capacity to kill carp under saline conditions.
- Further investigate the evolution of resistance to the carp virus, including the potential role of carp-Goldfish hybrids in this evolution.
- Develop and assess ecological risk mitigation options for ephemeral dryland river systems and Ramsar wetlands including the South Australian Lower Lakes system and the associated marine system immediately outside the Murray River mouth.
- Develop and implement pre- and post-deployment monitoring and evaluation plans.

PUBLIC COMMUNICATIONS

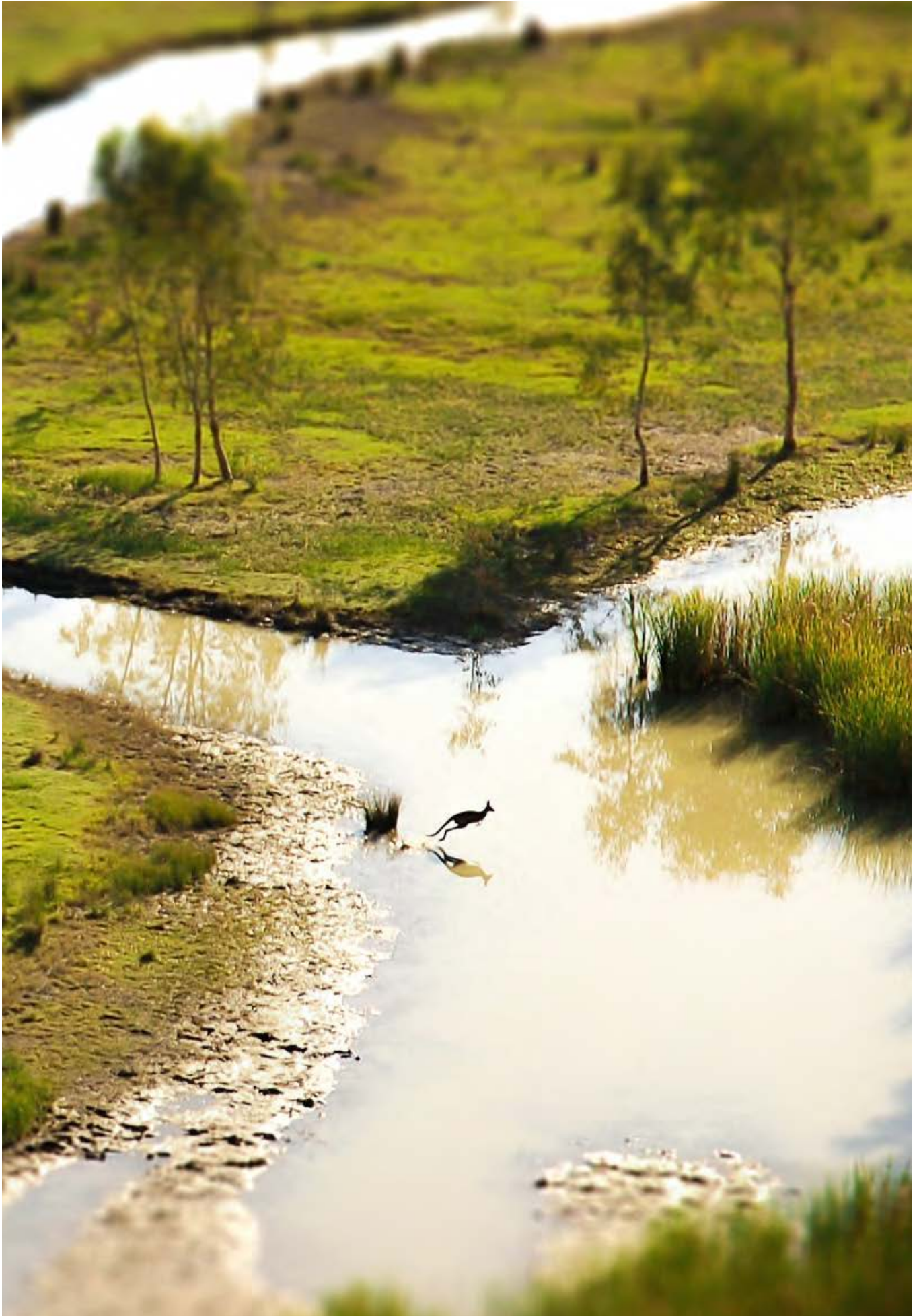
- Develop a comprehensive communications and engagement plan.
- Continue NCCP science communication through the decision-making phase.

COMMUNITY CONSULTATION

- Publish the NCCP and undertake community consultation.
- Undertake tailored consultation, in addition to that completed under the NCCP, with Traditional Owners.
- Undertake specifically designed consultation with other stakeholder groups identified by the NCCP.

STAKEHOLDER ENGAGEMENT

- Actively engage Traditional Owners in decision making and enterprise development associated with carp biocontrol.
- Engage local knowledge and stakeholders in regional implementation planning.
- Acknowledge possible stakeholder impacts, including anticipatory impacts.



1 INTRODUCTION

Introduced European Carp, or common carp (*Cyprinus carpio*, hereafter 'carp') are a serious pest in Australia's aquatic habitats, damaging aquatic vegetation, muddying water, and harming native animals through predation and competition for food. Biological control using Cyprinid herpesvirus 3 (CyHV-3, hereafter 'the carp virus', or 'the virus') offers the potential to control carp over large areas. Before proceeding with virus release, however, fundamental questions of safety for humans and non-target animals, potential impacts on water quality, and broader environmental effects demand evaluation. To address these questions, the National Carp Control Plan (NCCP), funded by the Australian Government, coordinated the most intensive investigation ever devoted to a biological control agent to inform decisions on further planning and potential release. This report summarises the results of these investigations for decision makers. The report's purpose is to provide the information needed to decide whether to proceed with planning and other activities that will ultimately inform decisions on whether or not to release the virus to control carp in Australia.

The NCCP addresses the following feasibility questions to inform a decision about proceeding towards implementation:

- a. Will biocontrol using the carp virus be effective?
- b. What are the risks associated with carp biocontrol and how can they be managed?
- c. How could carp biocontrol be implemented?

In addition to evaluating feasibility, the NCCP provides preliminary estimates of the costs and benefits of carp biocontrol and outlines an implementation strategy. The NCCP is supported by technical papers and project reports (Appendix 1). Readers seeking additional background information are directed to these resources.

This section of the report provides the background to carp in Australia and explains the carp virus's emergence as a potential biocontrol agent. Subsequent sections directly address one or more of the feasibility questions listed in points a-c. Section 2 outlines NCCP research conclusions about likely biocontrol effectiveness and risks (questions 'a' and 'b'). Section 3 provides strategic directions for implementation at the national scale (question 'c'). Section 4 illustrates how regional-scale carp biocontrol implementation could occur (question 'c'). Section 5 reports likely market and non-market costs and benefits accruing from carp biocontrol. Section 6 summarises NCCP findings to develop a feasibility statement. Section 7 outlines conclusions and recommendations for government.

1.1 A national problem

Although first introduced to Australia in the mid-19th century, carp only emerged as an environmental problem during the 1960s, when a genetic strain of carp called the 'Boolarra strain' escaped from a Victorian fish farm. The Boolarra strain's escape began approximately three decades of carp range expansion and population growth. Reasons for the Boolarra strain's success are varied, but flooding during the 1970s probably promoted carp dispersal and reproduction, while cross-breeding between Boolarra carp and genetic strains from earlier introductions may have created vigorous hybrids (see Technical Paper 1). Carp's ability to tolerate poor water quality probably also gave them a competitive advantage over native fish. Regardless of the mechanisms underlying their expansion, by the mid-late 1990s carp occupied a large area of south-eastern Australia, including most of the Murray-Darling Basin (MDB) and many eastern coastal catchments. A smaller population exists around Perth in Western Australia. Isolated populations also occurred in two Tasmanian lakes (Lakes Crescent and Sorrell). A physical removal campaign spanning more than 20 years resulted in the eradication of carp from Lake Crescent in 2007, while functional eradication of the Lake Sorrell population is imminent. The Lake Sorrell population is now strongly female-biased and many of the remaining males have a genetic disease that renders them sterile.

Carp's potential to become invasive was recognised soon after the Boolarra strain's escape, and the Victorian Government recommended carp eradication in 1962. Early control attempts included non-selective methods such as applying fish poisons to carp-affected waterways (Technical Paper 1). As carp expanded their geographic range, the focus shifted to various forms of capture and removal including netting, trapping, and community-based carp 'fish-outs'. While some of these approaches have achieved localised, short-term carp reductions, none have delivered long-term carp control over large areas (Technical Paper 1).

Definitive and concise statements about the ecological impacts of carp are difficult, because the species inhabits ecosystem types ranging from tidal subtropical upper estuaries to temperate, highly regulated dryland rivers. These varied ecosystem types will not experience the same impacts from a given carp density (Technical Paper 1). Additionally, overall carp abundance fluctuates markedly through time, as do the relative proportions of adult and juvenile carp within a given population. Carp impacts also occur with other environmental stressors, such as pollution and river regulation. All of these variables will affect the type and magnitude of impacts exerted by carp in a given ecosystem (Technical Paper 1; NCCP research project 15).

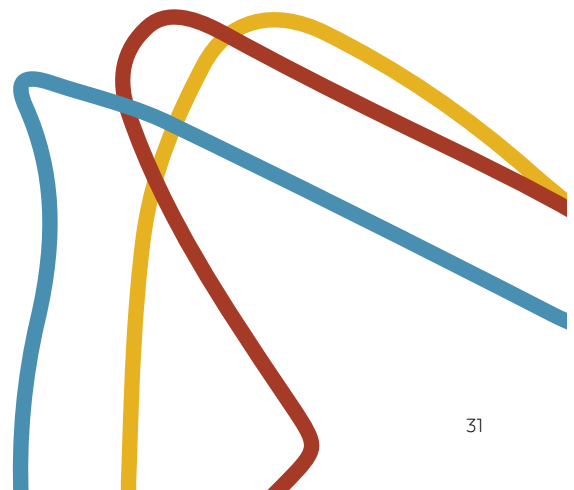
Despite this complexity, there is both scientific and anecdotal evidence that carp cause undesirable changes in at least some Australian freshwater ecosystems (see Technical Paper 1). The primary pathway by which carp damage aquatic ecosystems arises from the species' feeding style. Adult carp feed by syphoning sediment from the riverbed using their vacuum-like mouths, filtering out food items and ejecting the remaining material into the water around them. This feeding style reduces water clarity, adds nutrients to the water (potentially promoting harmful algal blooms), and destroys aquatic plants (Technical Paper 1). Carp also feed directly on small aquatic animals, causing local or regional extinction of some vulnerable species, and changing the composition of aquatic animal and plant communities. A recently recognised, but potentially important, impact is the monopolisation by carp of food resources and energy at the base of the food chain, preventing native fish population growth (Technical Paper 1). While these impacts will not occur in all places where carp occur, or at all times within a given location, they are reported in the scientific literature (Technical Paper 1). Importantly, these impacts also co-occur with other damaging processes, such as pollution, or with the legacy impacts of historical management practices (NCCP research project 15).

The concept of 'damage thresholds' (discussed in more detail in Section 2.1) provides a useful framework for understanding the ecological impacts of carp (Technical Paper 1). The concept posits that the ecological impacts of carp either manifest or intensify when carp densities (usually expressed as kilograms per hectare, kg/ha) exceed particular levels. Different ecosystem components or attributes have different damage thresholds. For example, a recent major review assessing carp impacts across the different continents and habitats in which they are invasive identified a carp density of 50 kg/ha for impacts on other fish species, 100 kg/ha for impacts on aquatic plants, and 150 kg/ha for negative impacts on water clarity (NCCP research project 4). These densities are indicative only and will vary substantially among different species and habitat types, and probably for a given species or habitat through time. Acknowledging the general and approximate nature of these thresholds, NCCP carp biomass estimates clearly demonstrate that carp densities exceed damage thresholds in many Australian aquatic habitats, indicating that carp pose real threats to aquatic biodiversity (NCCP research project 1).

1.2 The benefits of carp control

Long-term carp suppression is likely to benefit many species of aquatic flora and fauna. However, ecosystem responses to carp reduction will differ across the varied habitats comprising the species' Australian distribution. The potential for unexpected ecological consequences must also be acknowledged. For example, controlling carp might create opportunities for other invasive species that have hitherto been suppressed by carp to increase in abundance (NCCP research projects 12 and 15). Additionally, some faunal groups, such as fish-eating birds, may have come to rely upon carp as a food source. Sudden, major reductions in carp abundance could therefore result in food shortages for these species (NCCP research project 12). Such shortages could be short term, as small native fishes, the preferred food of many native predators, may increase their populations relatively rapidly in response to carp reductions. Some native invertebrates are very vulnerable to carp predation, and become locally or regionally extinct at even low carp abundances. Total carp eradication, which biocontrol will not deliver, would be required to restore populations of these species. Finally, the benefits of carp control are most likely to be fully realised when carp suppression is accompanied by action to address other, co-occurring environmental stressors.

These statements are not intended to devalue the worth of carp control; there is both scientific and anecdotal evidence that safe and effective carp control would benefit many Australian aquatic ecosystems. Improved water clarity and increased abundance of native aquatic plants and small animals have all been reported following carp control in Australian freshwater habitats. Modelling studies have also indicated that carp reduction could result in substantial improvements to native fish abundance, especially when combined with improved management of river flows. Biocontrol using the carp virus offers a potential, if partial, solution to a hitherto intractable problem.



1.3 Identifying the carp virus's potential as a biocontrol agent

Outbreaks of the disease caused by the carp virus were first recorded in German and Israeli aquaculture facilities during the mid-1990s. The virus's evolutionary origins are unclear, but it may have circulated in wild carp populations before emerging in aquaculture (Technical Paper 4).

Although currently occurring in 33 countries globally, the carp virus has never been deliberately used as a biological control agent. Disease outbreaks have instead resulted from the virus's unwanted entry to valued carp populations (including koi), or its unintended and unplanned introduction to invasive populations that are viewed as pests. Despite having caused major mortalities among wild carp in Japan, North America, and South Africa, the virus's impact on wild carp abundance in these locations is unclear. Some studies suggest relatively little impact, but data enabling comparison of carp populations before and after virus entry are scarce. Planned and deliberate introduction of the virus into carp sub-populations across the species' range is likely to have greater impact than unintentional, haphazard introduction.

International outbreaks prompted interest in the carp virus as a potential biological control agent for carp in Australia. The Invasive Animals Cooperative Research Centre initiated a research program during which CSIRO researchers studied the virus's capacity to effectively kill carp, and the potential for infections and disease to occur in species other than carp. Both avenues of research indicated that the carp virus had potential as a biocontrol agent; the virus killed a high proportion of infected carp, and appeared species-specific.

Information requirements for implementing a carp biocontrol program, however, exceed knowledge of host-specificity and laboratory-measured efficacy. Disease dynamics must be understood and potential ecological, social, and economic risks, including risks to water quality following carp kills, assessed. The Australian Government therefore funded the NCCP to develop the knowledge base required for informed decision making about biological control using the carp virus.

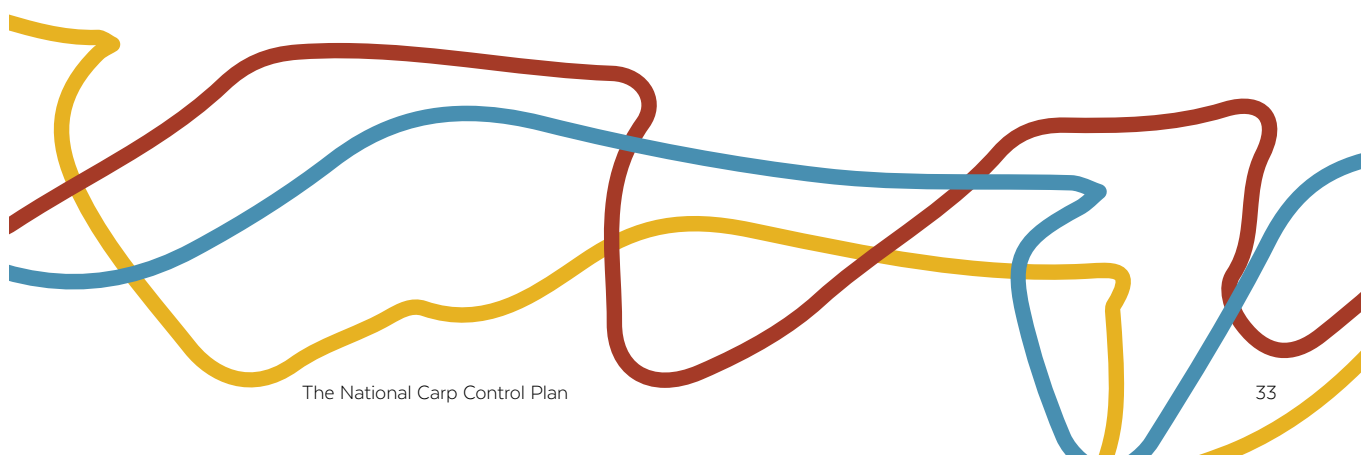


1.4 Investigating the potential for carp biocontrol in Australia

The aims of biocontrol programs typically include reduction in costs to agriculture and/or amelioration of environmental damage caused by target pests, each with attendant social and economic benefits. Regardless of the target and agent organisms and program aims, the basic value proposition for biological control usually lies in the capacity for highly specific biological control agents to spread through pest populations, providing sustained control over large geographic areas with minimal management intervention.

Because carp are an established pest inhabiting a large geographic area and attaining high population densities, a biocontrol agent targeting them needs the basic traits described above; specificity to the target species and a capacity to deliver cost-effective pest suppression across large areas. However, as the first attempt globally at viral biocontrol of a pest fish, carp control using the carp virus poses some unique challenges that differ from previous biocontrol programs targeting terrestrial vertebrates. In particular, because carp inhabit interconnected inland waterways, a viral biocontrol agent that transmits very rapidly and with high lethality among carp populations has the potential to cause major mortalities over large areas, with attendant risks to water quality as numerous carp decay in aquatic environments. Australia's only other vertebrate biocontrol programs — those targeting rabbits using the myxoma virus (MYXV) and rabbit haemorrhagic disease virus (RHDV, 'calicivirus'), and feral cats on Marion Island using feline panleukopenia virus (FPLV) — did not face this challenge because the target species were terrestrial and their decomposition posed few or no environmental risks. Carp biocontrol therefore demands a balance between effective, ongoing carp suppression at the continental scale and transmission dynamics that do not result in unmanageable densities of dead and decaying fish following initial deployment into high-density populations.

NCCP research indicates that the carp virus possesses the attributes required of a biocontrol agent to control carp. Modelling the virus's likely impacts on carp populations indicates that self-propagating transmission of the virus across large geographic areas, with subsequent widespread, major carp mortalities is unlikely. Rather, the virus is likely to only cause major carp mortalities when two factors — water temperature suitable for viral infection and disease in carp, and carp densities sufficient to enable effective transmission — co-occur (Technical Paper 2). Conditions conducive to outbreaks of the disease caused by the carp virus are most likely when carp gather to spawn in spring and early summer (depending upon latitude), meaning that the timing and location of kills may be relatively predictable. These traits provide an opportunity to effectively manage the water-quality risks associated with carp kills (Technical Paper 3). Because carp virus transmission is substantially reliant on direct physical contact between infected and susceptible carp, virus deployment will likely require more active and sustained ongoing releases than some other biocontrol agents (e.g. MYXV and RHDV used for rabbit biocontrol) to ensure effective carp suppression.

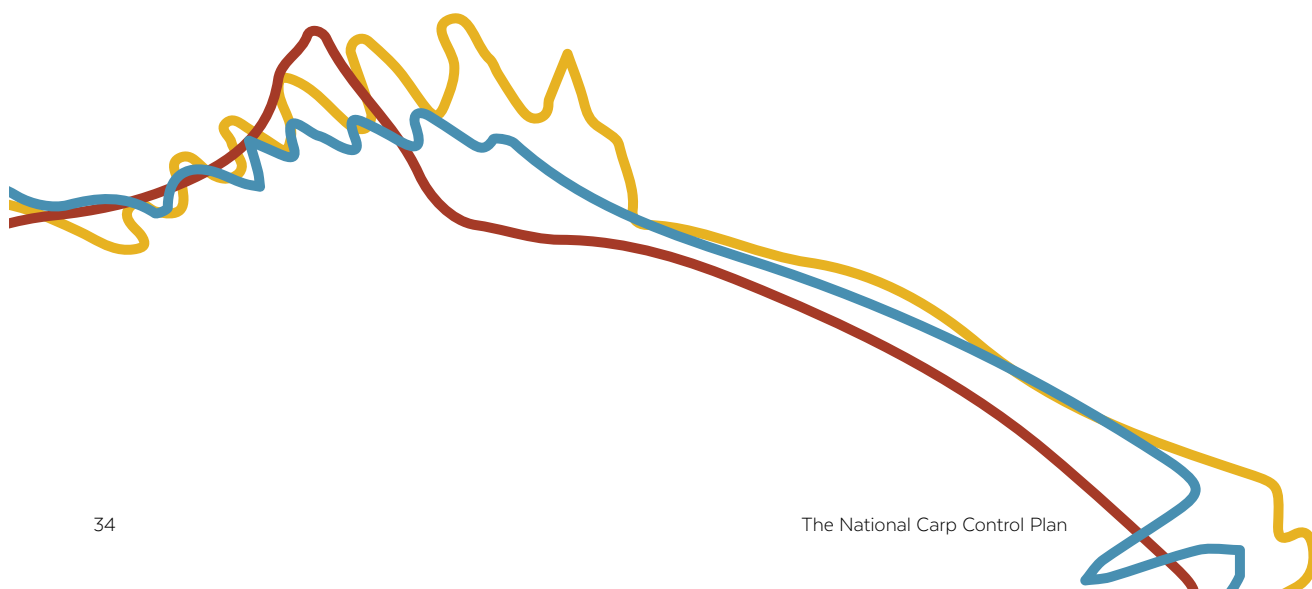


1.5 NCCP outline

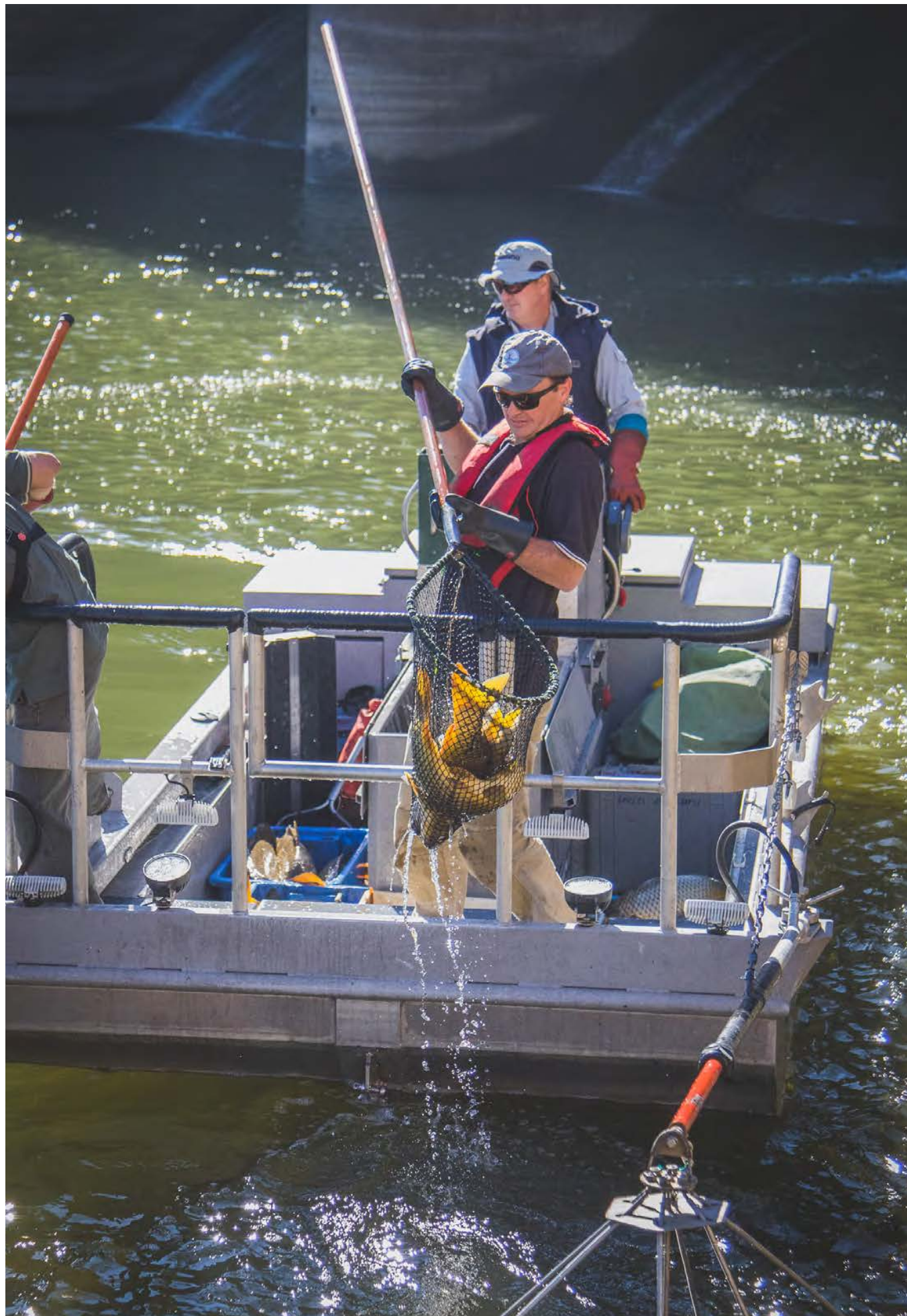
Table 1 outlines to structure of the NCCP and the associated supporting documents.

Table 1: National Carp Control Plan (NCCP) content summary.

NCCP section or supporting document	Title	Subject matter
The National Carp Control Plan		
	Executive summary	Provides a stand-alone summary of the NCCP's underlying rationale, objectives, scope, methodological approaches, and conclusions.
1	Introduction	Summarises the introduction of carp to Australia and ensuing environmental impacts. Introduces Cyprinid herpesvirus 3 (CyHV-3, 'the carp virus') and describes its potential as a biocontrol agent for carp in Australia. Explains the NCCP's role in assessing the feasibility of carp biocontrol.
2	NCCP research	Summarises NCCP research approaches and key results related to effectiveness and risks.
3	Implementation strategy	Outlines how carp virus biocontrol could be implemented at a strategic national scale.
4	Regional case studies	Integrates information from NCCP research and implementation planning in specific regional settings, providing concrete illustrations of the manner in which carp biocontrol could be implemented and managed in particular regions.
5	Costs and benefits of carp control	Integrates key results from, and explains implications of, market and non-market cost-benefit analyses conducted under the NCCP.
6	Feasibility assessment	Defines criteria for assessing carp biocontrol feasibility, provides a summary feasibility assessment based on information from research and planning, and delivers a feasibility statement.
7	Conclusion and recommendations	Outlines steps for governmental consideration if a decision is made to proceed towards carp biocontrol implementation. Recommendations relate to regulatory approvals, research, planning, socio-economic impacts, or community engagement.



NCCP section or supporting document	Title	Subject matter
Supporting documents		
Appendix 1	NCCP research	Outline of NCCP research approach and results.
Appendix 2	Monitoring and evaluation plan	Scope for monitoring and evaluation of carp virus biocontrol.
Technical Paper 1	Carp biocontrol background	Supports the NCCP introduction by providing contextual information on the ecological health of Australian rivers, carp ecology and introduction to Australia, carp control measures that have previously been proposed, trialled, or attempted, the legal status of carp in Australian states and territories, and background to biological control.
Technical Paper 2	Epidemiology and release strategies	Supports NCCP research and risk summaries (section 2) by explaining the epidemiological modelling that underpins predictions about the impacts of virus-induced disease impacts on carp populations.
Technical Paper 3	Carp biocontrol and water quality	Supports NCCP research and risk summaries (section 2) by explaining potential dead carp impacts on water quality. The paper summarises NCCP research and literature reviews addressing dissolved oxygen and nutrient concentrations, risk of dead carp fuelling harmful algal blooms, potential dead carp impacts on water treatment processes, and the risk that decomposing carp could promote growth of disease-causing bacteria, including those responsible for botulism.
Technical Paper 4	Carp virus species specificity	Supports NCCP research and risk discussions (section 2) by summarising and explaining research investigating the potential for the carp virus to infect species other than European Carp.
Technical Paper 5	Potential socio-economic impacts of carp biocontrol	Supports the socio-economic risk discussion (section 2) by summarising NCCP research on the potential social and economic risks posed by carp biocontrol, explaining implications for biocontrol planning and implementation, and proposing risk mitigation options.
Technical Paper 6	Implementation	Describes an implementation pathway for carp biocontrol.
Technical Paper 7	NCCP engagement report	Report on NCCP stakeholder engagement including workshops and web-based feedback.
Technical Paper 8	NCCP Murray and Murrumbidgee case study	Case study for virus deployment and carcass management for the Murray and Murrumbidgee regulated systems.
Technical Paper 9	NCCP Lachlan case study	Case study for virus deployment and carcass management of the Lachlan catchment.



2 NCCP RESEARCH

The NCCP has undertaken a broad-ranging research program including 19 peer-reviewed research projects and five planning investigations including regional case studies (see Appendix 1). The NCCP Strategic Research and Technology Plan 2017-19 provided the blueprint for design and planning of this research program. The Research and Technology Plan was developed shortly after the NCCP began (in early 2017), and provided a framework for identifying strategic research needs to inform a potential carp biocontrol program. The Research and Technology Plan identified three major themes (Environment, Communities, and Informing Possible Implementation), with research priorities identified under each theme. These priority areas guided development of research projects, with applications for research generally sought by select tender. The Strategic Research and Technology Plan was reviewed and endorsed by the NCCP Science Advisory Group (SAG). All NCCP research projects are listed in Appendix 1 together with a more detailed discussion of research program formulation and governance.

Most NCCP research is necessarily theoretical, requiring complex modelling of carp populations, the environments they inhabit, and the interplay between carp and virus (see Appendix 1). NCCP research therefore contains assumptions which are explained next.

A continental-scale carp biocontrol program would encompass many different aquatic habitats spanning a large geographic area. The ecological complexity entailed by this large and diverse control area means that some uncertainties remain. This section describes these uncertainties and their implications.

2.1 Effectiveness of the carp virus

Effective carp biocontrol needs to initially reduce existing carp populations and maintain suppression in the longer term. Three NCCP research projects provided knowledge essential to assessing effectiveness. First, the foundational knowledge about the target species' abundance, distribution, and population dynamics that underlies any pest control initiative was supplied by carp biomass estimation research. Biomass estimates were static 'snapshots in time' for the total weight of carp and its distribution across the various habitats comprising the species' eastern Australian distribution over spring and summer 2017-18. Second, a carp population model provides the capacity to project these static biomass values forward in time so that contemporary population estimates will be available in future years. Third and finally, epidemiological modelling integrated knowledge about carp populations and carp virus biology to predict the virus's impacts on Australian carp populations (see Technical Paper 2 for detailed discussion). Together, these projects provide the primary knowledge base for assessing the carp virus's likely effectiveness as a biological control agent.

Other NCCP research also relevant to understanding biocontrol effectiveness, or that generated data or information for use in the three studies described above, includes development of tools and methodological approaches to study genetic resistance to the carp virus (NCCP research project 7), and work clarifying the relative importance of different virus transmission pathways (NCCP research project 6). Results from these projects feed into epidemiological modelling by either testing key assumptions regarding transmission, or enabling ongoing assessments of efficacy if the virus is eventually released.

Assessing the likely efficacy of carp virus biocontrol is largely a question of applied epidemiology. Therefore, a brief explanation of the approach used for the NCCP epidemiological modelling is warranted. Readers seeking greater detail are directed to Technical Paper 2, and NCCP research project 4 (the epidemiological modelling project report).

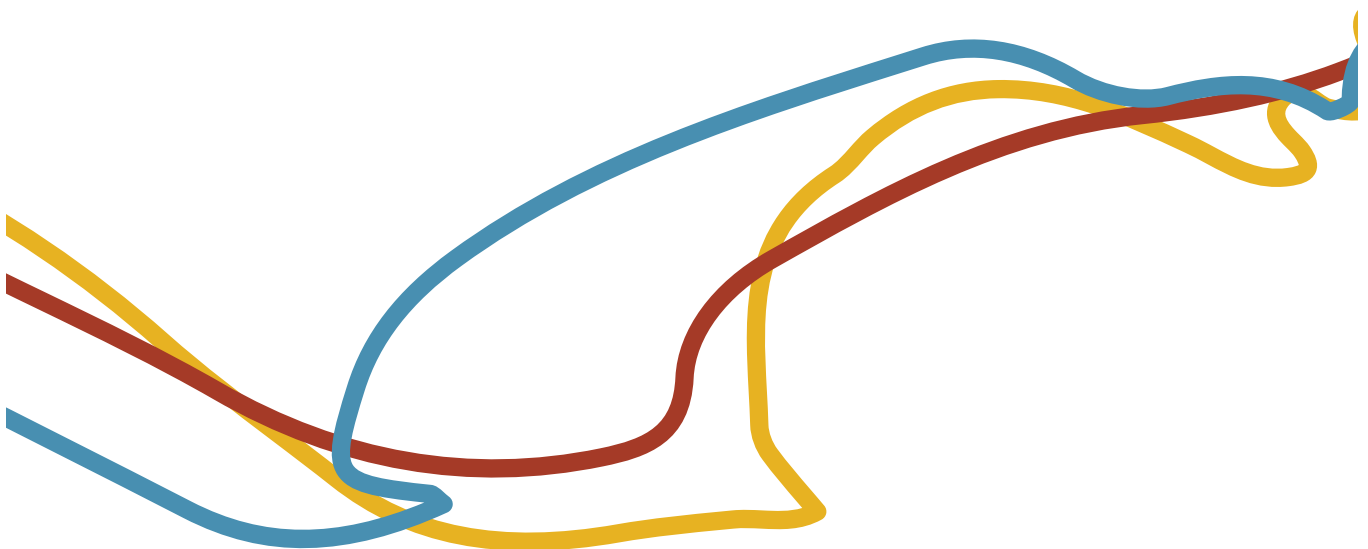
Although referred to for convenience throughout this document as ‘epidemiological modelling’, the study developed four interlinked models (for hydrology, carp habitat suitability, carp demography, and carp virus epidemiology). This approach was chosen because the key traits of Australian carp populations that would influence the magnitude and extent of viral knockdown change markedly through time and across the landscape in response to the major environmental variations typical of inland Australian waterways. These environmentally driven fluctuations in carp populations are often referred to as ‘boom and bust cycles’. While major changes in carp abundance are the most obvious feature of these cycles, they also exert more subtle demographic influences, such as changes in the relative abundance of different age classes and the population’s inherent capacity to rebuild following reductions. These demographic traits will influence the population-level impacts of any future carp biocontrol program. The carp virus itself is also subject to environmental constraints, notably in relation to the water-temperature range (16–28°C) under which the virus can infect carp and cause disease.

Understanding the interplay between the demography of the host population(s), the environmental tolerances of the pathogen, and the environmental context against which they will interact is relevant to most infectious diseases, but is particularly pertinent to carp biocontrol because inland Australian rivers and their carp populations are so dynamic. Epidemiological modelling under the NCCP explicitly recognised the linkages between population characteristics, environment, and disease outcomes by using multi-model approach. The four models were developed and integrated for five catchments; the Lachlan River (NSW), the mid Murray River (Hume Dam to Wentworth, NSW), the lower Murray River (Wentworth, NSW, to Goolwa, South Australia), the Glenelg River (Victoria), and the Moonie River (Queensland). Collectively, these catchments represent much of the diversity in carp habitat found throughout the species’ Australian distribution. A brief description of each model and its application follows.

1. The hydrological model reconstructed river flow, water temperature, waterway inundation, and connectivity. These four traits were identified as the key environmental drivers for the distribution of adult and sub-adult carp (flow, temperature) and larvae and juveniles (inundation and connectivity, which facilitate spawning) at an expert workshop funded by the Invasive Animals Cooperative Research Centre in 2014. Other factors (plankton productivity, dissolved oxygen levels and salinity) were also identified as affecting habitat suitability for carp. High-resolution data were not available for these factors across all catchments, so where necessary, surrogate variables were used or the parameter was left as a non-informative model node that could be populated in future if data become available.
2. The habitat suitability model built on the reconstructed hydrological datasets from (1) to classify the habitat suitability of each river reach or waterbody for both adult/sub-adult and larval/juvenile carp for the full study period (1990–2017 for most catchments). Habitat suitability rankings were the primary output from this modelling, but biomass density estimates (kg of carp per hectare) were also derived using conversion factors developed in consultation with freshwater ecology experts. The resulting density estimates enabling cross-validation of the modelling against carp densities estimated independently by the NCCP carp biomass project (NCCP research projects 1 and 2), with the two sets of estimates in close agreement. These habitat-derived carp density estimates (i.e. kg of carp per hectare) were then used as input in the carp demography model.

3. The carp demographic model used the carp density estimates described in point 2. Treating the density estimates as inputs to a demographic projection model meant that key processes and parameters influencing carp populations (e.g. density dependence, environmental carrying capacity) could be modelled. This approach would not have been possible under the simpler approach of deriving carp abundance from density estimates using average weights. As part of the demographic modelling, the structure of carp metapopulations (population groups that may join with, or be separated from each other through time by environmental or behavioural drivers) was also refined. Demographic modelling enabled reconstruction of carp metapopulations featuring six life-history stages (eggs, larvae, early young-of-the-year, late young-of-the-year, sub-adults, and adults). In turn, these reconstructions enabled determination of baseline population sizes for each catchment throughout the study period (which, as previously mentioned, was 1990–2017 for most catchments). Baseline population sizes are important, because they provide a point of reference against which the impacts of a possible carp biocontrol program could be measured.
4. The epidemiological modelling adapted an SEIR (Susceptible–Exposed–Infected–Recovered) infectious disease transmission model by replacing the ‘Recovered’ class with two classes – latently infected (L) and recrudescence (Z)—reflecting the carp virus’s disease dynamics (see Technical Paper 2 and NCCP research project 4 for further discussion of latency and recrudescence). Integrating the epidemiological model and the demographic model enabled exploration of the effects of different epidemiological assumptions on carp mortality and population suppression.

Results from the epidemiological modelling described earlier were considered in terms of the potential for the predicted carp reductions to reduce the environmental damage caused by carp. This approach is consistent with the concept that pest control should aim to reduce the damage caused by pest species – killing pests even in very large numbers may deliver relatively few benefits if population density remains high enough to continue causing damage (NCCP research project 4). Studies evaluating the environmental impacts of carp across the different continents and habitat types in which they are invasive have identified some general ‘threshold densities’ above which carp damage manifests or intensifies (Technical Paper 1). Different ecosystem components or attributes have different damage thresholds. For example, a recent major global literature review identified a carp density of 50 kg/ha for impacts on fish species, 100 kg/ha for impacts on aquatic plants, and 150 kg/ha for negative impacts on water clarity (NCCP research project 4).



These general 'one size fits all' damage thresholds for entire groups of species (e.g. all fish), or variables such as water clarity are indicative only, and will vary substantially among ecosystems, and potentially for a given ecosystem through time (Technical Paper 1). Furthermore, these thresholds have been developed by considering carp impacts across different ecosystems and continents. While Australian studies were included in broader analyses by scientists estimating carp-impact densities, these threshold densities were not developed specifically for Australian aquatic habitats.

Acknowledging the desirability of a more advanced understanding of damage thresholds for Australian species and ecosystems (see Appendix 2), the concept has still been useful in considering the likely effectiveness of carp biocontrol. Furthermore, carp damage thresholds of varying magnitudes almost certainly *do* exist – to provide an extreme example, some Australian freshwater snail species become locally extinct in the presence of carp at any density, and therefore effectively have a damage threshold of 0 kg of carp per hectare (Technical Paper 1). Other species and ecosystem characteristics likewise probably have their own damage thresholds.

Despite the use of damage thresholds in this plan as a concept for benchmarking potential outcomes for carp biocontrol in different areas, any reduction in carp density may be beneficial. Even carp reductions that do not force populations below a threshold value may still free resources for use by other species and provide a foundation from which to leverage other control measures.

Other NCCP research considered alternative control methods to complement the virus and to clarify the relative value of carp virus biocontrol over other methods. One project evaluated the potential utility of genetic biocontrol technologies (NCCP research project 3) and another the effectiveness of harvesting or manual carp control approaches (NCCP research project 8). Key results and implications of effectiveness-related research under the NCCP are described next.

RESEARCH CONCLUSIONS – EFFECTIVENESS

- Over summer 2017-18, total carp biomass for eastern Australian was approximately 205,000 tonnes (NCCP research project 1). As a result of necessary simplifying assumptions in the modelling, biomass is likely underestimated (NCCP research project 1). These underestimates are particularly relevant given strong and persistent La Niña conditions in the years immediately preceding publication of the NCCP.
- Population modelling indicates that carp biomass will change markedly in response to climatic drivers (NCCP research project 2). In particular, higher flows, especially those that inundate floodplains, typically promote carp population growth. A 'worst-case' scenario for carp abundance, involving three consecutive years of flooding across carp's entire Australian range, could result in a total carp biomass of just over 1 million tonnes (NCCP research project 2).
- Of the total carp biomass, a greater proportion is contained in waterbodies (e.g. lakes, reservoirs etc) than in rivers (see Figure 1) (NCCP research project 1).
- Planned virus release is unlikely to cause major, uncontrolled carp mortalities over large geographic areas (i.e. there will be no 'Carpageddon' scenario). Rather, large carp kills are only likely during spring and early summer, and in places where carp school densely (aggregate) prior to spawning (Technical Paper 2).

- Major kills involving numerous adult carp are only likely in the year of initial virus release, and potentially in the following one or two years. After this, the virus is expected to continue suppressing carp numbers, but mortalities should consist mainly of small juvenile carp, whose carcasses are likely to be less obvious in the environment (Technical Paper 2; NCCP research project 4).
- The degree to which the virus suppresses carp populations will differ both through time and from place to place. At times and places where carp populations are less resilient (e.g. during droughts, or in habitats that are inherently less suitable for carp), the virus could reduce carp populations by 60–80%. At times and places where carp populations are more resilient, populations could be reduced by around 40–60%. Sustained carp suppression could last at least 10 years, but the emergence of genetic resistance and/or herd immunity remain uncertainties.
- NCCP research has identified the tools and approaches needed to investigate the evolution of resistance to the virus among Australian carp. Targeted further work assessing the development of resistance (including the potential role of carp–Goldfish hybrids in this development) is recommended.
- Biocontrol is expected to reduce carp population densities below the intermediate damage threshold of 100 kg/ha across extensive areas of Australia’s inland waterways (Technical Paper 2; NCCP research project 4). In some areas with very high carp densities, biocontrol alone may not be sufficient to reduce populations below theoretical damage thresholds. Targeted intensive harvesting prior to virus deployment is recommended for these areas, and will also serve to reduce the total biomass of dead carp ultimately resulting from viral disease (NCCP research project 4). In other locations where carp populations may already be below damage thresholds, deliberate release of the carp virus may not be necessary. Damage thresholds are used here as a general guide, acknowledging that development or refinement of threshold values tailored specifically to Australian aquatic ecosystems is desirable.
- The modelled impact of the virus on carp explicitly recognises Australian carp populations’ propensity for large fluctuations in abundance (‘booms and busts’), and indicates that the virus will continue to suppress carp populations even at the peak of ‘booms’. That is, the virus’s suppressive effects on carp populations will be moderated but not overwhelmed by conditions that encourage high carp abundance.
- A limited review of genetic biocontrol technologies identified the Trojan Y Chromosome approach as the technique most applicable to carp in Australia (NCCP research project 3). However, considerable technical and logistical barriers would need to be overcome before this technology could be deployed as a continental-scale carp control measure (NCCP research project 3). Notably, implementing Trojan Y would require a multi-decade commitment to breeding and stocking carp carrying the Trojan Y genetic construct (NCCP research project 3).
- A combined literature review and carp population modelling study indicated that physical removal has little capacity to provide sustained, continental-scale carp suppression if used as a stand-alone control measure (Technical Paper 1; NCCP research project 8). Similarly, the carp virus, if deployed in isolation from other measures, is unlikely to reduce high-density carp populations, such as those in the lower Murray River, below the intermediate damage threshold of 100 kg/ha (although even reductions that do not push carp abundance below this threshold may be beneficial). However, using the two approaches together, with targeted physical removal reducing carp abundance prior virus deployment, has considerable potential to suppress resilient, high-density populations that are otherwise very difficult to control (NCCP research project 4).

IMPLICATIONS FOR FEASIBILITY

- Implementing a biocontrol program using the carp virus is expected to require active, targeted virus deployment into pre-identified carp sub-populations under conditions appropriate for infection and disease.
- Viral biocontrol will provide greater suppression, over longer time periods, at times and places with less resilient carp populations (i.e. reduced capacity to 'bounce back' following population reduction). Virus release strategies have been designed to target these opportunities for increased impact.
- While any reduction in carp density brings potential ecological benefits, optimising suppression (and hence outcomes) across the species' entire range is likely to require a multi-method approach (NCCP research project 4). In particular, NCCP modelling indicates that targeted physical removal prior to virus deployment will optimise suppression in high-density carp populations. Assessing biocontrol feasibility was the NCCP's primary focus, meaning detailed assessment of a multi-method, integrated approach was beyond the program's scope. Nonetheless, the desirability of such an approach in at least some parts of carp's Australian range has planning and resourcing implications that will need to be more completely assessed if governments decide to proceed towards implementation.
- Genetic biocontrol technologies, and particularly the Trojan Y Chromosome approach, are potentially applicable to carp in Australia, but substantial biological and logistical challenges would need to be overcome prior to implementation, requiring considerable investment.



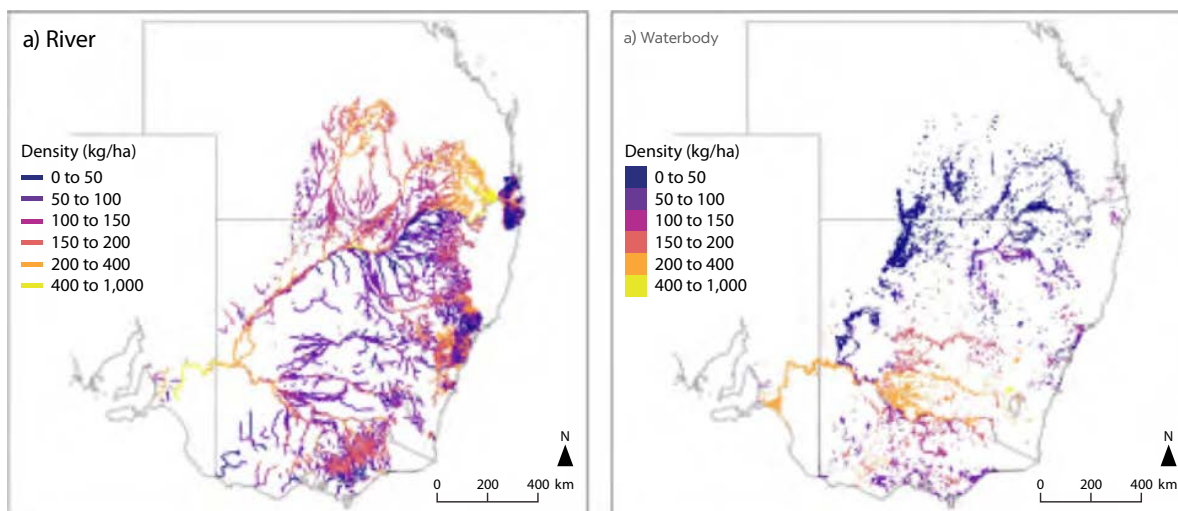


Figure 1: Density and distribution of carp in eastern Australia during spring/summer 2017-18, based on carp biomass estimation and mapping conducted under the NCCP. Carp also occur in some Western Australian coastal catchments.

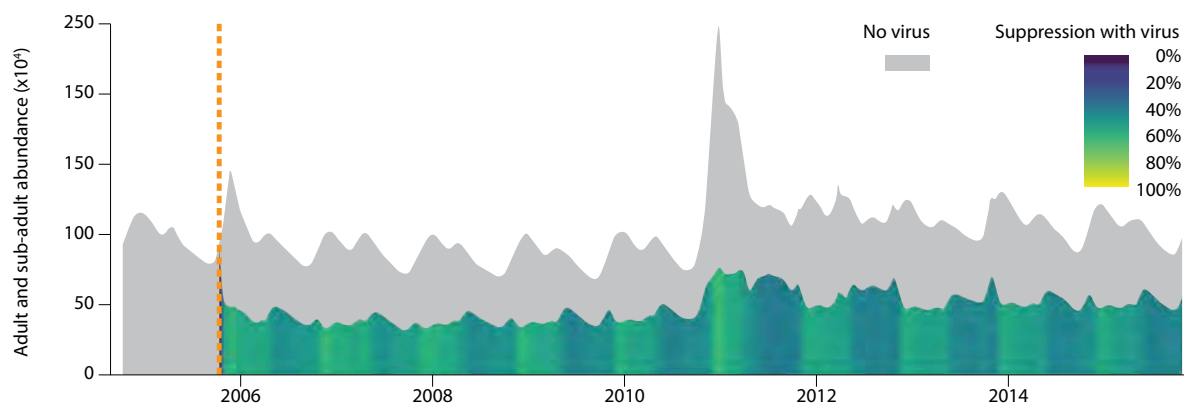
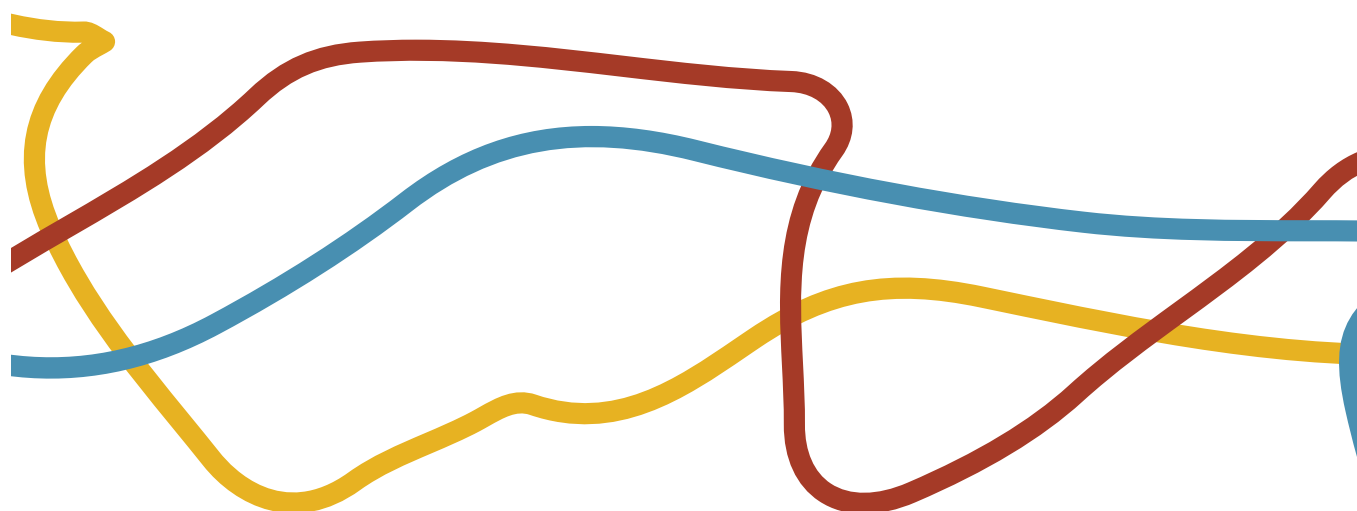


Figure 2: Modelled release of the carp virus into the mid-Murray River in 2000, assuming recrudescence and reasonable transmission. The shaded grey area represents carp populations in the absence of virus release.



KEY ASSUMPTIONS

Some key assumptions underpinning the NCCP epidemiological modelling and the consequences of those assumptions underlie the NCCP epidemiology conclusions as shown in Table 2.

Table 2: Key assumptions of the carp virus's impacts on Australian carp populations.

Assumption	Confidence that assumption is correct	Consequences if assumption is incorrect or inaccurate
Transmission primarily relies on physical contact between infected and susceptible carp. While other transmission pathways for the virus exist (e.g. infection of susceptible carp when they touch or ingest virus floating in the water) exist, experimental evidence from the NCCP and the broader scientific literature indicate that transmission through the water is likely to be relatively less important than physical contact between carp.	High. An NCCP experiment (NCCP research project 6) designed to test the relative importance of two transmission pathways (water-borne and physical contact between carp) confirmed that the latter is likely to be considerably more effective than the former. Transmission through the water can occur, but, in this experiment, the viral concentrations required to cause infection via this pathway were rarely achieved, even when diseased carp were confined in small (40 litre) volumes.	Variable depending on circumstances such as carp aggregation and water temperature, but overall carp mortalities would likely be greater if transmission through water is more effective than expected. If waterborne transmission occurred across long distances, carp kills could occur in unexpected locations, but this is unlikely. Nonetheless, the possibility of outbreaks in unexpected locations cannot be discounted. Such outbreaks could result from long-distance movement by latently infected carp, or from movement of infected carp by either humans or predatory animals/birds.
Direct physical contact between carp is frequent during spawning. The modelling assumes that, during spawning season, direct physical contact between carp occurs frequently.	Medium. While frequent physical contact among carp engaged in spawning behaviour is intuitively likely and based on well-understood reproductive biology, there are no data quantifying this.	The predicted strong seasonality of outbreaks may not be observed. If this assumption is incorrect, planning for deployment will be more difficult.
Latent infection with subsequent reactivation. The modelling assumes that carp surviving initial infection with the virus will develop a latent (i.e. dormant) infection that can be reactivated under suitable conditions, thereby infecting other carp. This reactivation of latent infections leading to disease – called 'recrudescence' – is one of the most important assumptions underlying the predicted impacts of viral disease on carp populations.	Medium. Latent and recrudescence carp virus infections are reported in the scientific literature. Additionally, results from an NCCP experiment supports the existence of latency and recrudescence over short time periods under laboratory conditions and with juvenile carp. Confirmation of latent carp virus infections with subsequent temperature-induced recrudescence, over longer time periods, in adult carp, and under variable environmental conditions (i.e. representing natural environments) is desirable.	If latent infections with subsequent reactivation do not occur, or if herd immunity means that they do occur, but do not cause substantial mortality, the virus's capacity to suppress carp populations in the medium to long term (i.e. 5-10 years) will be greatly diminished. The scenario would be one of a single major disease outbreak followed by rapid population recovery.

Assumption	Confidence that assumption is correct	Consequences if assumption is incorrect or inaccurate
No pre-existing resistance among Australian carp.	Medium. Preliminary work indicates that the genes conferring resistance to the carp virus are not present in Australian carp populations. However, this research was exploratory, and confirmation is desirable.	Viral effectiveness would be reduced, by an amount corresponding to the nature and prevalence of the resistance-conferring genes.
Viral transmission ceases completely outside permissive temperature range (below 16 °C and above 28 °C).	Medium. Carp maintained in a laboratory at 11 °C did not produce infectious virus, supporting this assumption (Technical Paper 2). Nonetheless, fish immunology is complex, and the different processes that could ultimately lead to a carp dying from the disease caused by the virus (i.e. an infected carp secreting virus, a susceptible carp becoming infected, then developing disease and dying) will all proceed at different rates as temperatures change. If new scientific knowledge documenting temperature effects on secretion, transmission, and survival emerges, this can be incorporated into the modelling.	Transmission under temperature conditions that don't allow disease development could facilitate emergence of population-level immunity to the virus.

UNCERTAINTIES

- To effectively initiate outbreaks, infectious carp will likely need to participate in aggregations to ensure high contact rates between infectious and susceptible individuals. Yet, carp aggregations can be transient, sometimes lasting only a day or two before dispersing. Ensuring that infectious carp participate in aggregations could therefore be challenging. Virus deployment strategies based on releasing latently infected carp prior to the spring/early summer spawning period and allowing them to join aggregations naturally could help to overcome this challenge. Both the broader scientific literature and an NCCP laboratory experiment (NCCP research project 5) indicate that latently infected carp may experience temperature-induced reactivation of their infections, but further investigation is recommended.
- NCCP research project 5 was a short-term, laboratory-based study using juvenile carp. Patterns of recrudescence and onward infection over longer timeframes, in adult carp, and in the more variable and diverse environmental and temperature conditions characteristic of natural ecosystems could vary from those reported in this experiment. Furthermore, carp with a recrudescing infection could potentially experience behavioural changes that alter the likelihood of contact with susceptible individuals. Given these considerations, additional research assessing latency and recrudescence in adult carp, over longer timeframes, and under conditions more typical of a natural ecosystem is desirable. Even this additional research will not provide a complete understanding of carp virus disease dynamics, emphasising the importance of detailed and thorough post-release monitoring. Planning for a second year of virus deployment also mitigates against these uncertainties to some extent by providing a second opportunity to initiate outbreaks.

- Carp populations could develop herd immunity, reducing modelled effectiveness of the virus (Technical Paper 2).
- Some uncertainty remains about the role that carp-Goldfish hybrids could play in the evolution of resistance following virus release. Hybrids of European Carp can be infected by the carp virus, but are much less likely to develop serious disease than are 'pure' (i.e. non-hybrid) carp. Following a virus release, this relative invulnerability to disease could bestow a selective advantage on hybrids, potentially leading to their dominance in the population. However, the evolutionary fitness of carp-Goldfish hybrids and their potential role in the emergence of resistance remain knowledge gaps. NCCP research project 7 has developed genetic tools that could help to reduce this uncertainty.

2.2 Risks associated with carp biocontrol

Direct risks associated with carp biocontrol centre on the potential for decaying carp to degrade water quality, with a range of negative consequences. The other main direct risk is for carp virus impacts on non-target species. Secondary ecological risks are also described in the following sections.

2.2.1 Water-quality risks

Decomposing carp have the potential to negatively affect water quality. Most notably, decomposition can deplete dissolved oxygen, stressing or killing gill-breathing aquatic organisms (Technical Paper 3). Decomposition also releases nutrients and ammonia that can respectively fuel harmful algal blooms or are toxic to aquatic life. In combination, decaying carcasses, low or no dissolved oxygen, and algal blooms could potentially cause 'cascades' of negative impacts, including severe oxygen depletion and proliferation of disease-causing bacteria (Technical Paper 3). Modelling and risk assessment under the NCCP have investigated the likelihood that these damaging processes (termed 'exposure pathways') and their negative consequences ('risk assessment endpoints') could emerge following the virus's deployment as a biocontrol agent for carp in Australia (NCCP research projects 9 and 15).

RESEARCH CONCLUSIONS – RISKS

- Where carp densities are below approximately 300 kg/ha, and the water is flowing, key water-quality parameters are unlikely to be seriously impaired (Technical Paper 3). These conditions tend to prevail in most of the regulated river channels of the southern MDB, but are dependent upon broader climatic regimes (e.g. flows reduce or cease during drought) (Technical Paper 3). For perspective, Figure 1 illustrates the distribution of carp biomass during the summer of 2017-18.
- Where carp densities exceed approximately 300 kg, and the water is still or slow-moving, there is potential for low dissolved oxygen conditions and harmful algal (cyanobacterial blooms) to develop (Technical Paper 3). These conditions are most likely to prevail in waterbodies that are disconnected from flowing river channels (e.g. wetlands, lakes, reservoirs etc), and in unregulated rivers that cease to flow and dry to disconnected pools during dry periods (Technical Paper 3).
- Carp kills during dryer conditions will generally pose greater risks to water quality because dead carp are concentrated into a smaller total area (NCCP research projects 9 and 15). Conversely, the virus is likely to reduce carp populations most effectively if released during a relatively dry (not drought) period when carp are concentrated into smaller areas and not undergoing strong population growth (NCCP research project 4). This tension between protecting water quality and maximising carp reductions could be managed through careful implementation planning and management.

IMPLICATIONS FOR FEASIBILITY

- Initial virus deployment should occur during a period of low to moderate carp population density, thereby reducing the likelihood of high dead carp loadings that could compromise water quality.
- Initial virus deployment should occur during a year in which sufficient flow is available to dilute carp decomposition products and aid water-column mixing (noting that river managers may not always be able to manipulate flows specifically to benefit carp control).
- Main river channel habitats are unlikely to experience negative water-quality impacts following carp kills, whereas shallow, off-channel habitats and unregulated dryland rivers may, particularly where carp densities exceed 300 kg/ha.
- In some of Australia's highest-density carp populations, targeted harvesting before virus deployment may enhance carp suppression (NCCP research project 4). Reducing carp density before virus release could also mitigate water-quality risks in areas where carp biomass is high.
- In higher-risk habitats, two important risk mitigation options (manual collection of carcasses and use of water releases to flush away dead carp) are difficult or impossible to implement. There is consequently an argument for restricting planned virus release to the southern, regulated portion of the MDB where carp populations tend to be high and opportunities to use flow to aid carcass collection or flushing in some locations are increased. However, the risk remains that the virus would disperse, either by long-distance movement of latently infected carp, or through human agency, beyond the targeted release areas to locations where negative water-quality impacts are more likely. Therefore, if release proceeds, planning will need to incorporate surveillance and rapid-response measures across carp's mainland eastern Australian distribution, focusing on off-channel areas with carp biomass of 300 kg/ha or greater. Implementing such measures in remote areas, or where access is otherwise difficult, presents logistical challenges requiring adequate resourcing.
- The timing of initial virus deployment would need to be carefully planned to achieve an optimal balance between biocontrol effectiveness and risk management. Acknowledging that rainfall and flow will vary among catchments during any given year, this balance is most likely to be attained if initial deployment occurs under moderate flow conditions (i.e. neither flooding with full wetland inundation, nor drought), and when climatic conditions in the years preceding release have produced relatively low carp populations. Care will also be needed to ensure that virus-induced carp kills do not coincide with 'blackwater' events.

KEY ASSUMPTIONS

- NCCP water-quality modelling uses dead carp densities derived from the NCCP carp biomass and epidemiological modelling projects. Modelled water-quality impacts therefore rest on the fundamental assumption that these two projects' conclusions are approximately correct.
- The water-quality impacts of extreme dead carp densities were also modelled to understand likely impacts on water quality if dead carp densities are much higher than predicted. These investigations confirmed that very high dead carp densities seriously compromise water quality. Serious underestimation of likely dead carp biomass is, however, unlikely.

UNCERTAINTIES

- Nutrients from decaying carp could enter aquatic sediments and remain there, potentially forming a nutrient 'bank' that could contribute to future undesirable events, such as harmful algal blooms, well after carp carcasses have decayed (Technical Paper 3; NCCP research project 7).
- Assessing the extent to which 'legacy' nutrients in the sediment could contribute to environmental problems into the future is challenging, because the chemistry involved in the sequestration and subsequent release of these nutrients from the sediment is both complex and dependent upon local conditions (Technical Paper 3; NCCP research project 9).
- Nutrient accumulation is most likely at sites of high carcass density, such as where carcasses concentrate through current or wind action. Targeted carcass removal focused on these areas will be the most effective risk mitigation approach (Technical Paper 3; NCCP research project 9), but presents difficulties in some areas as outlined previously.
- NCCP water-quality modelling did not account for cumulative risks potentially posed by the downstream movement of water containing decomposition byproducts from successive upstream carp kills (NCCP research project 9).

2.2.2 Water treatment risks

Understanding potential impacts of carp biomass decomposition on water treatment plants and processes is essential for decision making on carp biocontrol. Producing drinking water involves two stages; 'treatment', which ensures water does not contain offensive odours or tastes, and 'disinfection', which kills potentially harmful microorganisms (Technical Paper 3; NCCP research project 14). Research co-funded by the NCCP investigated potential impacts of carp decomposition on both processes (NCCP research project 14).

RESEARCH CONCLUSIONS

- At carp densities typical of those estimated across the species' Australian range, standard water treatment and disinfection processes are effective (Technical Paper 3).
- At carp concentrations towards the upper limits of those estimated in Australian ecosystems, water remains treatable with the addition of powdered activated carbon (Technical Paper 3). Incorporating powdered activated carbon into the treatment process incurs additional costs, but is already routinely used in Australian water treatment plants to remove algal tastes and odours (Technical Paper 3).
- At carp densities substantially higher than those estimated to occur in Australian ecosystems, both water treatment and disinfection are untenable (Technical Paper 3). These very high dead carp densities are most likely to occur in a 'point-source' manner if wind or current caused dead carp to accumulate in a localised areas close to a treatment plant inlet (Technical Paper 3).

IMPLICATIONS FOR FEASIBILITY

- Dead carp densities likely to eventuate from use of the carp virus as a biocontrol agent pose little risk to the operability of water treatment plants.
- In areas with higher carp densities, some additional water treatment processes will likely be needed during peak carp mortalities.
- Carcass management activities will be required to prevent dead carp accumulating at high densities in restricted locations and decaying therein.

2.2.3 Carp virus species specificity

A detailed summary of species specificity information relevant to biocontrol using the carp virus is provided in Technical Paper 4. Key results and their implications for decision making are provided in the following sections.

RESEARCH CONCLUSIONS – SPECIES SPECIFICITY

- Specificity to the target organism is a fundamental requirement for most biocontrol agents.
- Some viruses can infect their hosts without causing disease. In these cases, the host is *infected* but not *affected* by the virus.
- The carp virus can neither infect nor affect any mammal, including human beings.
- Disease caused by the carp virus has only been reported in European Carp (including the ornamental variety), and in hybrids of European Carp (e.g. carp–Goldfish hybrids).
- CSIRO testing that preceded the NCCP (funded by the Invasive Animals Cooperative Research Centre) indicated that none of the 22 non-target species tested (see Technical Paper 4 for details) were either infected or affected by the virus, although some questions remained, leading to further work.
- A literature review commissioned by the NCCP (NCCP research project 11) raised the possibility that the carp virus may be able to infect species other than carp, though apparently without affecting them. This review recommended some additional work to increase confidence in the virus's species specificity before proceeding with virus release. Accordingly, Murray Cod and Silver Perch were re-tested for susceptibility to infection by the carp virus (NCCP research project 12). Attempts were also made to re-test Rainbow Trout, but captive fish experienced a water chemistry issue that led to major mortalities before any exposure to the virus occurred (NCCP research project 12). Therefore, at the direction of the relevant Animal Ethics committees, testing did not proceed for this species.

No evidence of viral infection was found in the re-tested Murray Cod and Silver Perch (NCCP research project 12). However, NCCP research identified viral species-specificity as an important concern for the Australian community. NCCP research project 13 identified that 57% of 4680 people surveyed were concerned that the virus might be transmissible to fish or animals other than carp. Decision makers will also need to be as confident as possible that the virus will only infect carp. Consequently, additional testing is recommended before any decisions are made regarding virus release. This testing should include Rainbow Trout as a minimum, but a small number of additional species could also be identified for inclusion through consultation with scientific experts.

IMPLICATIONS FOR FEASIBILITY

There is no indication that the carp virus has ever infected human beings or any other mammal, or is likely to do so in future. Further investigation of this possibility is not required, and it does not affect the feasibility of carp biocontrol.

The situation regarding potential susceptibility of lower vertebrates – and particularly non-carp fish species – is more complex. While considerable evidence indicates that the virus is specific to carp, community concern regarding species specificity, combined with the absence of Rainbow Trout from the second round of non-target species susceptibility testing (NCCP research project 12), mean that a precautionary approach to this issue is warranted. Therefore, the NCCP recommends that the current level of confidence in the virus's species specificity is insufficient for a clear determination of feasibility, and that additional testing is conducted.

KEY ASSUMPTIONS

The key assumption underpinning carp virus species-specificity considerations is that following any future release, the virus would not evolve in ways that result in the acquisition of new host species. Predicting viral evolution is difficult, and the virus's capacity for evolutionary change over longer timescales cannot be tested in the laboratory. Nonetheless, the carp virus possesses several traits that make it much less likely than many viruses to infect species other than carp (see Technical Paper 4).

UNCERTAINTIES

Absolute guarantees about the species specificity of any virus, including the carp virus, are not possible, so uncertainty in this area will never be completely eliminated. Nonetheless, confidence in the virus's specificity to carp could likely be further improved. Additional, carefully controlled non-target species susceptibility trials could provide the additional evidence required to address community concerns and support a more definitive determination of the virus's host range. These additional trials are therefore recommended before decisions regarding virus release are made.

2.2.4 Ecological impacts

The NCCP research program has considered primary risks (i.e. water quality, including for stock and domestic use, and species specificity) and secondary ecological impacts. These secondary impacts were assessed by reviewing information available in the scientific literature, and through the structured elicitation of expert opinion. A brief summary of the ecological risk pathways and potentially impacted ecosystems and species identified and assessed through this process is provided in the following sections. Risk management and mitigation is outlined in sections 2 and 3.

PROLIFERATION OF DISEASE-CAUSING BACTERIA FOLLOWING CARP KILLS

If dead carp are left to decay in waterbodies following virus-induced carp kills, diverse bacterial communities are likely to use the carcasses as a substrate for growth (Technical Paper 3; NCCP research project 15). These bacteria would include those that had been inhabiting the intestinal tracts of the carp prior to death, various generalist 'spoilage' bacteria associated with decay, and potentially some disease-causing species such as Shiga-toxin producing *Escherichia coli* and various *Aeromonas* species (NCCP research project 15).

The potential proliferation of harmful bacteria following carp kills is largely a consequence of poor water quality (Technical Paper 3; NCCP research project 15). Therefore, the extent to which dissolved oxygen can be maintained, nutrient levels managed, and cyanobacterial blooms averted, will influence pathogenic bacteria risk levels. As with other water-quality hazards, major carp kills during low-flow conditions elevate risk. Additionally, temperature is an important determinant of microbial growth, with bacteria more likely to proliferate when water temperatures exceed approximately 20 °C (NCCP research project 15). Given the carp virus causes disease in carp most effectively at water temperatures between approximately 16–28 °C, carp kills would occur at temperatures suitable for bacterial growth. Therefore, proliferation of bacteria, including species harmful to humans and other animals, is at least theoretically possible following carp kills. Despite the capacity of fish kills to generate conditions suitable for bacterial growth, there are no recorded incidents of bacterial disease outbreaks caused by these opportunistic 'secondary' bacteria in humans, fish, or other faunal groups following fish kills in Australia (NCCP research project 15). Nonetheless, the possibility of such an outcome cannot be discounted, particularly if water quality deteriorates.

REDUCED AVAILABILITY OF CARP AS A FOOD SOURCE FOR NATIVE SPECIES

Carp are now the dominant large-bodied fish species in the MDB, and are also abundant in many coastal catchments. Consequently, piscivorous native species, including fish and waterbirds, may now rely on carp (especially juvenile carp) for a portion of their diets. The NCCP risk assessment (NCCP research project 15) concluded that nesting waterbirds are the group most likely to be affected by this exposure pathway, so the following discussion focuses on this faunal group.

There is little scientific evidence quantifying the importance of carp in waterbird diets. Nonetheless, waterbird breeding usually occurs on inundated river floodplains, thus coinciding both temporally and spatially with carp spawning. The co-occurrence of numerous juvenile carp with waterbirds raising young makes it intuitively likely that juvenile carp form an important food source for waterbirds at these times. Carp reduction could therefore create food shortages for fish-eating waterbirds during their nesting periods (NCCP research project 15).

Treatment options to reduce the risk that carp control will result in food shortages for waterbirds centre on planning initial virus deployment on a catchment or regional basis to avoid waterbird nesting periods. Unfortunately, in at least some parts of carp's Australian distribution (e.g. along the Murray River), waterbird nesting periods and permissive temperatures for carp virus infection and disease coincide, making implementation of this control measure challenging. Supplementing local populations of forage species through hatchery rearing and release programs has also been suggested, but would be costly and both biologically and logistically complex (NCCP research project 15).

PREDATORY SPECIES SWITCHING FOCUS TO PREY ON NATIVE SPECIES FOLLOWING CARP REDUCTION

If piscivorous species do rely on carp as a food source, and this food source is substantially reduced by viral disease, then 'prey switching' may occur as predators refocus their hunting efforts from carp to native species, including small-bodied native fish, juveniles of large-bodied native fish, crustaceans, frogs, and freshwater turtle eggs and young. Potential mitigation measures for this risk are similar to those outlined under the heading 'Reduced availability of carp as a food source for native species'.

BOTULISM OUTBREAKS FOLLOWING CARP KILLS

Botulism is a serious illness caused by bacterial neurotoxins (Technical Paper 3; NCCP research project 15). The bacteria that cause botulism can persist for decades as dormant, harmless spores in aquatic sediments and other environments, including the intestinal tracts of animals. The basic prerequisites for a botulism outbreak are anoxic (no oxygen) conditions and a protein source to fuel bacterial growth (Technical Paper 3; NCCP research project 15). When these conditions occur, dormant spores germinate, with ensuing bacterial growth and toxin production, potentially leading to a botulism outbreak. Botulism outbreaks in wild birds and livestock occur sporadically in Australia (Technical Paper 3; NCCP research project 15).

Although there are seven botulism strains, concern in the carp biocontrol context lies primarily with strains C, D, and C-D mosaic (Technical Paper 3; NCCP research project 15). These strains affect birds, livestock, and, to a much lesser extent, fish, but are not harmful to humans. Strain E is very dangerous to humans and fish, but there is some doubt as to whether this strain occurs in Australia. If strain E is present in this country, it is likely rare and/or has a restricted distribution (Technical Paper 3; NCCP research project 15).

Botulism risk varies with both river flows and water temperatures. Botulism outbreaks are more likely at temperatures greater than 20 °C and in still or slow-moving water. The temperature band within which the virus causes disease most effectively in carp means that outbreaks will usually occur at temperatures above 20 °C (Technical Paper 3; NCCP research project 15). Overall, it is possible that botulism outbreaks could result from mass carp mortalities (Technical Paper 3; NCCP research project 15). This risk rating is conservative and precautionary, reflecting the capacity of major fish kills to produce the fundamental preconditions for a botulism outbreak under some circumstances (i.e. kills occurring in shallow, off-channel waterbodies with high carp densities) (Technical Paper 3; NCCP research project 15). Despite this biological plausibility, fish kills in Australian freshwater ecosystems have not generally triggered botulism outbreaks, with only one recorded outbreak (NCCP research project 15). Nonetheless, depending upon the virus release strategy used, carp kills resulting from planned release of the carp virus could be on an unprecedented scale for Australian systems. The 'possible' risk rating reflects a balance of these considerations. As for pathogenic bacterial risk more generally, treating botulism risk centres on removing carcasses, either manually or through planned water releases where feasible (NCCP research project 15).

EPHEMERAL OR DRYLAND RIVER SYSTEMS

Ephemeral waterbodies are those that either dry completely or shrink to a series of disconnected pools during low-rainfall periods. Ephemeral systems tend to occur in the drier northern and western portions of the MDB, and differ from regulated rivers that tend to have long stretches of permanent water. Ephemeral river systems are ecologically important because the isolated permanent or semi-permanent waterholes that remain in their channels during dry times provide drought refuges for many species, including those that are rare and threatened (NCCP research project 15).

Refuge waterholes generally have little or no flow, and often have generally poor water quality, even in the absence of fish kills (Technical Paper 3). Virus-induced carp kills could potentially exacerbate these conditions, compromising the refuge value of these habitats (Technical Paper 3). These impacts will need to be addressed through regional implementation planning.

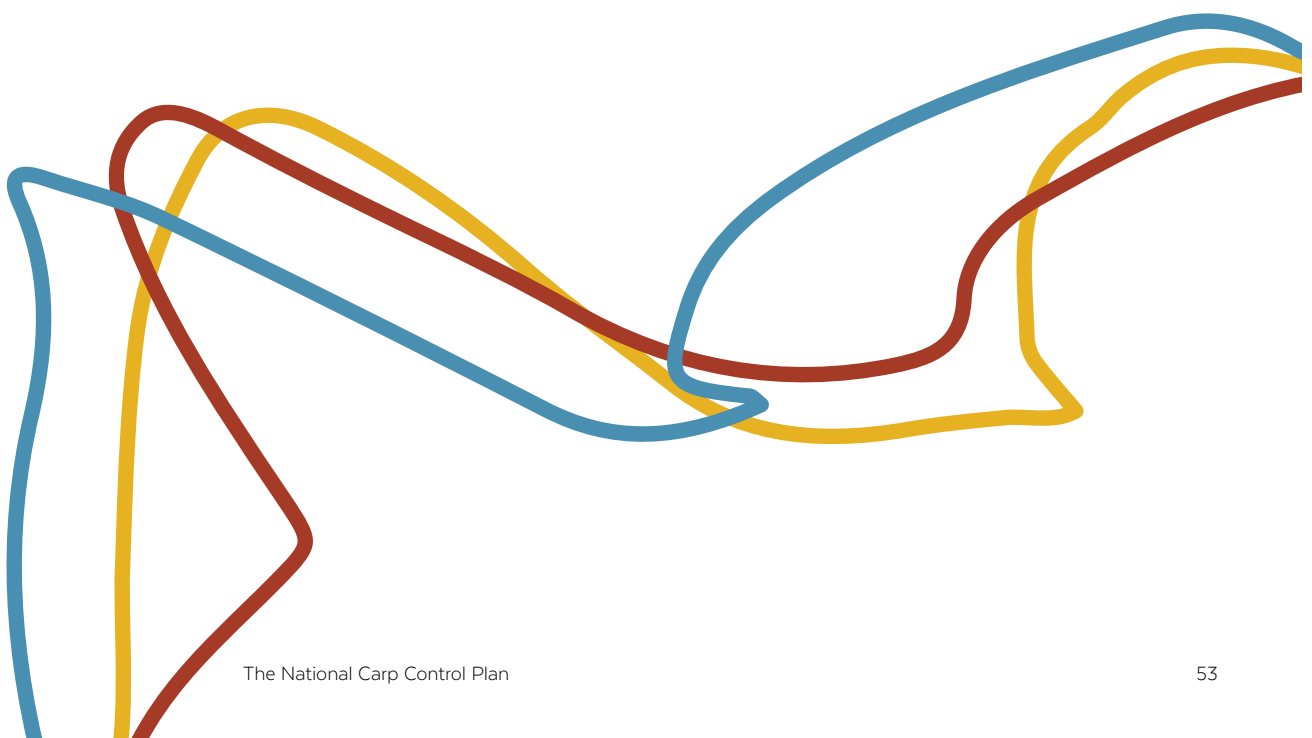


RAMSAR WETLAND SYSTEMS

Twenty-five listed wetlands occur within carp's Australian distribution. These wetlands have high conservation values and are afforded protection by the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and the Ramsar Convention. These wetlands also tend to have high carp biomass. The NCCP ecological risk assessment (NCCP research project 15) concludes that the following wetlands could possibly be impacted according to criteria established under the EPBC Act:

- The Coorong and Lakes Alexandrina and Albert estuarine wetlands (South Australia),
- Currawinya Lakes (Currawinya National Park) (Queensland),
- Gwydir Wetlands: Gingham and Lower Gwydir (Big Leather) Watercourses (New South Wales),
- Narran Lake Nature Reserve (New South Wales),
- Paroo River Wetlands (New South Wales),
- The Macquarie Marshes (New South Wales),
- Banrock Station Wetland Complex (South Australia),
- Barmah Forest (Victoria),
- Fivebough and Tuckerbil Swamps (New South Wales),
- Gunbower Forest (Victoria),
- Hattah-Kulkyne Lakes (Victoria),
- Kerang Wetlands (Victoria),
- New South Wales Central Murray Forests (New South Wales), and
- Riverland (South Australia).

Implementation planning will need to assess and mitigate possible impacts consistent with EPBC Act requirements. NCCP case studies demonstrated that risk mitigation measures are possible at Barmah Forest and Gunbower Forest (see section 4.4).



2.3 Socio-economic impacts

The feasibility assessment for carp biocontrol presented in the NCCP is limited to scientific and operational matters, and does not formally incorporate potential socio-economic impacts. Nonetheless, the NCCP research program considered these potential impacts (Technical Paper 5; NCCP research projects 13 and 15), and summarised results are presented for consideration by governments.

Positive and negative impacts of the NCCP will vary between stakeholder groups. Carp biocontrol may involve negative impacts for some stakeholder groups, particular in the short term as the virus is deployed and initial major carp mortalities occur. These initial negative impacts may be balanced by longer-term benefits flowing from improved environmental outcomes. Other stakeholders could experience more sustained negative impacts.

NCCP social impact research could only identify potential impacts, as opposed to quantifying actual impacts. Potential impacts were used because the research was conducted concurrently with NCCP biophysical research, and hence could not fully consider final research conclusions and the likely short- and long-term effects of carp biocontrol.

2.3.1 Traditional Owners

Many Aboriginal Nations have strong interest in carp-affected waterways. Many Aboriginal people living outside these regions also have cultural responsibilities to care for carp-affected country despite not currently living on that country.

The NCCP consulted Aboriginal Nations and organisations to discuss carp biocontrol. Consultation directly with Aboriginal communities was limited.

Negative (or potentially negative) impacts of carp biocontrol for Aboriginal people include:

- potential for disempowerment through lack of involvement in carp biocontrol planning, decision making, and implementation,
- potential for negative impacts on health of country if biocontrol has unforeseen harmful effects on ecosystems,
- potential for negative impacts on cultural activities and culturally important sites if biocontrol has unforeseen harmful effects on ecosystems, and
- potential for reduced employment opportunities if biocontrol is ineffective or is planned and implemented in ways that do not empower Aboriginal people.

Positive, or potentially positive impacts of carp biocontrol for Aboriginal people include:

- empowerment through active, meaningful, appropriately resourced involvement,
- potential for improvements in health of country if biocontrol is effective,
- potential for positive impacts on cultural activities and culturally important sites if biocontrol is effective, and
- potential for increased employment opportunities if biocontrol planning and implementation is empowering for Aboriginal people.

A key recommendation is that a specific engagement strategy be developed and implemented for Aboriginal communities which consults at the community as well as nations level. Aboriginal engagement should engage on enterprise outcomes as well as social licence to operate.

2.3.2 Tourism

The tourism sector is defined as any recreation-related business that is reliant on inland freshwater systems or regions for their income (e.g. houseboat operators, fishing guides, nature-based or adventure tourism, and accommodation with water frontage). Poor water quality, regardless of its cause, reduces visitation to freshwater destinations, resulting in negative economic impacts to the tourism sector. For example, the tourism industry has been, and continues to be, negatively impacted by major algal blooms occurring along the Murray River. Perceived declines in water quality can be as damaging to tourism businesses as real reductions. Technical Paper 5 addresses potential socio-economic impacts on the tourism industry, and potential mitigation measures, in detail.

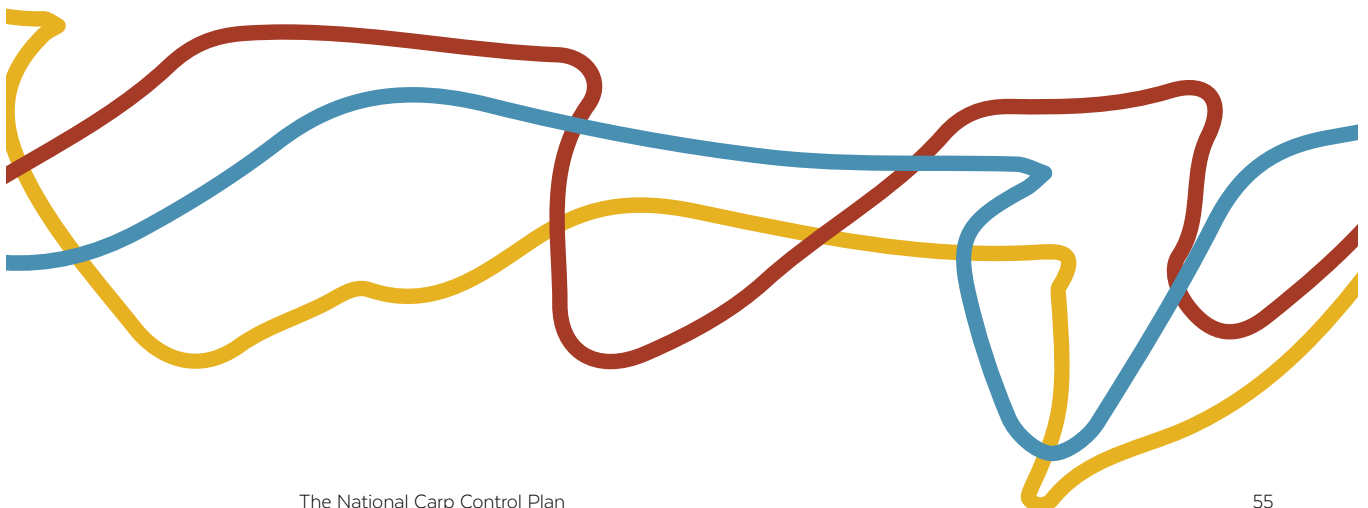
2.3.3 Commercial carp fishers

Commercial carp fisheries in Australian states and territories are currently fairly small, with limited permits issued. Regulatory regimes vary widely across the jurisdictions in which commercial carp fishing is permitted.

Potential negative impacts of carp biocontrol on the commercial fishing sector include:

- uncertainty about the future resulting in psychological distress and mental health impacts,
- severe reduction in profitability, or complete loss of business viability,
- inability to invest in or sell fishing businesses,
- changes to World Organisation for Animal Health (OIE) trade policies that could reduce access to international markets or reduce profitability,
- difficulty or inability to obtain or service finance,
- loss of market access,
- impact on public reputation, and
- increased business costs.

Potential positive impacts or opportunities of carp biocontrol for the commercial fishing sector include potential inclusion of live harvest in an integrated control strategy to support biocontrol. Technical Paper 5 and NCCP research project 13 address potential socio-economic impacts on commercial carp fishers, and potential mitigation measures, in detail.



2.3.4 Native fish aquaculture

Native fish aquaculture is a small but growing industry, which is expanding in both domestic and export markets. Many of these markets are highly sensitive to any change in real or perceived product quality. Viability of the sector is reliant upon price premiums attracted by their products' 'clean and green' image. The sector supplies fingerlings for stocking, export fingerlings for grow-out overseas, and some businesses grow stock into table-size fish for domestic consumption. Markets include conservation restocking, stocked recreational fishing, and consumption.

Potential negative impacts of carp biocontrol on the native fish aquaculture sector include:

- uncertainty about future business viability, including potential for complete loss of viability,
- increased business costs,
- changes to OIE trade policies following virus release in Australia, and
- loss of market access due to negative perceptions (i.e. loss of 'clean and green' image) and/or regulatory barriers.

Potential positive impacts of carp biocontrol on the native fish aquaculture sector include:

- expanded business opportunities if native fish restocking is implemented as an environmental restoration measure alongside carp biocontrol, and
- potential opportunities to address existing regulatory constraints.

Technical Paper 5 details potential socio-economic impacts on the native fish aquaculture industry, and potential mitigation measures.

2.3.5 Koi hobbyists and businesses

Keeping decorative koi carp (an ornamental genetic strain of carp) involves thousands of people and supports many businesses in those jurisdictions where koi may be legally kept (New South Wales and Western Australia). Koi keeping has a long cultural history, and koi keepers have strong connections to their pet fish and to koi communities in other countries.



Potential negative impacts of carp biocontrol on the koi sector include:

- uncertainty about the future resulting in psychological distress, and mental health impacts,
- higher day-to-day business costs resulting from the need to increase biosecurity measures,
- higher koi keeping costs for hobbyists,
- reduced social interaction,
- psychological and financial impacts of loss of koi, for both hobbyists and businesses, and
- longer-term viability of the koi hobby in Australia.

Technical Paper 5 and NCCP research project 13 address potential socio-economic impacts on koi hobbyists and businesses, and potential mitigation measures, in detail.

The NCCP has commissioned a biosecurity strategy for the koi sector to guide risk mitigation following potential release of the carp virus in Australia (NCCP planning investigation 2). The project concluded that:

- improved biosecurity protocols could reduce the risks of adverse impacts on the koi sector, and
- koi sector representatives are concerned that implementing enhanced biosecurity protocols would be costly for both hobbyists and businesses, and would unduly inhibit koi exchanges and events.

2.3.6 Recreational fishers

Recreational fishing is a key driver of visitation and tourism revenue in many freshwater and estuarine areas inhabited by carp. Changes in fishing conditions and opportunities contribute to changing visitor numbers. Within the recreational fishing sector, a relatively small number of fishers specifically focus on carp fishing (coarse fishing, a term originating in the United Kingdom to denote fishing for species other than the salmonids historically recognised as premium sporting or 'game' species). Recreational fishers have been highly engaged in discussions about carp control and in actions to raise awareness of carp as a pest species, for example through conducting regular community-based 'carp buster' competitions.

Potential negative impacts of carp biocontrol for recreational fishers (and particularly those who target carp) include:

- reduced fishing opportunities and/or fishing activity for those wishing to catch carp,
- reduced carp numbers for coarse fishers, and
- reduced profitability for some recreational fishing suppliers or guide businesses if carp constitute a substantial component of their business.

Potential positive impacts of carp biocontrol for recreational fishers include:

- increased fishing success and enjoyment for fishers wishing to catch native species,
- increased revenue for fishing-related businesses if carp control leads to improved ecosystem health and enhanced native fish abundance, and
- opportunities for recreational fisher involvement in carp control and aquatic habitat restoration.

Technical Paper 5 and NCCP research project 13 detail potential socio-economic impacts on recreational fishers, with potential mitigation measures for negative impacts.



3 IMPLEMENTATION STRATEGY

3.1 Introduction

This section describes how carp virus biocontrol could be successfully implemented across Australia. The implementation strategy provides a national framework or strategic 'intent' for more detailed planning should the Australian Government decide to proceed towards implementation. The strategy does not provide detailed implementation actions as jurisdictions and regions are best placed to complete implementation planning according to jurisdictional legislation and local conditions and constraints.

The implementation strategy is based on NCCP research (section 2), and case studies (section 4). Additional information is provided in Technical Paper 6. The case studies reported in section 4 illustrate how implementation could occur in particular regions.

3.2 Implementation objectives

Implementation objectives for carp biocontrol have been developed from NCCP research results and feasibility assessment. The objectives are:

- a. widescale reduction and suppression of carp populations for the medium to long term (5–10 years),
- b. effective environmental risk management with no unacceptable impacts on Matters of National Environmental Significance (MNES) under the EPBC Act,
- c. management of water-quality risks for town water supply, stock and domestic water needs, irrigation, and cultural and recreational purposes, and
- d. effective and efficient virus deployment and carcass management, where the latter is required.

This section provides specific national strategies to achieve objective (a), which is fundamentally informed by technical and scientific considerations and therefore within the scope of NCCP research and investigations. Objectives (b), (c), and (d) are primarily informed by policy, jurisdictional, local, and operational considerations and are therefore addressed conceptually to provide indicative approaches for regional planners. The NCCP case studies demonstrate how these objectives could be achieved in particular regional contexts.

3.3 Implementation outcomes

AT LEAST 40–60% MORTALITY IN TARGETED CARP SUB-POPULATIONS

NCCP modelling indicates that initial virus deployment into targeted carp sub-populations will cause disease outbreaks that reduce those populations by on average 40–60% relative to pre-deployment levels (and 60–80% in less resilient carp populations) (see Technical Paper 2, NCCP research project 4, and section 2.1 for details, including assumptions and uncertainties).

ONGOING SUPPRESSION OF TARGETED CARP SUB-POPULATIONS

Following virus deployment and associated carp reductions, suppression is expected to result from the combined effects of the initial knockdown and reactivation of latent infections.

3.4 Implementation phases

If governments ultimately decide to proceed towards undertaking a carp biocontrol program, NCCP implementation is proposed over a 10-year timeframe with activities primarily focused in the first four years. Specific timings are dependent on implementation planning and adaptive management. The phases or periods of implementation include:

1. planning — one or two years of implementation planning before virus deployment,
2. operations (initial deployment) — two or three years of virus deployment and carcass management, possibly preceded by harvesting to 'thin out' high-density carp sub-populations,
3. operations (post deployment) — five to seven years of significantly reduced operations and ongoing surveillance, and
4. completion.

The phases listed in points 1-4 occur sequentially, however overlaps and delays between the different phases are expected (for example, suitable pre-conditions for deployment may take some time to eventuate). The following sections apply the knowledge generated by NCCP research and planning investigations to address the third feasibility question, namely "how could carp biocontrol be implemented?".

3.4.1 Planning

The NCCP implementation strategy sets out the national strategic intent and approach to virus deployment and management, and provides the basis from which jurisdictions and regions will undertake more detailed implementation planning. Implementation planning will identify the operational measures and resources required to deploy the virus and manage associated risks. Regulatory approvals will also need to be obtained during the planning stage. Guidelines for the planning phase are given in Technical Paper 6.

LEGISLATIVE APPROVALS

Objectives (b) and (c) (from section 3.2) will be guided by numerous legislative approval processes and then implemented according to those approvals. Legislative approvals requiring completion during the planning stage include those necessary under:

- the EPBC Act,
- legislation administered by the APVMA,
- the *Biosecurity Act 2015*,
- the *Biological Control Act 1984*, and
- relevant state and territory regulatory approvals.

STRATEGIC ASSESSMENT UNDER THE EPBC ACT

On 19 January 2018, a delegate of the then Minister for the Environment and Energy entered into an agreement with the then Department of Agriculture and Water Resources to undertake a strategic assessment of the NCCP. The strategic assessment will be undertaken in accordance with section 146 of the EPBC Act (see dcceew.gov.au/environment/epbc/strategic-assessments/strategic/national-carp-control-plan).

Additional planning, risk assessment and drafting of statutory documents will be required to undertake the strategic assessment should government decide to undertake further work towards implementation of the NCCP.

For the purposes of the strategic assessment, the Plan is to be a document that will describe how the NCCP will be implemented by each state and territory to ensure impacts on Protected Matters are acceptable. A Strategic Assessment Report will be prepared to assess how the implementation of the Plan will ensure the appropriate level of consideration and management of impacts on Protected Matters. A draft Strategic Assessment Report and draft Plan will need to be made available for public comment. Following the public comment period, a Supplementary Report (addressing public comments) and a revised Plan and Strategic Assessment Report (if necessary) will be submitted to the Minister for consideration.

After considering the Strategic Assessment documents the Minister may decide to endorse the Plan if satisfied that the reports adequately address the impacts. If the Minister endorses the Plan, the Minister may then approve the taking of an action, or class of actions, in accordance with the Plan and the EPBC Act. The effect of any such approval decision is that any actions or class of actions would not need further approval by the Minister under the EPBC Act if taken in accordance with the endorsed Plan.

This process takes approximately 18 months. This timeframe depends on the timely preparation of the relevant strategic assessment documents and management of the public consultation process. In past strategic assessments, including those where governments were the proponent, the preparation of this documentation has been undertaken by ecological consultants, with expertise in EPBC Act assessments.

MANAGEMENT AREAS FOR OPERATIONS

Planning would begin by determining Catchment Control Areas (CCAs) for implementation across the designated area of virus deployment. CCAs will be defined by:

- operational considerations such as spans of control,
- prioritised areas for virus release,
- connections and barriers between waterways and carp populations, and
- natural characteristics of the catchment.

DEVELOPMENT OF IMPLEMENTATION PLANS

If governments decide to proceed towards implementation, jurisdictions and regions (as defined by CCAs) will need to develop regional implementation plans detailing specific operational approaches, requirements, and constraints including regional central command and forward command locations (Technical Paper 6). Regional implementation plans will reflect the relevant directions, policies, legislative requirements and frameworks of the appropriate state or territory plan.

ESTABLISHING OPERATIONAL COORDINATION

During the planning phase operational coordination would need to be established according to jurisdictional and regional planning and proposed Australian incident management procedures (Technical Paper 6).

3.4.2 Operations (initial deployment)

Operations would follow implementation planning and would take two to three years to complete. The operational phase would involve the following major tasks:

1. virus preparation,
2. establishment of regional and jurisdictional implementation teams,
3. operational preparation,
4. communications and engagement, and
5. initial deployment field operations.

This phase of viral biocontrol would be the most resource intensive, as it includes the substantial tasks of virus deployment and carcass management (outlined in the following sections). This phase might usefully be preceded by targeted, intense harvesting of carp in high density sub-populations to reduce their abundance prior to viral biocontrol (NCCP research project 4). Details of operations related to implementation are provided in Technical Paper 6.

3.4.3 Operations (post deployment)

Operations in the year after initial deployment would involve a significant reduction in the number of carp kills and the size of the carp in those kills. Kills during this phase are likely to substantially comprise juvenile carp, presenting reduced water-quality risks (Technical Paper 3; NCCP research project 4).

Post-deployment operations involve moving from 'response' arrangements with full incident management systems to a 'maintenance and learning' phase during which active operational activity is substantially reduced. Australian experience with viral biocontrol of vertebrate pests indicates that these programs are most effective when delivered with a long-term, strategic approach to managing the evolving relationship between virus and host. Regional disease surveillance and operational response capability may still be required and could be conducted, with appropriate resourcing, by state/territory agencies. Alternatively, dedicated regional coordination centres could be retained with reduced staffing levels.

Jurisdictions are probably best placed to lead any activities during this period. The need for coordination at the national level would be reduced, but ongoing national monitoring and evaluation would still be required.

3.4.4 Completion

The completion phase would begin when all necessary national actions to deploy the carp virus and manage associated risks have been completed. Completion is likely to begin approximately 10 years after initial virus deployment, but experience during adaptive management could change this projection. Upon completion, jurisdictions would be able to manage risks as part of their usual operations. Ongoing surveillance, monitoring, and research is proposed following completion.

3.5 Virus deployment strategy

3.5.1 Critical success factors

Virus deployment will aim to achieve the first implementation objective, namely:

- widescale reduction and suppression of carp populations for the medium to long term (5–10 years).

Critical success factors for carp virus deployment and carp biocontrol are identified in the following sections. These factors exploit the biological characteristics of carp and the carp virus to maximise knockdown and suppression.

USING VIRUS AND CARP BIOLOGY TO MAXIMISE EFFECTIVENESS

Virus deployment aims to maximise the impacts of viral disease on carp populations by achieving both an initial knockdown and ongoing suppression as modelled by NCCP research (NCCP research project 4).

Four primary biological preconditions will likely determine the virus's impact on carp populations:

- the permissive water temperature for viral infection and recrudescence,
- recrudescence of latent infections,
- carp aggregation behaviour to achieve virus transmission between carp, and
- the proportion of carp infected within a given sub-population (see Technical Paper 2 and NCCP research project 4 for more detailed discussion of these variables).

The carp virus's capacity to kill carp is temperature dependent. The virus only causes disease in carp at temperatures between approximately 16 and 28 °C. Disease is particularly likely in a narrower temperature range between approximately 21 and 25 °C (Technical Paper 2). Within carp's Australian distribution, these water temperatures mainly occur through spring and early summer.

As water temperatures move outside the permissive range, the virus becomes latent within infected carp and does not replicate (see Technical Papers 2 and 6 for descriptions of latency and its potential role in carp biocontrol). The scientific literature and results from a preliminary and limited laboratory experiment under the NCCP indicate that, as water temperature increases into the permissive range during spring in the years following initial deployment, a proportion of latently infected carp will experience reactivation of their infection (recrudescence) (Technical Paper 2; NCCP research project 4). These individuals may or may not get sick and/or die, but most should shed virus, potentially infecting naïve carp with which they have physical contact (NCCP research project 4).

This sequence of latency and recrudescence will be a crucial determinant of the virus's capacity to deliver long-term carp suppression (Technical Paper 2). If latent infections recrudescence and infect naïve carp, the virus should deliver effective ongoing carp suppression for at least 5–10 years, and probably longer, albeit with uncertainties regarding genetic resistance and herd immunity (NCCP research project 4). Recrudescence carp virus infections are documented in the scientific literature, and results from a short-term laboratory experiment under the NCCP also support the existence of recrudescence, although their applicability to the timescales and environmental conditions under which recrudescence would need to occur in the field should be interpreted cautiously (Technical Paper 2; NCCP research project 4). If recrudescence does not occur, or if it does occur but herd immunity reduces mortality rates, the carp virus will deliver large initial mortalities in the year or two following release, but is unlikely to provide longer-term suppression (NCCP research project 4).

Physical contact between infected and naïve carp is almost certainly the most effective transmission pathway for the carp virus (Technical Paper 2; NCCP research project 4; NCCP research project 6). A laboratory experiment under the NCCP (NCCP research project 6) supports this contention, demonstrating that physical contact between carp is required for efficient transmission of the carp virus. In contrast, transmission through water required extremely high viral concentrations that were only rarely obtained even when infected carp with disease symptoms were housed in small (40-litre) volumes of water. The emphasis placed on direct physical contact as the primary transmission route in NCCP epidemiological modelling is therefore supported by experimental evidence. Although the virus can survive in the water column outside its carp host for a relatively short period, this transmission pathway is likely to be substantially less important than direct physical contact between infected and naïve carp (Technical Paper 2; NCCP research project 4; NCCP research project 6).

The requirement for physical contact between carp to ensure transmission presents both opportunities and challenges. The need for physical contact to ensure effective transmission contributes to a geographically and seasonally restricted outbreak pattern that facilitates carcass management. However, transmission through physical contact also means that engineering disease outbreaks of sufficient magnitude to knock down carp populations may be challenging.

Carp spawning behaviour provides the most likely opportunity to initiate outbreaks of the disease caused by the carp virus. Adult carp move to access suitable spawning habitat in early spring, forming large aggregations immediately prior to spawning. Aggregations place numerous carp in close physical proximity. The virus will be deployed by introducing infected carp into aggregations within targeted sub-populations. Two primary potential deployment techniques for getting infected carp into aggregations have been identified by NCCP research and planning investigations. These techniques (i) are capture, injection and release of a subsample of aggregating fish in spring, and (ii) capture, injection and release of latently infected carp during winter prior to onset of aggregating behaviour. An adaptive management approach following virus release (if governments choose to proceed) is most likely to enable refinement and optimal targeting of deployment methods.



Photo Luis García (Wikimedia).

TARGETING AGGREGATIONS ACROSS CARP SUB-POPULATIONS

The most effective virus deployment strategy will target as many aggregations as possible within a given carp sub-population. Depending upon the virus-deployment technique used, deployment may need to occur during a relatively narrow time-period when carp aggregating behaviour and permissive water temperatures coincide. Sufficient virus needs to be introduced into each sub-population to (a) trigger an outbreak that provides initial knockdown, and (b) ensure that a proportion of infected carp develop latent infections to trigger outbreaks in future years. If insufficient aggregations within each carp sub-population are not infected during this period, carp suppression is likely to be suboptimal.

ACHIEVING BROADSCALE INFECTION

Broadscale deployment of the carp virus is required to ensure that as many carp as possible are exposed to the virus while still immunologically naïve (Technical Paper 2). The requirement for broadscale deployment does not initially extend to geographically isolated populations, such as those in coastal catchments. Over time, however, isolated carp populations could still be controlled through secondary deployment of the virus at jurisdictional discretion.

While broadscale virus deployment and impact is desirable, logistical constraints and priorities would almost certainly preclude simultaneous deployment across carp's entire Australian distribution. However, targeting carp meta-populations (connected groups of sub-populations) offers an opportunity to achieve broadscale impacts, while operating at more manageable spatial scales.

The regulated systems within the MDB contain high carp densities, and are proposed as the focus of the initial virus deployment. In areas where carp may not routinely aggregate in large numbers (e.g. some unregulated systems in the northern MDB), initiating outbreaks could be particularly challenging.

3.5.2 Duration of initial carp virus deployment

Initial virus deployment is proposed for the first year with contingency for a second year of deployment based on an evaluation of first-year deployment success. A second year of deployment may be required given the uncertainty regarding the narrow 'window of opportunity' during which permissive water temperatures and carp aggregation align. The extent of virus deployment and carcass management required in the second year would be determined by evaluating first year outcomes.

3.5.3 Location of initial carp virus deployment

If carp biocontrol eventually proceeds, initial virus deployment would likely focus on regulated river systems of the MDB, including irrigation areas (subject to irrigation operations), see Figure 3. Deployment timing would be informed by local surveillance, monitoring, and environmental/weather conditions. Specific decisions about deployment timing and locations would need to be agreed by all jurisdictions and the Australian Government. Deployment and subsequent management would occur over two years across the following management zones and geographic locations.

Mid zone of operations

- the Gwydir River and adjoining waterbodies and lakes from Copeton Dam to the confluence with the Barwon River,
- the Namoi River and adjoining waterbodies and lakes from Keepit Dam to the confluence with the Barwon River,
- the Macquarie River and adjoining waterbodies and lakes from Burrendong Dam to the confluence with the Barwon River,
- the lower sections of the Balonne and Warrego River systems, and
- the Barwon and Darling Rivers to Menindee Lakes.

Southern zone of operations

- Murray River and adjoining waterbodies and lakes from Hume Dam to the Lower Lakes. Including the lower sections of the following tributaries:
 - Ovens,
 - Goulburn,
 - Campaspe,
 - Loddon,
 - Broken, and
 - Lower Darling from Menindee Lakes; including the following tributary/anabranh systems
 - Edward-Wakool,
 - Chowilla, and
 - Darling Anabranh.
- Murrumbidgee River and adjoining waterbodies and lakes from Burrinjuck Dam to the confluence with the Murray River (note there are large carp populations throughout the upper Murrumbidgee catchment and these could be included in the first year of deployment).
- The Lachlan River and adjoining waterbodies and lakes from Wyangala Dam to the confluence with the Murrumbidgee River including the first section of Wyangala Creek.



Murrumbidgee River. Photo Biogee (Wikimedia).

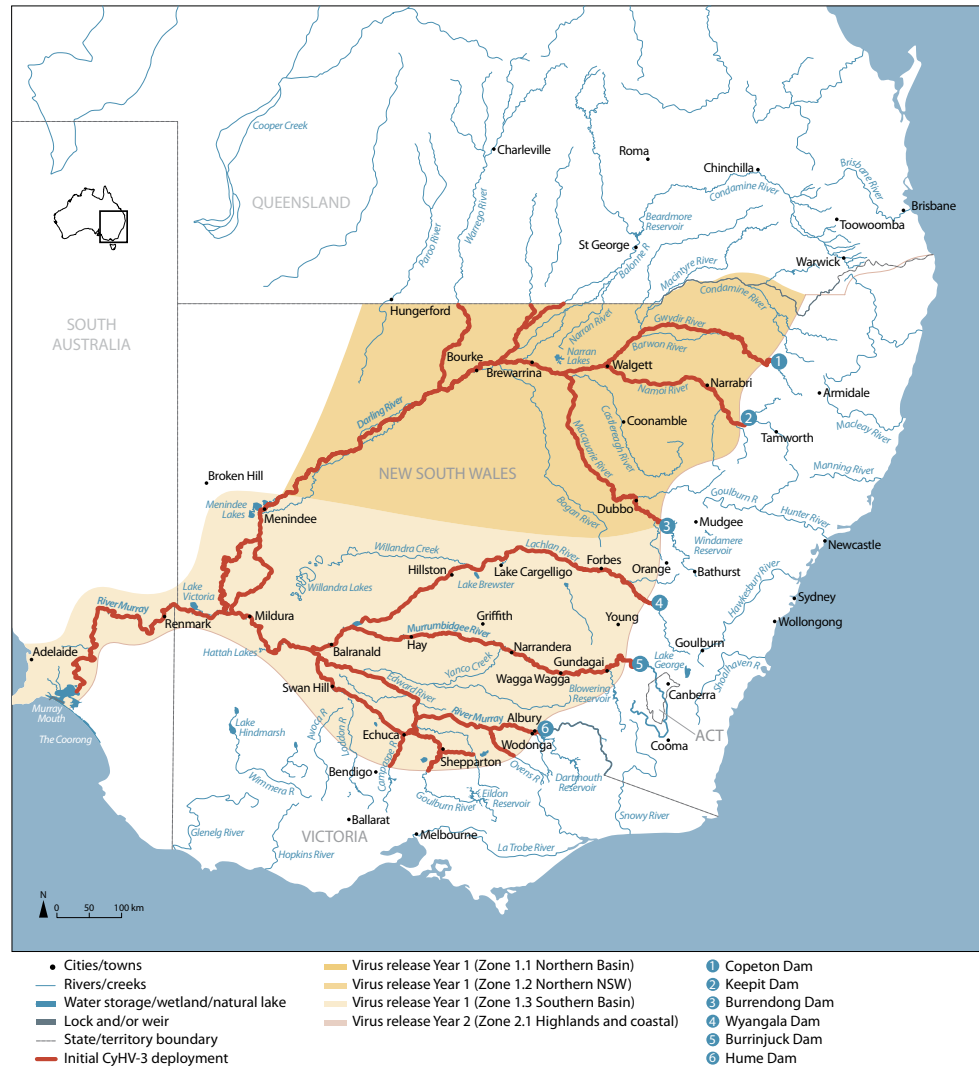


Figure 3. Initial deployment of the carp virus into regulated systems in south-eastern Australia.

The mid zone or northern New South Wales zone will reach permissive water temperatures for viral infection and disease earlier than the southern zone, so deployment could begin and finish slightly earlier in the north.

A potential variation on the release strategy focusing on regulated river systems first would be to include Queensland's unregulated ephemeral systems in the initial release (Figure 4). These rivers dry to disconnected refuge pools, usually during the season when virus release would need to occur (NCCP research project 15). Refuge pools have important biodiversity values, which could be compromised by decomposing carp at high densities. Furthermore, these pools typically feature dissolved oxygen and temperature profiles that are already marginal for native fish (Technical Paper 3; NCCP research project 15). Dryland ephemeral rivers consequently present a different risk profile to regulated systems. A virus release strategy that includes these sensitive systems in the initial deployment would aim to induce major carp mortalities in a predictable manner while personnel and resources for intensive carcass removal are present. Initial carp mortalities could reduce the overall population, thereby reducing the likelihood of major kills that could compromise water quality in future years. Nonetheless, the challenges associated with implementing such an approach in these remote systems where vehicle access is often very difficult should not be underestimated.

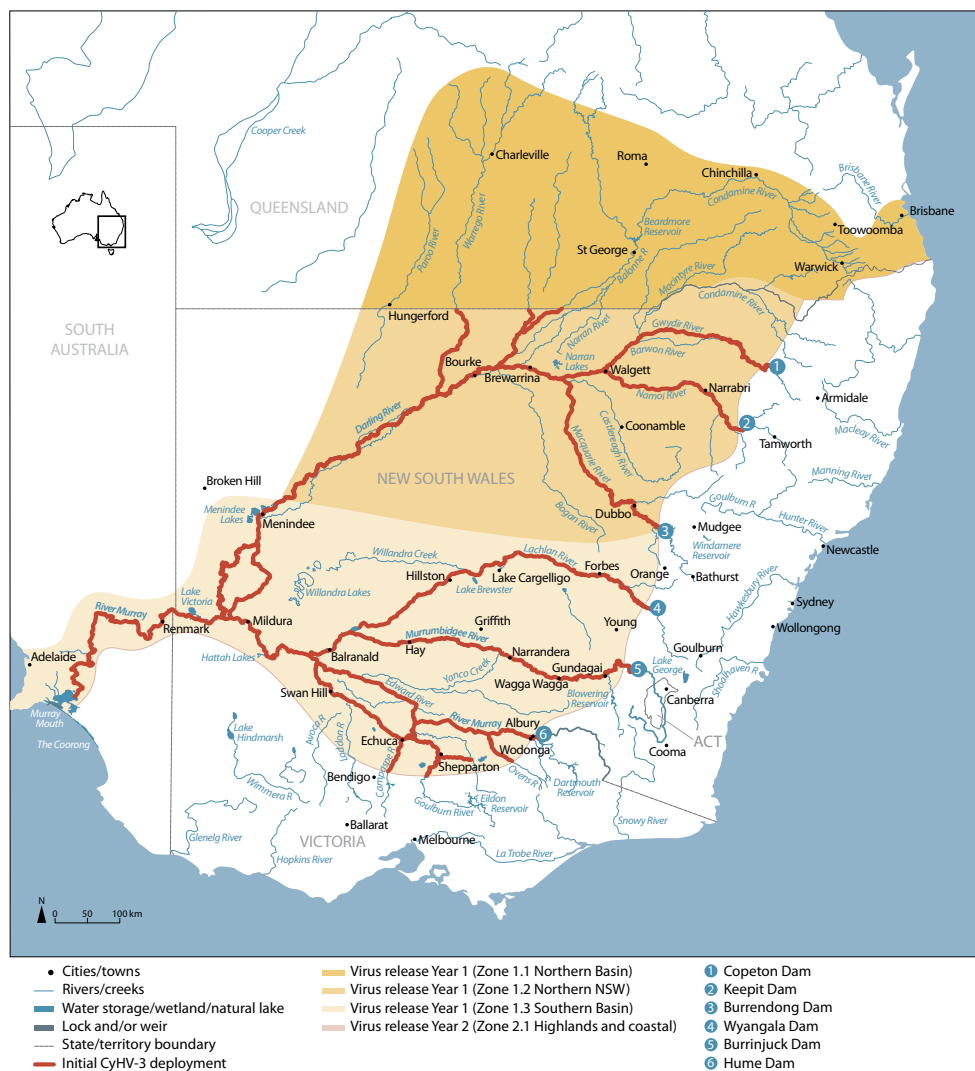


Figure 4: Initial deployment of the carp virus – regulated rivers in the MDB and major unregulated rivers in the northern Basin including Queensland.



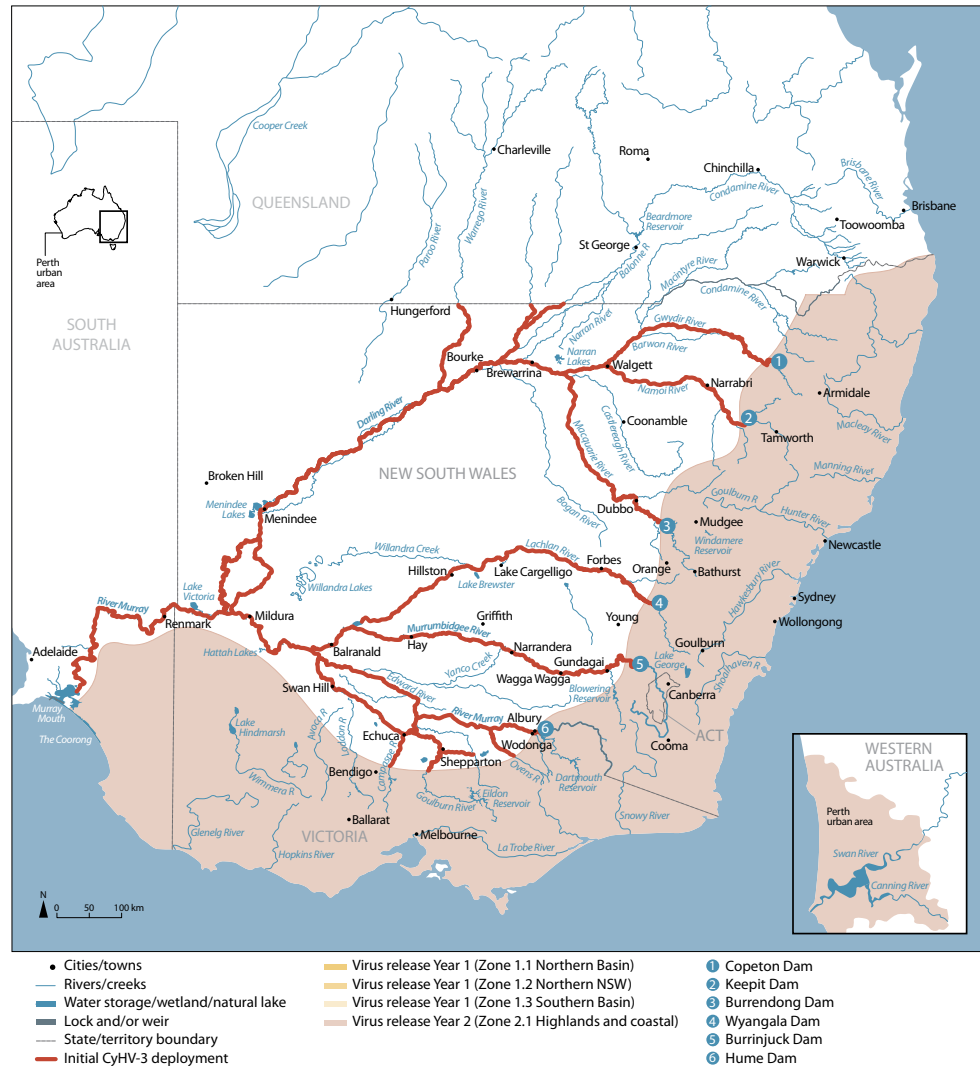


Figure 5. Secondary deployment of the carp virus – unregulated upland catchments of the MDB and coastal catchments including Western Australia.

3.5.4 Secondary carp virus deployment

In the second or third year following initial deployment, the carp virus would be deployed into aggregations within sub-populations in other catchments across the full extent of carp's Australian distribution. This control region is shown in Figure 5 and includes:

- unregulated upland catchments in the MDB, and
- coastal catchments across New South Wales, Victoria, Queensland and (potentially) Western Australia.

Specific locations for deployment can be determined by relevant jurisdictions consistent with national objectives for carp control.

3.5.5 Carp virus deployment methods

There are two potential methods for introducing the virus into carp populations:

1. As carp begin to aggregate in spring, fish in targeted aggregations would be captured, usually by electrofishing, injected with the virus, and released back into the waterway in which they were caught. As many aggregations will be infected as possible across each carp sub-population.
2. In late winter, prior to the onset of aggregating behaviour, dispersed carp would be captured within targeted sub-populations, injected with the virus to initiate a latent infection, and released. As the water warms, the latently infected carp are expected to join spawning aggregations. Because aggregations coincide with warming water temperatures, latently infected carp should experience reactivation of their infections as spawning occurs, thereby infecting other carp in the aggregation and initiating an outbreak. Uncertainties remain about exactly how a virus deployment approach based on latently infected carp would function under field conditions. For example, the extent to which carp experiencing a reactivating viral infection will participate in spawning aggregations is unknown. Some of these uncertainties could potentially be resolved by studying patterns of latency and recrudescence under conditions of environmental variability similar to those that would occur in the field and over timescales of weeks to months. Because Australian research using the carp virus can only take place in biosecure laboratories, studies of this nature would probably best be undertaken internationally, in a location where the virus is already endemic and where its use in scientific experimentation is therefore less restricted. Such experiments would not, however, obviate the need for a thorough post-release monitoring scheme linked to an adaptive governance and management structure to facilitate ongoing evolution of release strategies if carp biocontrol does proceed.

Selecting between these two deployment methods will be an operational decision based on conditions and capability. An adaptive approach should be used during the initial release, with a combination of methods tested depending on regional environmental conditions and operational constraints.



3.6 Carcass management

Carcass management, where required, would follow initial virus deployment. Carcass management is essential to achieve the following implementation objectives:

- management of environmental risks and no unacceptable impacts on MNES,
- management of risks to water quality for town water supply, stock and domestic water needs, irrigation, and cultural and recreational purposes, and
- effective and efficient management of carp virus deployment and carcass management.

Carcass management operations would be implemented within each CCA and would follow deployment operations.

Carcass management will be determined by the maintenance of water quality at levels that mitigate significant risks or specific outcomes. Where possible clear risk thresholds or triggers should be developed to guide operations.

Factors guiding selection of carcass management strategies include:

- predicted dead carp biomass,
- threats to the operability of infrastructure,
- social amenity,
- cost to deploy a method and return on investment,
- resource availability,
- waterway features,
- prevailing water quality in the operational area,
- flow and water movement,
- downstream and upstream assets and impacts,
- potential environmental impacts,
- forecast weather,
- unloading and transport access for equipment, and
- disposal option(s) available.



Technical Paper 6 outlines more specific carcass management strategies and methods. Detailed carcass management strategies will be determined in subsequent implementation planning stages based on specific regional conditions and policies.

To achieve efficient carcass management, methods that do not require manual collection and removal of carcasses should be prioritised where possible. Non-removal methods such as the use of water flow and wind conditions are less labour-intensive and more likely to be rapidly deployed, but may not always be achievable as a result of water availability and the degree to which flows at a given location can be manipulated or regulated.

3.6.1 Carcass management strategies

Potential carcass management strategies are outlined in the following sections. Some of these approaches involve manipulating live carp movements before infection and/or death, ultimately facilitating carcass removal. Section 4 (regional case studies) illustrates the potential application of some methods.

MANIPULATING MOVEMENT AND DISTRIBUTION OF LIVE CARP BEFORE VIRUS RELEASE

- Manipulating river flow and water level, including the use of permanent infrastructure (e.g. weirs, wetland regulators) to promote carp aggregation or concentration.
- Removing live carp from targeted sub-populations before virus release in areas where carp density and habitat traits pose risks to water quality, or in other areas where strategically effective.

MOVEMENT AND DISTRIBUTION OF INFECTED LIVE CARP

- Using permanent and temporary infrastructure (e.g. floating booms and nets) to restrict movement of infected live carp into areas or habitat types where water-quality impacts are more likely to occur and/or have serious consequences.
- Using permanent and temporary infrastructure to contain infected live carp in areas or habitat types where water-quality impacts are less likely to occur and/or have serious consequences.

MOVEMENT AND DISTRIBUTION OF CARP CARCASSES AND NUTRIENTS

- Using regulated water flows and permanent infrastructure to assist the flushing of carp carcasses and nutrients.
- Using regulated flow conditions and permanent and temporary infrastructure to intercept and remove carp carcasses at strategic locations.
- Using regulated water flows and permanent and temporary infrastructure to divert carp carcasses away from locations where water-quality impacts are more likely to occur and/or have serious consequences.
- Using permanent and temporary infrastructure to contain carp carcasses in situ at locations where water-quality impacts are less likely to occur and/or have serious consequences.

STRATEGIC REMOVAL AND DISPOSAL OF CARP CARCASSES

- Physically remove a proportion of carp carcasses from locations where their accumulation cannot be avoided and water-quality impacts are more likely to occur and/or have serious consequences.
- Physically remove a proportion of carp carcasses from strategic locations (e.g. where carcasses accumulate and there is ease of access or facilities for collection).

MITIGATING IMPACTS OF DECOMPOSING CARP CARCASSES

- Aerating waterways.
- Flushing cyanobacterial blooms.
- Native fish breeding and restocking plans (with particular focus on micro-endemic species and to mitigate potential prey-switching impacts, noting considerable logistical and biological challenges in some cases).

3.7 Implementation management and coordination

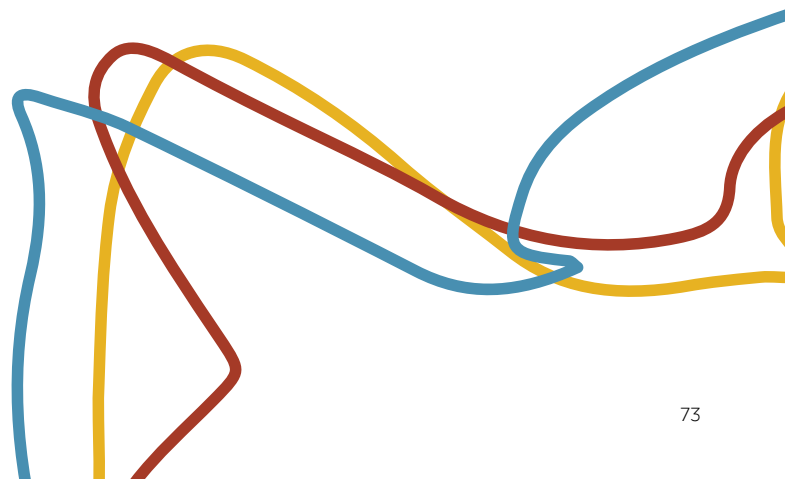
The NCCP will adopt existing cross-jurisdictional management systems that have been extensively applied in Australia and are used by all relevant authorities likely to be involved in carp biocontrol. These systems are relevant for both planned events (such as carp biocontrol) and emergency responses. These systems include:

- the Australian Interagency Incident Management System (AIIMS) Incident Control System (ICS) 2017 that underpins the management and leadership system for all emergency responses across Australia, and
- Biosecurity Incident Management System (BIMS) that is applicable for biosecurity emergency responses and largely aligns with AIIMS ICS except in areas where operations are specific to biosecurity (e.g. destruction and disposal).

Carp biocontrol implementation management should also be guided by the following principles:

- national coordination — led by the Commonwealth and delivered by each state/territory in which carp control is undertaken,
- scalability of management — each state/territory will expand and contract both scale and complexity of management in parallel with expansion and contraction of field operations,
- field operations within a functional management unit or CCAs — management will be situated primarily within local areas of operations (catchment or part thereof) with coordination at the whole-of-state/territory level,
- designated lead agencies — each jurisdiction undertaking carp biocontrol will nominate a single lead agency responsible for coordinating control activities including financial management,
- designated supporting agencies — jurisdictional lead agencies may nominate a supporting agency to represent their jurisdiction at national-level forums,
- jurisdictional delegation — each state/territory will use their authorities, delegations, and legislation to deliver the NCCP, and
- adoption of critical management systems.

Additional information on management arrangements, principles, and procedures is detailed in Technical Paper 6.



3.8 Integrated pest management

Viral biocontrol has been the NCCP's primary focus. Nonetheless, best-practice pest management usually requires an integrated approach. A range of carp control measures, including physical removal and genetic technologies, may have increased effectiveness when deployed against carp populations suppressed by viral disease. Physical removal methods could also be used to reduce carp populations before virus deployment to mitigate water-quality impacts in sensitive locations.

Integrating viral biocontrol with genetic biocontrol technologies is not currently feasible, as none of the potentially applicable genetic approaches are sufficiently advanced to enable field deployment. The Trojan Y Chromosome approach has been assessed as the most promising genetic control method (NCCP research project 3), but substantial investment in research and infrastructure (hatcheries) over approximately 10 years would be necessary to prepare even this technology for field deployment.

3.9 The role of science in management

An ongoing scientific management approach is critical for optimising biocontrol effectiveness and risk management. Remaining uncertainties about carp virus biocontrol could be reduced or managed by targeted additional research that could inform deployment strategies and ongoing management. During deployment, an adaptive, science-based operational approach will increase effectiveness and reduce risks and costs. For example, disease dynamics will probably differ slightly among regions and carp populations and a science-based management approach will be critical for detecting these differences and understanding their implications for biocontrol effectiveness.

To enable evidence-based adaptive management, the following actions and governance arrangements are recommended:

- a national technical advisory committee to frame and guide monitoring and evaluation and advise on initial deployment,
- national knowledge management and decision-support tools that can integrate modelling and monitoring data,
- regional investigations into carp aggregations and movements during planning periods,
- fish biology and water-quality expertise located within regional implementation teams, and
- a national monitoring and evaluation plan which includes the following assessments to inform ongoing management
 - viral effectiveness under varying environmental and carp demographic conditions,
 - impacts of carp decomposition on water quality,
 - the evolving relationship between carp and the virus, and
 - ecological responses during the deployment phase and in the longer term.

Science needs to be integrated into decision making and operational systems. The proposed adoption of AIIMS includes science and planning functions directly into decision making. Investing in an ongoing role for science in carp biocontrol is likely to significantly reduce implementation costs.

4 REGIONAL CASE STUDIES

4.1 Introduction

This section outlines how carp biocontrol could be implemented across four case study regions:

- the Lachlan catchment in New South Wales,
- the South Australian Riverland (Locks 1 to 3 on the Murray River),
- the mid-Murray (Barmah to Koondrook Perricoota), and
- the southern connected basin portion of the Murray and Murrumbidgee River systems (below Hume Dam).

Case-study locations do not span carp's entire eastern-Australian distribution, but focus on high carp biomass areas in the MDB's southern connected systems. Case study areas are high priority for virus deployment as described in section 3. Technical Papers 5, 6, 8, and 9 provide more detailed information.

Case studies were developed through numerous stakeholder workshops within each case-study area. Stakeholders involved in workshops included water managers, water users, environmental water holders, commercial fishers, tourism operators, landholders, local and state government officers, natural resource managers, and water utilities. Workshops used NCCP research results to inform planning and discussions.

Workshops had the following focus questions:

- How much of a problem are carp in the area?
- What are the opportunities for carp control in the area?
- What are the environmental values and locations in the area?
- Where are the social and infrastructure risks from carp biocontrol?
- Where should carp control be implemented and why?
- What are the risks from carp carcasses and how could they be managed?
- Do the NCCP biomass estimates for the area seem accurate?
- What are stakeholder views about use of the carp virus to control carp in the workshop area?

4.2 Lachlan case study

4.2.1 Description of area

The Lachlan case study area includes the entire Lachlan River catchment as shown in Figure 6. The Lachlan catchment encompasses 22 local government areas.

The catchment's main river is the Lachlan and its tributaries. Major off-channel waterbodies include Lakes Cargelligo and Brewster, and Cumbung Swamp. The Lachlan system does not connect directly through to the Murrumbidgee and Murray systems.

Parts of the Lachlan catchment are regulated with permanent waterbodies and flows but substantial ephemeral areas remain. There are many regulators and weirs, including major dams, on the Lachlan River and its tributaries.

4.2.2 The carp problem

The Lachlan catchment has a significant carp problem. Carp are widespread through the catchment, and are most abundant in permanent off-channel waterbodies. There are 70 carp sub-populations located throughout the catchment, highlighting the system's disconnected nature. Some parts of the catchment above Wyangala Dam remain carp free.

High carp densities (more than 500 kg/ha) occur in sections of the Lachlan river from Forbes to Hillston and in the major off-channel waterbodies. Carp biomass and its distribution within the catchment as estimated during summer 2017-18 is shown in Table 3 (drawn from NCCP research project 1).

Table 3: Indicative biomass of European Carp, *Cyprinus carpio*, and its distribution in the Lachlan River catchment, New South Wales. All biomass estimates in this table are drawn from NCCP research project 1.

Location	Tonnes
Upstream of Wyangala	145
Wyangala to Jemalong	1,901
Lake Cowal and upper drainage area	917
Jemalong to Brewster	866
Lake Cargelligo	208
Lake Brewster	1,077
Willandra Creek	7,491
Brewster to Great Cumbung	4,977
TOTAL	17,582

Carp abundance in the Lachlan catchment varies considerably in response to hydrological conditions. During dry conditions carp become concentrated into permanent waterbodies or die in ephemeral systems.



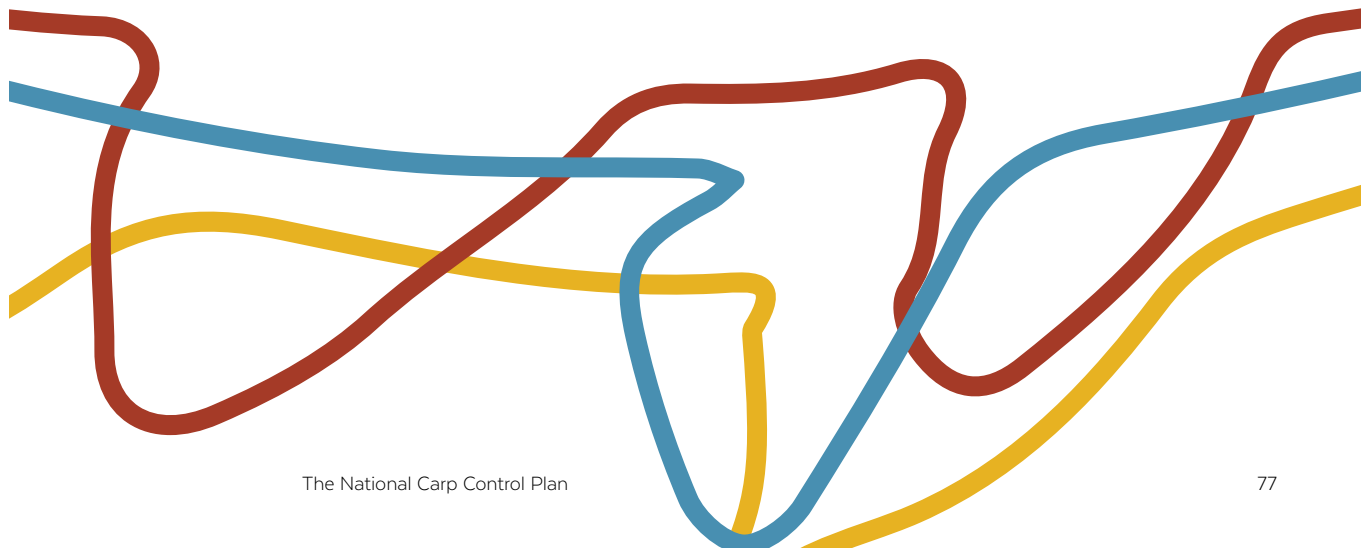
Lachlan River. Photo Mattinbgn (Wikimedia).

4.2.3 Risks assessment

Table 4 summarises the main risks and impacts associated with carp biocontrol in the Lachlan catchment, with mitigation options.

Table 4: Risk summary, with mitigation options, for carp biocontrol in the Lachlan River catchment, New South Wales.

Risk	Possible impacts	Risk mitigation
Environmental		
Native fish nursery sites (e.g. Agassiz's Glassfish [olive perchlet] and Southern Pygmy Perch).	Low if water quality maintained and normal Lachlan River flows.	Strategic carcass management upstream by booms.
Macquarie Perch breeding in the Abercrombie River.	Low if water quality maintained and normal Lachlan River flows.	Strategic carcass management upstream by booms.
Pelican rookery at Lake Brewster.	Could be impacted if water quality not maintained.	Virus deployment during a non-breeding season.
Lake Cowal.	Low due to variable carp populations.	No virus deployment.
Endangered Ecological Community downstream of Wyangala Dam.	Low due to cold water temperatures.	No virus deployment.
Social		
Town water offtakes.	Low due to treatment capability.	Water treatment and carcass management.
Major towns: Forbes, Booligal, Condobolin, Hillston and Cargelligo.	May impact amenity.	Focused carcass management.
Lake Brewster.	Low as no public access. Could affect water quality.	Water regulation to manage carcass impacts.
Lake Cargelligo.	High amenity value and likely high number of carcasses. Possible short-term impacts.	Use of wind and booms to corral carcasses to specific shorelines to reduce impacts.
Irrigation offtakes.	Numerous offtakes likely low impact.	Intake screening.
Weirs.	Low impact.	Operational approvals.



4.2.4 Implementation constraints

The Lachlan catchment has several characteristics that will shape and constrain carp biocontrol operations. In the catchment's ephemeral streams, carp population density is sufficiently low that virus deployment may not be warranted. A substantial portion of the Lachlan River is also affected by cold-water pollution from Wyangala and Carcoar Dams. Water temperatures in these reaches are below the permissive range for the disease caused by the carp virus.

The Lachlan River is not navigable, so physical collection of carp carcasses would generally be restricted to shore-based operations. Adjoining major floodplain waterbodies are navigable but have extensive shallow areas that would restrict operations.

Access to some parts of the catchment is restricted by private property and limited public road access. Operations would therefore be confined to strategic locations at weir points and settlements.

4.2.5 Management arrangements

Carp biocontrol operations for the entire Lachlan catchment could be managed through one CCA (Figure 4). Central command could be located in Forbes and forward commands could be located at Condobolin, Hillston and Oxley. The Oxley forward command could be included in the Murrumbidgee CCA. Most operational activity would occur at locations along the 300 kilometres of river between Forbes and Booligal.

4.2.6 Carp virus deployment strategy

The following sections of the Lachlan catchment would be targeted for carp virus deployment:

- Lachlan River and adjoining systems between Forbes and Booligal at numerous weir points,
- Lake Brewster,
- Lake Cargelligo,
- Booberoi Creek, and
- strategic locations on the Abercrombie River where carp aggregations are known to occur.

Carp aggregations also occur below Wyangala Dam and from Carcoar Dam to Forbes, but these areas are affected by cold-water pollution. Biocontrol using the carp virus therefore may not be successful in these reaches.

The areas listed above hold the Lachlan catchment's highest carp biomass and are also carp spawning sites. Risks in these areas can be managed with appropriate coordination and resourcing. These locations encompass more than 20 carp sub-populations.



Lachlan River. Photo Mattinbgn (Wikimedia).

4.2.7 Carcass management strategy

Carcass management in the Lachlan catchment would focus on areas where the virus had been deployed into carp aggregations and where risks are highest. Operations more generally would focus on the 300-kilometre zone between Forbes and Booligal.

Only a proportion of all carcasses may need to be removed from the river providing favourable flow conditions are available to maintain water quality. More carcasses may need to be removed from Lakes Brewster and Cargelligo, where flow is limited or non-existent. The following measures and tactics could be applied to manage risks:

- strategic cross-river booms to corral carcasses drifting downstream into shore-based removal locations,
- containment booming and removal of carcasses from aggregations below weir pools, and
- regulation of Lake Brewster to isolate carp carcasses.

Workshops highlighted considerable opportunities to synchronise water-regulation planning with potential virus deployment. Using water releases to assist with carcass management would reduce the need for costly and laborious manual carcass removal activities, but river managers are unlikely to be able to alter operations specifically for carp control.

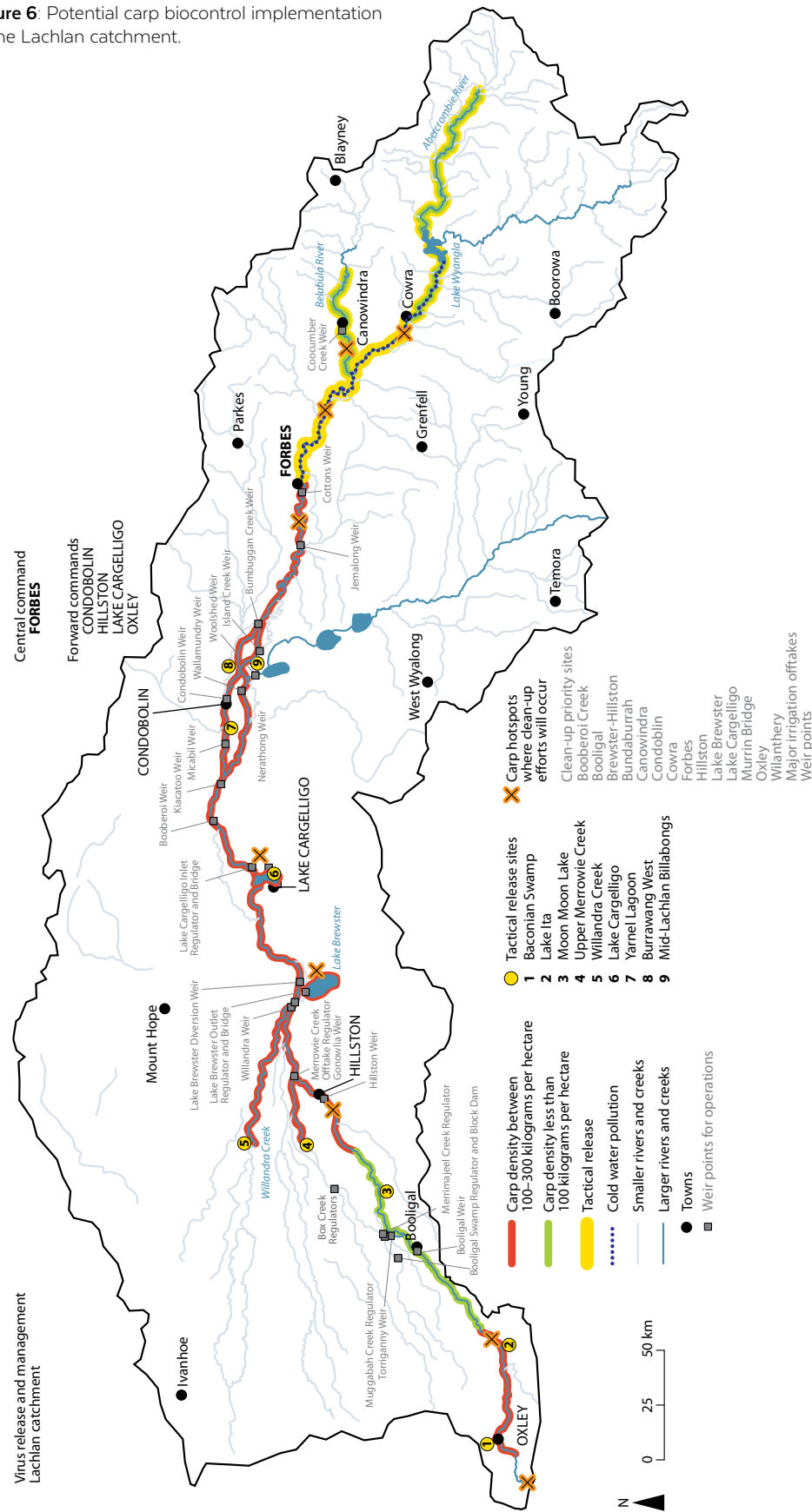
4.2.8 Conclusions

NCCP research and stakeholder workshops indicate that biological control using the carp virus could effectively reduce carp abundance in the Lachlan catchment. Strategic approaches to carcass management generally appear logistically achievable (with some constraints), and are expected to mitigate risks. If carp biocontrol proceeds, operations in the Lachlan catchment would be focused on various locations along the 300-kilometre river stretch between Forbes and Booligal.

Expert workshops emphasised the importance of communications and engagement within the region in advance of, and during, operations. There is considerable local knowledge and expertise in the region that should be utilised in biocontrol implementation. Traditional Owners and recreational fishing groups have expressed interest in planning, decision making, and operational participation.



Figure 6. Potential carp biocontrol implementation in the Lachlan catchment.



4.3 Riverland/lower Murray Lock 1 to Lock 3 case study

4.3.1 Description of area

The mid-Murray case study covers the Murray River between Locks 1 and 3, including Lake Bonney. Carp attain high population densities in the case study area, inhabiting the Murray River channel, adjoining wetlands and oxbows, and Lake Bonney. Commercial activity in the region includes extensive irrigated agriculture, river-based tourism, and commercial carp harvesting in Lake Bonney. Major townships include Waikerie and Morgan.

4.3.2 The carp problem

Over the 2017-18 summer, carp densities in the case study area ranged from 200–500 kg/ha (NCCP research project 1). Carp dominate waterbodies such as Lake Bonney.

4.3.3 Risk assessment

Table 5 summarises the main risks and impacts associated with carp biocontrol in the Riverland/lower Murray area, with mitigation options. Risks are substantially social in nature.

Table 5: Risk summary, with mitigation options, for carp biocontrol between Locks 1 and 3 in the lower Murray River, South Australia.

Risk	Possible impacts	Risk mitigation
Environmental		
Off-channel regulated wetlands.	Invertebrates and amphibians, Murray Cod.	Regulation of flows, carp attractants, carcass removal.
Oxbow systems e.g. Devils Pound.	Invertebrates and amphibians. Reduced dissolved oxygen, algal blooms.	Carcass removal with boats.
Murray River channel.	Murray Cod.	Strategic booms and upstream collection of carcasses.
Social		
Houseboats (hundreds).	Odour, amenity.	Strategic booms and upstream carcass collection. Effectively communicating the extent of affected areas to potential customers.
Waikerie township.	Odour, amenity.	Strategic booms and upstream carcass collection. Small boat carcass removal.
Holiday shacks between Morgan and Blanchetown and off-channel marina.	Odour, amenity.	Strategic booms and upstream collection of carcasses.
Private irrigation offtakes (domestic use).	Water quality.	Screens on intake structures.
Major irrigation offtakes.	Water quality.	Screens on intake structures.
Morgan Lagoon.	Odour, amenity.	Booms and small boats to corral carcasses for collection.
Lake Bonney.	Six hundred tonnes of carp. Odour and amenity.	Booms and small boats to corral carcasses to boat ramps and edges for operations.

4.3.4 Implementation constraints

This case study area imposes several implementation constraints associated with access and infrastructure. Large shallow wetlands, lakes, and oxbow systems are difficult to access with boats and shore-based equipment. Lake Bonney also presents a challenge for operations. The lake is large and shallow with high carp biomass and high salinity. Lake Bonney is also subject to intensive recreational use. The lake experiences strong winds that will affect carcass management operations by blowing dead carp to downwind locations. The wind also naturally oxygenates the lake, potentially mitigating water-quality impacts.

Major river regulation infrastructure is located at each of the locks. Carp carcasses will likely concentrate at these locations. Carp control operations must be conducted without affecting river operations.

4.3.5 Possible pre-deployment density reduction

The lower Murray contains high carp densities. Consequently, the 40–60% carp reductions expected to follow virus deployment may still leave higher densities than would occur in less resilient populations. While any carp reduction has the potential to deliver ecological benefits, such benefits may be enhanced if virus deployment in the lower Murray is preceded by targeted, intensive harvesting to reduce carp ‘starting density’. Assessing the timing, magnitude, and operational planning aspects of this ‘pre-fishing effort is beyond the NCCP’s scope, but could usefully be investigated by some limited additional modelling (NCCP research project 4).

4.3.6 Management arrangements

Operations may involve a control centre located at Waikerie and forward command locations at Lake Bonney and Morgan.

4.3.7 Carp virus deployment

The carp virus should be deployed through the whole river system and adjoining wetlands and oxbow systems.

4.3.8 Carcass management

Priority carcass management locations include areas above water treatment plants, water offtakes, areas around townships and holiday shacks, locks, spot locations in which carcass accumulation is likely (e.g. Pelican Point), and wetlands holding environmental values.

4.3.9 Conclusions

The Riverland area has high carp biomass that could be substantially reduced by carp biocontrol. These reductions could potentially be enhanced by targeted, intensive harvest before virus deployment. Risks in this area are predominantly social, reflecting high levels of tourism and recreational use.

Social risks could be managed with strategic boom placement and collection of carp carcasses. Screens on irrigation intakes provide a solution to mitigate risks such as pump blockage. Lake Bonney would require more sophisticated carcass management using corralling and booming in navigable parts of the lake to direct carcasses to convenient collection points. Workshops highlighted the importance of local communication and engagement, especially with the tourism sector. Workshops also highlighted the importance of working with water authorities and local governments in potential carp virus biocontrol.

4.4 Mid-Murray case study

4.4.1 Description of area

The mid-Murray case study area extends from Picnic Point to the Gunbower wetlands on the Murray River. This section of the Murray forms a highly connected permanent system with large adjoining wetlands including Barmah and Moira Lakes, Gunbower Creek and associated lagoons, and Kow Swamp. The area's flow patterns and geomorphology are ideal for carp.

4.4.2 The carp problem

The region supports high carp densities and spawning hotspots, including Barmah and Moira Lakes and Gunbower Creek. The area's carp population tends to concentrate at these spawning sites during spring and early summer.

4.4.3 Risks assessment

Figure 7 provides a spatial scan of the risks associated with virus release in the study area. Table 6 summarises these risks at particular locations.

Table 6: Risk summary, with mitigation options, for carp biocontrol in the mid-Murray River region (Pelican Point to Gunbower Forest wetlands).

Risk	Possible impacts	Risk mitigation
Environmental		
Ramsar wetlands (Barmah).	Endangered species, bird nesting.	Regulation of flows, timing of virus deployment, strategic carcass removal, carcass dispersal.
Gunbower Creek and lagoons.	Bird nesting, wetland ecology.	Carcass removal with boats.
Kow Swamp.	Bird nesting.	Flow regulation, strategic booms and upstream collection of carcasses, carcass removal.
Social		
Kow Swamp.	Significant cultural site, water quality.	Flow regulation, strategic booms, and upstream collection of carcasses.
Echuca township and associated tourism and recreation including events.	Odour, amenity.	Strategic booms and upstream collection of carcasses, regular small boat carcass removal.
Torrumbarry weir pool.	Odour, amenity.	Strategic booms and upstream collection of carcasses, regular small boat carcass removal.
Gunbower small landholdings.	Odour, amenity, water quality.	Screens on intake structures.
National irrigation channel offtake.	Water quality.	Strategic booms and upstream collection of carcasses.

4.4.4 Possible pre-deployment density reduction

The mid-Murray case-study area holds generally high carp densities. Consequently, the 40–60% carp reductions expected to follow virus deployment may still leave higher densities than would occur in less resilient populations. While any carp reduction has the potential to deliver ecological benefits, such benefits may be enhanced if virus deployment in the mid-Murray is preceded by targeted, intensive harvesting to reduce carp ‘starting density’. Assessing the timing, magnitude, and operational planning aspects of this ‘pre-fishing’ effort is beyond the NCCP’s scope, but could usefully be investigated by some limited additional modelling (NCCP research project 4).

4.4.5 Implementation constraints

The study area’s features and values impose environmental, physical, and social constraints on biocontrol implementation. Important considerations include:

- high levels of year-round tourism and recreational use,
- large shallow inaccessible waterbodies such as Kow Swamp,
- significant cultural values,
- Ramsar wetlands and endangered species,
- requirement to maintain navigable waterways,
- numerous shallow lagoons with poor physical access and high carp biomass, and
- numerous small adjoining landholders.

4.4.6 Management arrangements

The regional control centre could be located at Echuca with forward command centres at Picnic Point and Cohuna.

4.4.7 Carp virus deployment

Virus deployment is illustrated in Figure 8. The case study indicates that eight major carp sub-populations should be targeted for virus deployment.

4.4.8 Carcass management

Carcass management in the region is illustrated in Figure 9. Managing high-risk zones around the Echuca township and Gunbower and Torrumbarry weirs will require adequate resourcing. Cross-channel booms that corral and direct carp carcasses to collection points would constitute the main management method. Booms would be located upstream of high-risk areas. Around Echuca township regular small boat operations would be required to remove as many carcasses as practical. At Barmah and Moira Lakes, risks could be substantially managed by carcass dispersal using flow regulation supplemented by strategic carcass removal at aggregation locations.

4.4.9 Conclusions

The mid-Murray case study illustrates that the carp virus could be deployed and managed successfully in a high-use, complex, connected system with important environmental and social values. The case study area poses some significant challenges to implementation, especially in locations such as Kow Swamp and Gunbower Creek. These locations will require further implementation planning. As with the lower Murray, carp biocontrol outcomes in the mid-Murray could potentially be enhanced if targeted intensive harvesting occurred before virus deployment. Carp biocontrol in the mid-Murray case study area would be relatively costly, reflecting the area’s complexity and high carp biomass.

Figure 7: Mid-Murray carp biocontrol case study risks and opportunities scan.

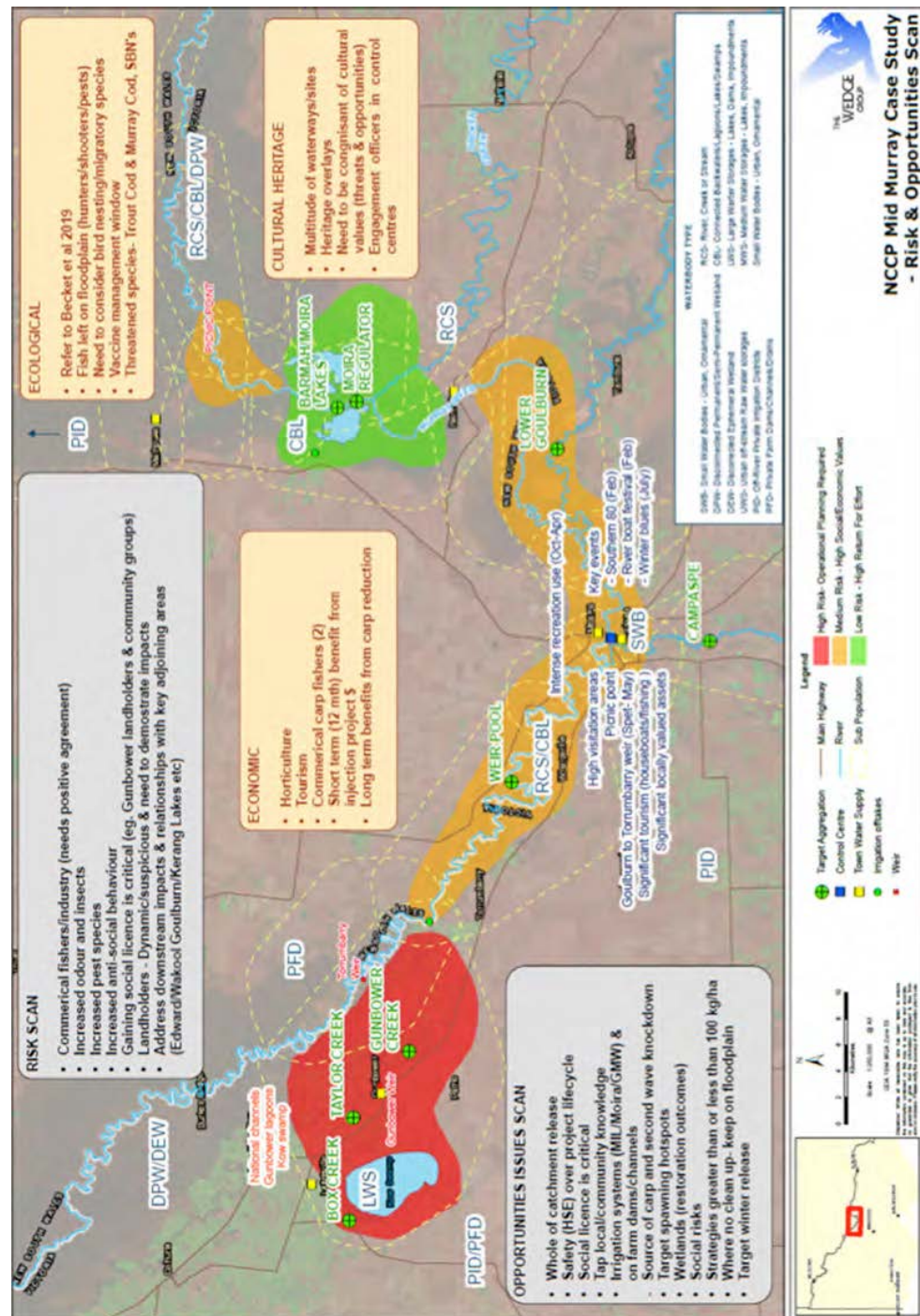


Figure 8: Mid-Murray deployment strategy into carp sub-populations.

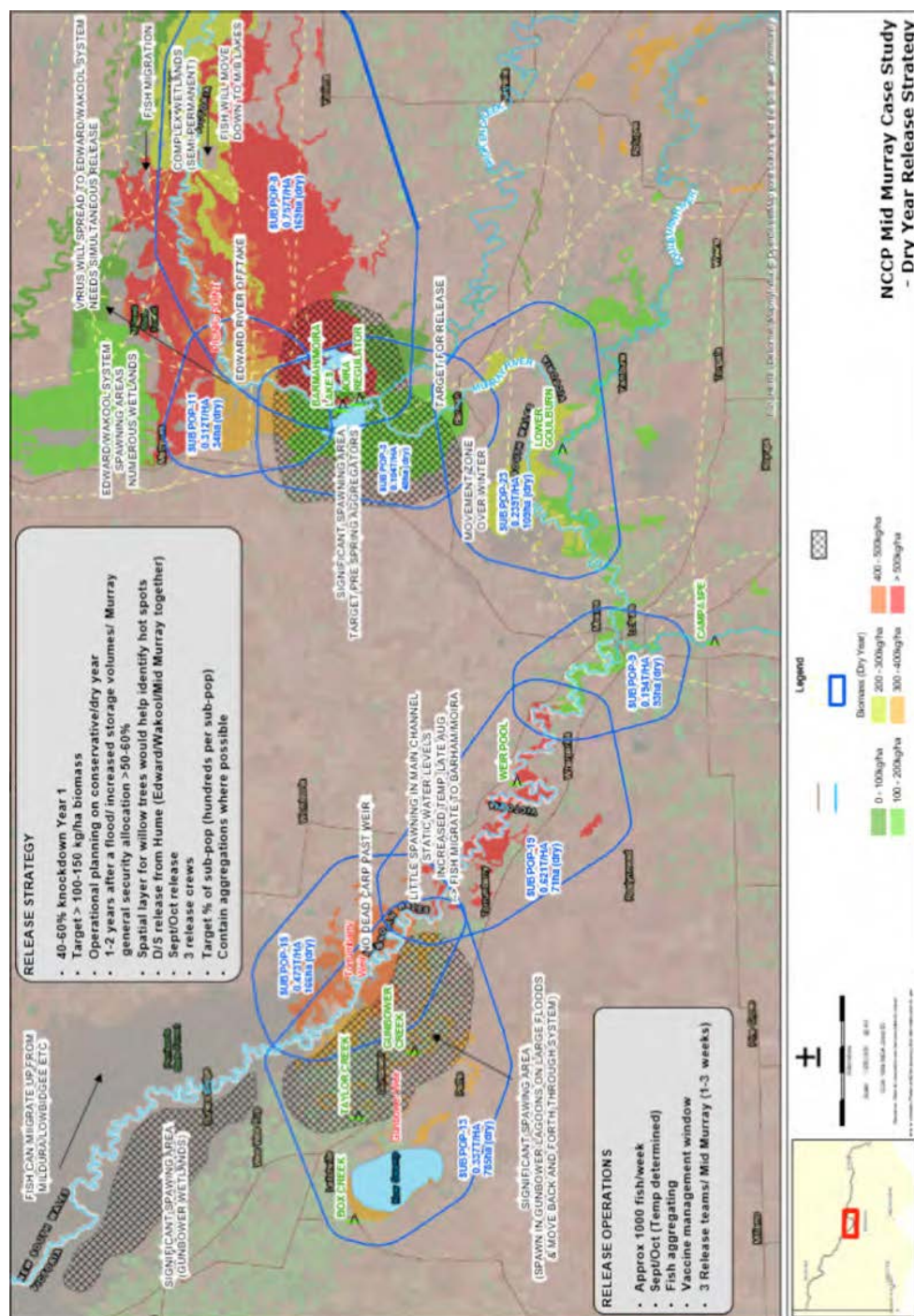
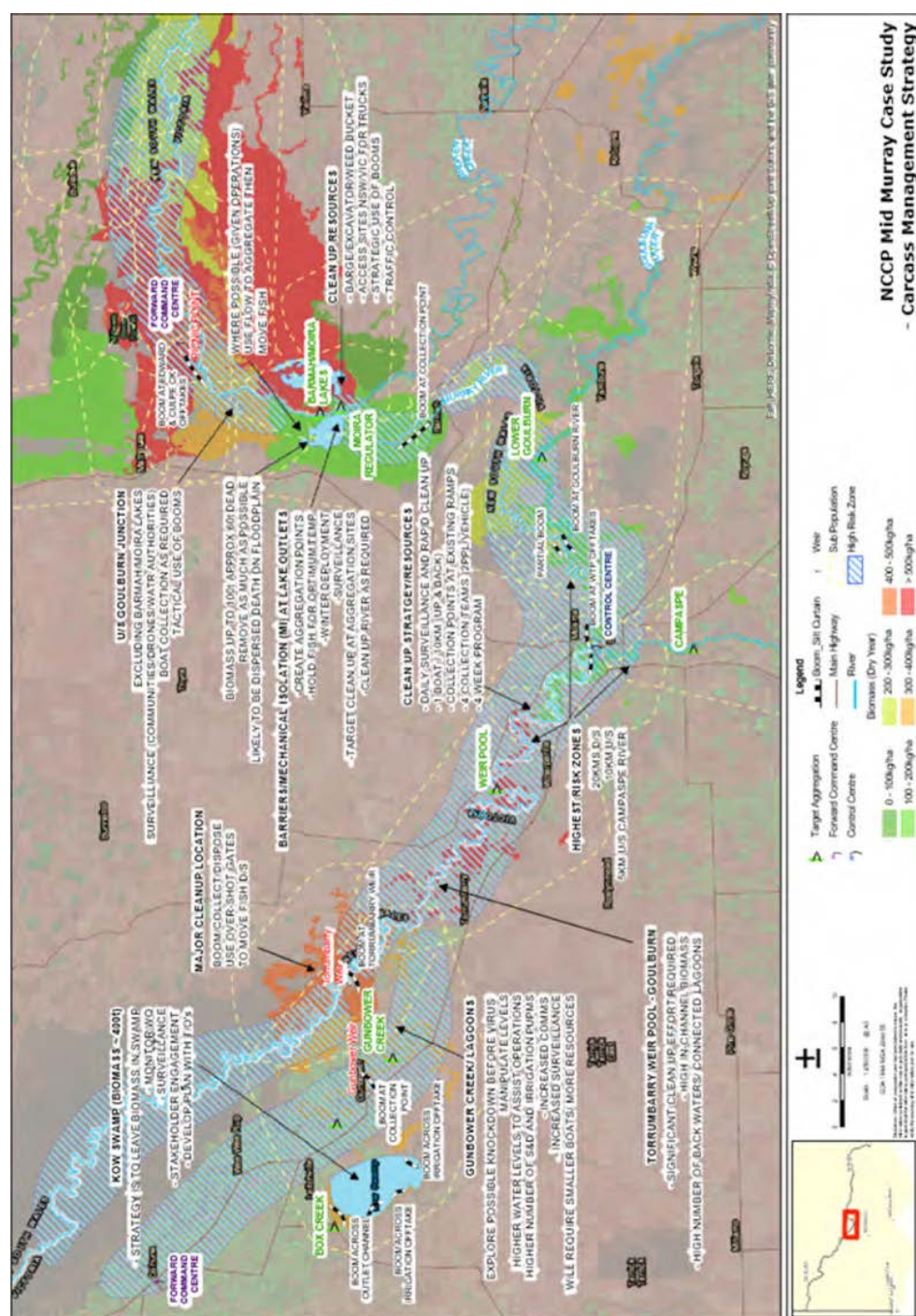


Figure 9: Mid-Murray carcass management strategy.



4.5 Murray and Murrumbidgee system below Hume Dam case study

4.5.1 Description of area

The case study area represents the southern zone for initial deployment of the carp virus, and encompasses the previous mid-Murray case study, demonstrating how carp biocontrol could be scaled up. This area contains the highest carp biomass and densities of all the case study areas. The area also includes anabranch systems and the lower reaches of tributaries into the main rivers. Parts of the area have high environmental values including Ramsar wetlands.

4.5.2 The carp problem

Carp are abundant in both Murray and Murrumbidgee River systems. During summer 2017-18, carp densities in the area ranged from 100–500 kg/ha (NCCP research project 1). The case study area encompasses numerous carp aggregation and spawning hotspots.

4.5.3 Risk assessment

Figure 10 summarises high-level risks for virus deployment and management. Highest risk areas are located in the lower sections of the Murray River where carp biomass is greatest. Other high-risk areas include waterbodies and reaches that experience periodic low flows, such as the Edward-Wakool anabranch system (EW1 in Figure 10) and the lower Murrumbidgee wetlands (MB6 in Figure 10).

4.5.4 Possible pre-deployment density reduction

This case study area holds some of Australia's highest carp densities. Consequently, the 40–60% carp reductions expected to follow virus deployment may still leave higher densities than would occur in less resilient populations. While any carp reduction has the potential to deliver ecological benefits, such benefits may be enhanced if virus deployment in the Murray and Murrumbidgee system below Hume Dam is preceded by targeted, intensive harvesting to reduce carp 'starting density'. Assessing the timing, magnitude, and operational planning aspects of this 'pre-fishing' effort is beyond the NCCP's scope, but could usefully be investigated by some limited additional modelling (NCCP research project 4).

4.5.5 Management arrangements

Potential management arrangements for operations are outlined in Figure 10. All operations could be managed in four CCAs or regions. Each region would have a central command and at least two forward command locations.

Coordination would be required across regions at the state/territory level. During operations, resource deployment may at times need to be concentrated on particular sites to address emerging risks. Surge operational capacity will also be required.

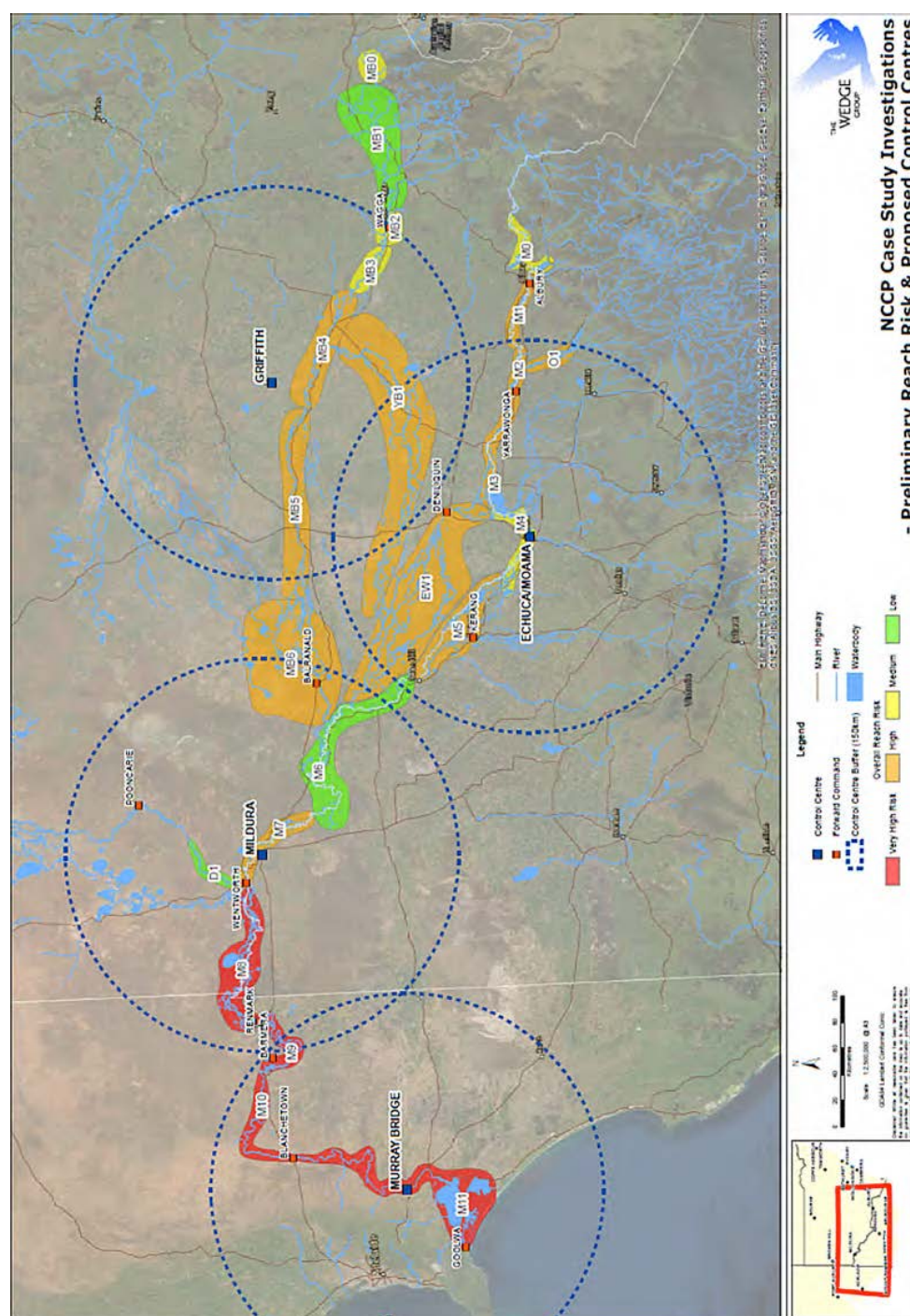
4.5.6 Operational costs

The cost of implementing carp biocontrol in the case study area was estimated at approximately \$190 million over three years with range of assumptions (NCCP planning investigation 5).

4.5.7 Conclusions

This case study highlights the potential for effective and efficient management of carp biocontrol operations across large areas by directing and coordinating operations through smaller regions.

Figure 10: Murray and Murrumbidgee NCCP implementation to address risks.





5 COSTS AND BENEFITS OF CARP CONTROL

5.1 Introduction

This section summarises information from NCCP research assessing:

- the current costs and benefits consequent upon the presence of carp in Australia (i.e. the 'status quo'),
- costs and benefits arising from implementing a biocontrol program using the carp virus, and
- longer-term costs and benefits associated with reduced carp abundance, if a carp control program was successful.

Both market (i.e. readily monetised) and non-market (i.e. less readily monetised, yet still valuable) costs and benefits were considered.

Costs and benefits of carp biocontrol are difficult to assess accurately because carp:

- inhabit a diverse range of Australian aquatic ecosystems,
- vary markedly in abundance among different habitats, and within a given habitat through time, and
- cause habitat-specific ecological impacts that interact with a range of other, non-carp stressors.

Consequently, developing cost-benefit assessments for a limited number of case study locations is likely to provide more meaningful information than a nation-wide estimate with a large error margin. The case study approach also provides a methodological 'template' that can be applied to additional regions as required.

Research under the NCCP has identified that, while the virus has potential to reduce and suppress carp abundance, ecological outcomes in areas with very high carp densities could potentially be enhanced by targeted and intensive carp harvesting before virus deployment. The NCCP was explicitly focused on assessing the feasibility of carp biocontrol, so, beyond a general acknowledgement of the potential usefulness of an integrated approach, costings and plans for a targeted 'fish down' are not presented in this report. Any costs incurred by such an initiative would need to be quantified separately. Using targeted harvesting to reduce carp densities before virus deployment could bring both additional costs and opportunities to reduce expenditure. For example, carcass management activities could potentially be reduced in some areas if carp populations were 'thinned' by harvesting before biocontrol operations began.

5.2 Costs of carp in Australia

Impact costs of carp in Australian waterways have been assembled from available data under the following themes:

- a. reduced water quality,
- b. erosion and increased incidence of algal blooms,
- c. impacts on invertebrates and both native and exotic aquatic plants,
- d. competition with native fish species, and
- e. introduction of pests and diseases.

Total impact costs were generated by including maintenance costs for water treatment and infrastructure, planning and management costs for affected water and land, opportunity costs for tourism, and secondary impacts for primary producers (NCCP research project 19).

Cost assessments indicate that carp do not create substantial market costs in the Australian economy (NCCP research project 19). Rather, most direct and indirect carp impacts are more strongly aligned with non-market costs. Irrigation sectors, water authorities, and primary producers did not report carp as a significant financial threat. Water-treatment plants reported an estimated average increased water-treatment cost of \$211,494 per plant per year due to source sedimentation. This 'per-plant' figure represents a total annual cost of \$21,360,894 for treatment of turbid water when multiplied across 101 treatment plants in New South Wales and Victoria (NCCP research project 19). However, the proportion of this total sedimentation directly attributable to carp is unknown.

Non-market impact costs were calculated based on a per-household willingness to pay (WTP) for primary changes over 10 years following carp suppression. These changes were identified by an ecological expert elicitation panel, with units of change identified as additional expected native fish per kilometre of river, per expected additional 10,000 hectares of wetland free of carp, and per additional expected 1000 waterbirds. The range of possible total WTP calculated for Australia is \$24,372–\$2,076,074,706 for fish, \$39,187–\$313,498,906 for wetlands, and \$5,422–\$601,833,024 for birds (NCCP research project 19).

Calculating total WTP of Australian households requires predicting how many units of expected environmental outcomes will be realised for each affected area. To do so with the greatest accuracy, using the implementation strategy as a guide, a tailored clean-up strategy must be developed, informed by logistical considerations specific to the area, and water-quality implications predicted by the same or 'best fit' case-study area. Each area to be considered must then synthesise epidemiological predictions from the same or 'best-fit' case-study area, and ecological response predictions from the same or 'best-fit' case-study area. Two case study examples are provided later in this section.

In addition to market and non-market surveys, a literature review of economic, environmental and/or social impacts related to the direct and indirect impacts of carp was undertaken. Estimates associated directly with the impact costs of carp ranged from \$11.18 to \$500 million per annum Australia-wide. The latter estimate must be viewed with caution, as the methods used to calculate it are not clearly described. Additional estimates were made for the value of impacts where carp may be a contributing factor, including erosion damage, reduced amenity, biodiversity impacts, and water-quality impacts including algal blooms. Erosion was estimated to cost irrigators \$1.9 million over eight years for channel repairs, while loss of consumer surplus due to algal blooms was estimated to cost \$185 million to \$250 million per annum. Amenity, biodiversity, and water-quality impacts were assessed based on a household WTP for qualitative or quantitative improvements. Willingness to pay for a 1% improvement to an attribute ranged between \$0.46 to \$13.27. Improvements in amenity also attracted a one-off WTP of \$28.75 to \$54.16 for recreational fishing, and \$59.97 to \$104.07 for rivers to be 'swimmable'.



5.3 Benefits of carp in Australia

Carp in Australia generate financial benefits through three key uses; recreational fishing, commercial fishing, and the ornamental koi industry. A small but active community of Australian recreational fishers specialise in targeting carp (and other species) using coarse-fishing techniques (NCCP research project 13). Other recreational fishers catch carp as part of more general fishing activity, in which carp may or may not be one of the target species (NCCP research project 13). Recreational fishers who like or prefer catching carp are likely to constitute a small proportion of total recreational fishing participation in Australia (NCCP research project 19). The economic contribution of recreational carp fishing in Australia has not been estimated. Positive economic impacts from carp fishing competitions (e.g. 'carp-buster' events), also not quantified, may benefit communities through generation of tourism industry income. Importantly, benefits associated with community-based carp-buster events may arise largely from participants' desire to 'get rid of carp' (NCCP research project 19).

Commercial exploitation of carp centres around two key products; fertiliser (Charlie Carp) and carp for table consumption in Australia and abroad. Profitability of carp fishing in Australia has not been estimated.

The commercial ornamental koi sector differs from the other sectors discussed here in that it relies on maintenance of captive imported and locally bred animals rather than preservation of wild populations of carp. The legality of owning and transporting carp varies from state to state in Australia.

5.4 Regional costs of carp biocontrol

The whole Murray and Murrumbidgee systems and the mid-Murray case studies were used to estimate the cost of implementing a carp biocontrol program using the carp virus. The total cost estimate for the whole Murray and Murrumbidgee systems is roughly \$190 million. The rough cost estimate for the mid-Murray is approximately \$14 million. These costs are approximate and indicative only, and reflect 2019 costings and numerous assumptions. If governments choose to continue work towards a final decision on whether or not carp biocontrol should proceed, the methods and processes used to develop these estimates can be used as a template for refining cost estimates.

The costs described here are based on the following key assumptions:

- one year for implementation planning and coordination at the regional level,
- two years of initial deployment,
- the second year of initial deployment assumes 60% of year one costings,
- twelve months of community engagement and establishment of regional operations platforms,
- six months of operations in each year of deployment, with peak resource application September to December annually,
- deployment in a year with average water levels,
- deployment will target populations where average biomass exceeds 150 kg/ha,
- mortality rate of 60%, and
- clean-up operations targeting identified medium- and high-risk (ecological and socio-economic) reaches.

Potential impacts not included in the costs of virus release include:

- loss of amenity for regional communities and tourists due to fish carcass odour in affected waterways,
- increased incidence of algal blooms and/or blackwater events that may reduce aesthetic and recreational amenity values and biodiversity for some affected waterways,
- increased bird mortalities associated with botulinum toxin cycles if carcasses and/or water quality in wetlands and other low-flow waterbodies cannot be managed,
- increased water treatment costs resulting from dead fish blocking plant inlets and/or above-threshold ammonia levels from decomposing fish, and
- increased costs for protection of the koi industry.

Pre-release costs were calculated for factors including

- extensive local consultation and stakeholder engagement,
- local statutory planning functions,
- establishment of operational posts (control centres and forward command centres),
- production, transport, and storage of virus,
- training of virus deployment personnel,
- training and response resources for clean-up personnel, and
- establishment and maintenance of communication channels between monitoring, release, and clean-up personnel.

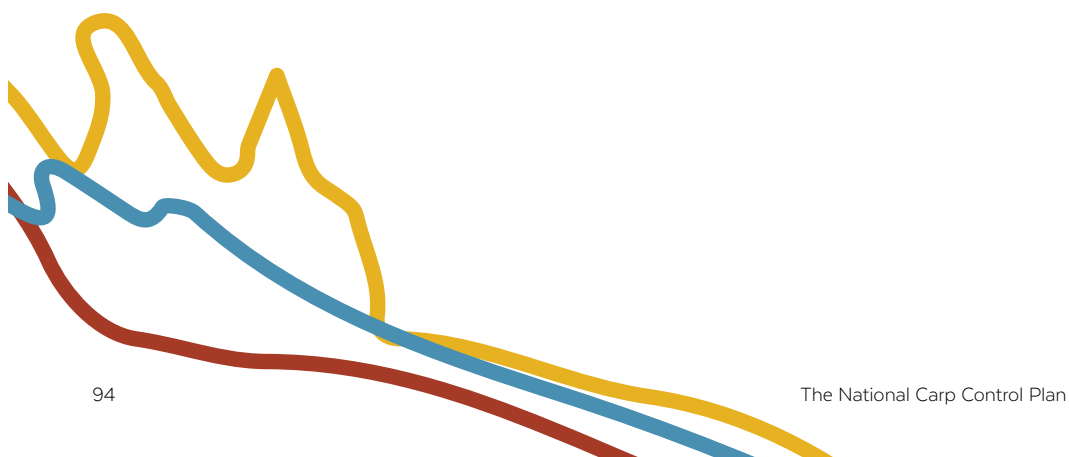
Virus release costs include:

- virus transport and distribution,
- financial remuneration for personnel, and
- hire and/or purchase of tools and equipment.

The two potential viral deployment methods described in section 3.5 incur similar costs.

Following infection of carp populations, costs are largely associated with carcass management, monitoring, communications, and associated operations including:

- contracting personnel to coordinate, patrol, and collect carp from waterways,
- disposing of dead carp, including hire and/or purchase of equipment to direct, confine, collect, or contain dead carp,
- planning and coordinating dead carp disposal including transport routing, access, and designation/design of disposal areas, carcass transport and processing, and
- sourcing and retaining 'surge' resources for response to unforeseen events.



Ongoing (post initial deployment and clean-up) costs include:

- monitoring, assessment, and reporting of carp biomass and aggregation dynamics, hydrological conditions, and long-range meteorological predictions to ensure successful long-term suppression,
- additional modelling, or use of existing models for ongoing management,
- capacity to produce, transport and store virus, and maintain effectiveness through targeted follow-up activities,
- monitoring and reporting virus efficacy (transmission, virulence, potential emergence of host resistance),
- water-quality monitoring and reporting for human and livestock use,
- ecological health monitoring and evaluation of carp suppression,
- monitoring and evaluation of workplace health and safety effectiveness for personnel,
- regular reporting of carp control activities to key stakeholders, and
- monitoring community attitudes towards carp control activities and results for development of effective communication.

5.5 National costs

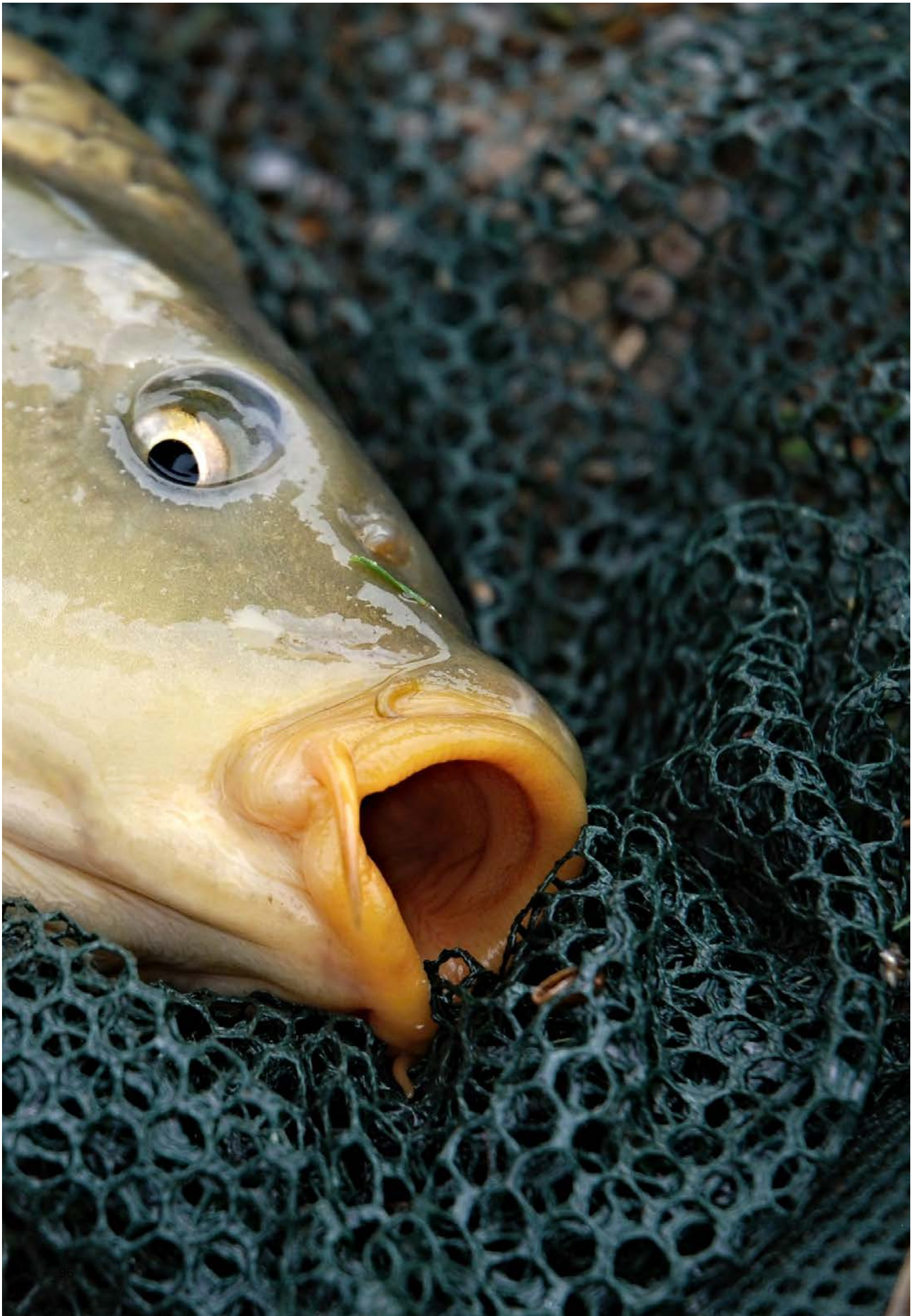
Accurately identifying a total national cost for carp biocontrol implementation is not currently possible. A total national cost estimate could be generated by adding jurisdictional and national costs to regional costs. Key factors to consider in developing regional costs include:

- A region's geographic, landscape, and ecological features, including characteristics of its carp populations. For example, costs are likely to be highest in regulated systems of the southern MDB, as these have high carp biomass and could receive carp decomposition products from upstream. Consequently, substantial risk mitigation efforts may be required in this region. Tailored risk mitigation approaches are also likely to be needed for ephemeral systems in the northern portions of the MDB, given the particular risk profile presented by these habitats.
- Can a region provide enough financial, technical, and human resources on its own, or will these need to be subsidised?
- Can regions coordinate to mitigate costs and risks?
- Does a region lie within a jurisdiction that has/can obtain contingency and surge resources if needed?
- How extensive will year two and follow up operations need to be?

5.6 Cost-mitigating factors

Opportunities may exist mitigate the costs associated with carp carcass management by using carcasses as raw material for marketable products rather than placing them in landfill (or otherwise disposing of them). To explore potential economic uses of carp carcasses, an NCCP research project trialled several potential products and processing techniques (NCCP research project 17). Products identified as potentially feasible were subject to further cost-benefit analysis. Composting, rendering as mixed inputs to animal feeds, and hydrolysate were the most commercially viable options. Composting was identified as having the greatest net cash benefit per kg input of carp (\$0.438-\$0.338) (NCCP research project 17).

Before developing plans to utilise carp carcasses, potential constraints imposed by jurisdictional environmental protection legislation will need to be considered. For example, in some Australian states, the carcasses of carp killed by the virus may be classified as industrial waste, potentially limiting options for their use.



6 FEASIBILITY ASSESSMENT

The feasibility of proceeding towards carp biocontrol implementation is assessed against the criteria detailed in Table 7. The NCCP assesses scientific and operational feasibility. Feasibility criteria involving financial and policy considerations are not assessed, as these are matters for consideration by governments. The feasibility criteria detailed in Table 7 cover the critical questions for carp biocontrol based on the aims of biocontrol programs generally, previous research, input from NCCP advisory groups, and NCCP research results.

The ecological benefits of carp biocontrol are not included as a feasibility criterion, as accurately assessing the ecological benefits of carp reduction is complex and context specific (Technical Paper 1; NCCP research project 18). The NCCP is underpinned by the fundamental assumption that carp have adverse impacts on freshwater ecosystems, consistent with extensive research and evidence, and that reducing these impacts will improve environmental outcomes (see section 1, and Technical Paper 1).

Table 7 outlines each criterion and any relevant standards defining it.

Table 7: Feasibility criteria and relevant standards.

Feasibility criteria	Definitions and standards
1. Will carp virus biocontrol be effective?	
That there will be widescale reduction and suppression of carp populations for the medium to long term (5-10 years) in Australian aquatic ecosystems.	Long-term carp suppression is defined as 5-10 years, based on the likely shorter suppression durations afforded by other currently available methods. 'Widespread' is defined as occurring across major catchment systems and multiple jurisdictions. Modelled outcomes are likely to suppress carp populations by 40-60% on average.
2. What are the carp virus biocontrol risks and how can they be managed?	
The carp virus will not affect human health, or domestic or stock animal health, as a result of direct infection (i.e. this criteria does not relate to potential secondary impacts, such as those associated with degraded water quality).	The World Organisation for Animal Health (OIE) defines a notifiable impact as occurring if a species is infected by the pathogen in question. Infection is defined as "the entry and development or multiplication of a pathogenic agent in the body of humans or animals".
There are very low risks that the carp virus will infect and cause disease and/or sub-clinical effects in any non-target species.	The OIE defines a notifiable impact as occurring if a species is infected by the pathogen in question. Infection is defined as "the entry and development or multiplication of a pathogenic agent in the body of humans or animals".
There will be no significant impacts on the quality of water used for town water supplies, stock and domestic consumption, irrigation, and cultural and recreational purposes.	Significant impacts are defined under the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (available at https://www.waterquality.gov.au/guidelines/anz-fresh-marine).
3. How can carp virus biocontrol be implemented?	
Implement effective and efficient operations to manage risks and potential impacts.	Guidelines on effective and efficient operations are outlined in the Australian Interagency Incident Management system (AIIMS) Incident Control System (ICS).

NCCP research and planning investigations provide the evidence for assessment against the feasibility criteria. Table 8 summarises the assessment of feasibility against these criteria.

Table 8: Summary assessment of feasibility against specific criteria.

Feasibility criteria	Evidence	Expected outcomes	Feasibility assessment
1. Will carp virus biocontrol be effective?			
i. That there will be widescale reduction and suppression of carp populations for the medium to long term in Australian aquatic ecosystems.	Epidemiological modelling; transmission experiment; latency experiment; carp biomass estimates; population modelling.	Forty to sixty per cent knockdown of carp following initial virus deployment (60–80% in less resilient in carp populations). Carp suppression could continue for at least 10 years, and should persist through booming or highly productive carp population growth periods. Nonetheless, uncertainties regarding the development of genetic and/or herd immunity, and the extent to which recrudescence of latent infections will occur under field conditions remain. Carp populations will likely be reduced below theoretical damage thresholds across extensive areas of Australia's inland waterways (see section 2.1), however this may not occur in high density sub-populations. Benefits may be enhanced if virus deployment in the lower Murray is preceded by targeted, intensive harvesting to reduce carp 'starting density'. Assessing the timing, magnitude, and operational planning aspects of this pre-fishing effort is beyond the NCCP's scope, but could usefully be investigated by some limited additional modelling (NCCP research project 4). Some uncertainty remains about the likelihood of achieving sufficient virus transmission within carp aggregations during the first year of deployment. A second year of deployment may therefore be required.	Feasible (indicative) based on epidemiological modelling, and providing some additional validation and refinement of assumptions underpinning that modelling is conducted.

Feasibility criteria	Evidence	Expected outcomes	Feasibility assessment
2. What are the carp virus biocontrol risks and how can they be managed?			
i. The carp virus should not infect or cause disease in non-target species.	CSIRO and Invasive Animals CRC non-target species susceptibility testing preceding the NCCP; review assessing the carp virus's potential to infect humans; carp virus species specificity review (for non-human species); non-target species susceptibility testing on Murray Cod and Silver Perch.	Additional non-target species susceptibility testing focused on rainbow trout at minimum would provide necessary additional knowledge of the virus's host range.	Additional testing is recommended to inform a clearer feasibility recommendation.
ii. The carp virus must not affect humans or stock health through direct infection (note, this criterion does not refer to impacts on water quality caused by decomposing carp carcasses).	Human health review.	The virus will not infect humans or other mammals.	Feasible based on human health literature review.
iii. Manage prolonged, adverse impacts on water quality for town water supply, stock and domestic water supply, irrigation, and cultural and recreational purposes.	Anoxia and blue-green algae water quality research; water treatment research; ecological risk assessment; regional case studies.	Prolonged broadscale impacts unlikely. Challenges remain in some ecosystem types discussed throughout this report (e.g. northern MDB ephemeral systems). Risks could be managed with sufficient resourcing as per the NCCP implementation strategy and case studies. Water treatment plants can deal with existing carp densities. Some risks can be managed by communication and education. No significant infrastructure risks have been identified.	Feasible (indicative) based on the NCCP water quality modelling and its assumptions and sufficient carcass management.

Feasibility criteria	Evidence	Expected outcomes	Feasibility assessment
3. How can carp virus biocontrol be implemented?			
i. Implement effective and efficient measures and actions that mitigate risks and impacts associated with the release of the carp virus.	Ecological risk assessment; NCCP implementation strategy; regional case studies.	NCCP case studies illustrate that risk mitigation is possible subject to effective coordination, planning, and resourcing.	Feasible based on NCCP case studies and conclusions from water quality, biomass, and epidemiological modelling.

Describing the feasibility of carp biocontrol using the virus requires a nuanced and qualified statement. Briefly restated, feasibility criteria are (i) effectiveness, (ii) risk identification and management, and (iii) implementation. When assessed against these criteria, results from NCCP research and investigations indicate feasibility, with some qualifications. With strategic virus deployment, carp reductions of varying magnitudes and ongoing suppression appear achievable. From a risk perspective, water-quality impacts (for both ecosystem integrity and human/livestock use) appear manageable in many areas and habitat types, regional case studies have identified strategies for managing dead carp, and water treatment processes appear able to cope with all but the most extreme and unlikely dead carp loadings. To reframe these conclusions, no results have emerged to clearly indicate that further consideration of the virus as a biocontrol agent should cease.

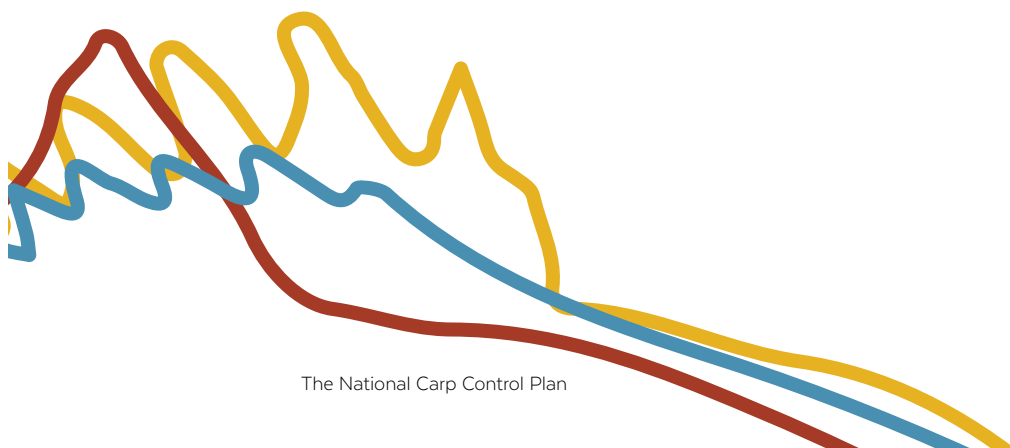


Yet, as has been noted throughout this report, these broad indications of feasibility are subject to important uncertainties and caveats. In particular, the following key uncertainties preclude a definite recommendation of feasibility at this time.

- a. Further non-target species susceptibility testing is recommended.
- b. Investigation of viral latency and recrudescence in adult carp under variable environmental conditions and over timescales similar to those that would be required to initiate outbreaks and sustain carp suppression in natural ecosystems is desirable. Modelled carp suppression outcomes depend on reactivation of latent infections. Therefore, while latent and recrudescence infections are consistent with knowledge of the carp virus's biology and have been indicatively supported by a short-term laboratory experiment using juvenile carp in the NCCP, further confirmation is recommended.
- c. Confirmation of some key epidemiological rates, again ideally generated from longer-term experiments under conditions of environmental variability similar to those encountered in the field, would usefully inform and validate epidemiological modelling.
- d. Improved understanding of the possible existence of alleles conferring resistance to the carp virus in Australian carp, and the potential role of carp-Goldfish hybrids in the evolution of resistance, is desirable.
- e. In addition to these specific issues, broader uncertainties remain regarding the viability of carcass management in waterways that are remote and/or difficult to access (e.g. the ephemeral systems of the northern MDB). Concerns regarding the likely effectiveness of clean-up in these systems is compounded by their relative sensitivity to water-quality impacts.
- f. In a point allied to (e), major and unmanaged carp kills in still-water environments (e.g. off-channel wetlands) could establish the preconditions for avian botulism outbreaks. Given the highly probabilistic nature of botulism outbreaks, quantitatively predicting the likelihood of these events is difficult. Effective carcass management could prevent development of the preconditions for botulism outbreaks, but may be challenging in these habitats. Sufficient resourcing for carcass-management operations may be able to address these concerns.

Points a–d could be addressed with additional, targeted research, potentially leading to a more definitive feasibility determination. A pathway for such research is set out in the Recommendations section of this report. Yet even additional research would not eliminate all uncertainty or risk, necessitating a flexible and responsive adaptive management framework if virus release did eventually proceed.

The above considerations preclude an outright recommendation of feasibility at this time. Yet concluding that carp biocontrol is non-feasible would not accurately represent the results of most of the NCCP science, and risks prematurely discarding one potential option for managing a serious environmental problem for Australian aquatic ecosystems.





7 CONCLUSIONS AND RECOMMENDATIONS

NCCP research and planning investigations have developed a knowledge base from which Australian governments could, if they choose to do so, proceed with further activities to inform decision making on potential use of the virus in Australian biocontrol operations.

A continental-scale biocontrol program targeting an established pest fish inevitably involves risk and uncertainty. As noted in section 6, NCCP research and investigations have clarified risks and reduced, but can never eliminate, uncertainty.

Biocontrol using the virus will not eradicate carp, nor will it provide a stand-alone solution for controlling carp in perpetuity. However, successfully implementing carp biocontrol could achieve the following national outcomes and opportunities:

- reduced environmental damage caused by carp,
- a ‘window of opportunity’ during which ecological restoration measures could be implemented to benefit native fish and aquatic habitats while carp impacts are reduced, and
- an opportunity to develop and refine other carp control measures that could then be deployed against carp populations reduced by viral disease.

If governments decide to proceed with additional activities to further inform decision making, the next stages will involve additional research, legislative approvals and more detailed planning and risk mitigation.

7.1 Governance recommendations

If governments decide to proceed with further activities to support decision making, the following governance tasks are recommended as a minimum to proceed with assessment and coordination:

1. Establish a national taskforce (potentially the existing Freshwater Vertebrates and Invertebrates Working Group of the Environment and Invasives Committee) consisting of state/territory and local government representatives to coordinate planning. The taskforce should include representatives from biosecurity, water, environment, and agriculture portfolios. Key tasks would include policy and regulation, communications and engagement, and operations.
2. Develop and implement an NCCP communications and engagement plan.
3. Progress state, territory, and Commonwealth legislative approvals, as necessary supporting information becomes available.
4. Obtain APVMA approval. This task will involve Australian Government negotiation with the NSW Department of Primary Industries to complete the APVMA approval.
5. Seek approval under other relevant legislation including the *Biosecurity Act 2015*, the *Biological Control Act 1984*, and relevant state and territory regulatory approvals.

A specific timeline for implementation is not provided as this would be determined by the Australian Government and state/territory governments.

7.2 Research and development recommendations

The NCCP research program has made substantial progress towards understanding the carp virus's potential role as a biocontrol agent in Australia. As noted in section 6, several key uncertainties are likely amenable to resolution through carefully planned and targeted research. Recommendations for this research are provided in the following sections.

7.2.1 Additional non-target species susceptibility testing

Although considerable evidence indicates that the carp virus only infects carp, concerns regarding the potential for infection in other species are relatively common in the Australian community. To address these concerns, and improve the level of evidence available to decision makers, a final round of non-target species susceptibility testing is recommended. At minimum, this testing should include rainbow trout. The experiments should be carefully designed to ensure that test subjects are exposed to the virus under optimal conditions for infection.

7.2.2 Improving understanding of carp virus latency and recrudescence

During the NCCP research program, a need for improved understanding of the dynamics of carp virus latency and recrudescence under field conditions has emerged as a key area in which additional knowledge would substantially benefit decision making. These aspects of carp virus infection and disease are important for two reasons.

First, if carp biocontrol does eventually proceed, releasing latently infected carp into waterways during seasons (most likely winter) when water temperatures are below the permissive range for the disease caused by the carp virus may be an effective virus deployment strategy. Latent infections are expected to recrudescence as water temperatures enter the permissive range in spring, which is also when carp in many areas aggregate to spawn. If carp with reactivating infections joined spawning aggregations, they would likely have physical contact with numerous other carp, thereby initiating outbreaks (Technical Paper 2; NCCP research projects 4 and 6).

Second, modelled carp suppression outcomes depend upon recrudescence of latent infections. Under NCCP modelling, if latency does not occur, carp populations rapidly rebuild after initial major outbreaks, meaning the virus would offer only very short-term carp suppression (NCCP research project 4).

Scientific knowledge of carp virus biology supports the occurrence of both latency and recrudescence, as do results from a short-term laboratory experiment under the NCCP (NCCP research project 5). However, the two considerations outlined above are critical to the effectiveness of carp virus biocontrol. Therefore, studying latency and recrudescence in natural ecosystems (or at least in conditions imitating them) could substantially improve understanding of carp biocontrol efficacy. The broad aims of such research would be twofold; to determine whether latency and recrudescence do in fact occur over the timescales (likely weeks to months) on which they would need to operate in a biocontrol program, and to improve understanding of how these processes interact with critical carp behaviours. For example, a key question is whether carp experiencing recrudescence would join spawning aggregations. Additionally, such research should use adult carp, as this is the life-history stage in which latency primarily needs to operate for the virus to be maximally effective as a biocontrol agent.

Conducting research as outlined previously in Australia is difficult. As an exotic (to Australia) virus notifiable to the OIE, all research using the virus in Australia must occur within biosecure laboratories, removing the possibility of field experiments and constraining the scale of laboratory experiments. However, international research institutions in countries where the virus is endemic, and where biosecurity provisions regarding its scientific use are therefore less stringent, possess facilities that could enable research as described earlier. Such facilities include outdoor pond/lake systems and large indoor tanks that would provide an opportunity to study virus dynamics under conditions more representative of natural ecosystems than is generally feasible in the laboratory. If governments choose to proceed with activities to support decision making about carp biocontrol, further consideration of this research would be a useful priority.

7.2.3 Validating epidemiological modelling with real data

By coupling models of carp virus transmission and disease dynamics with those simulating carp demography and ecology, NCCP modellers have produced cutting-edge work with real capacity to inform a pathway to implementation. As with all modelling, assumptions were necessary (see discussion in section 2, and Technical Paper 2), and, while these were informed wherever possible by information available in the scientific literature, the unique challenges posed by carp biocontrol mean that some uncertainty remains.

One of the most useful pieces of research that could be undertaken to inform implementation is further investigation of carp population structure. The carp virus's epidemiology in Australian systems will be influenced by carp population structure and demography, because factors such as population density, age structure (the relative abundance of different age classes in the population), and connectivity between carp sub-populations will influence the knockdown resulting from viral disease (see section 2.1). Consequently, NCCP epidemiological modelling is linked to a carp demographic model. This model is based on the best available scientific information and has been evaluated by carp biology and ecology experts. Nonetheless, additional field-based research investigating carp demography and population structure would refine this model, enabling improved operational planning for virus deployment and outbreak response. Additionally, research to better resolve carp population structure and demography would be a 'zero-loss' investment, because this information would be useful for any future carp control measures if governments choose not to proceed with biocontrol.

Similarly, recently available data on carp virus outbreaks from Japanese waterways provide an opportunity to test and validate the epidemiological modelling. Japanese aquatic habitats differ in some important respect from those in Australia, but applying the models to the Japanese data nonetheless represents a useful opportunity to test assumptions and outcomes, and is recommended. Likewise, the potential approach outlined in section 7.2.2 for studying viral disease dynamics under natural or semi-natural conditions would also yield data to inform the modelling, particularly with regard to some key epidemiological rates.

7.2.4 Developing methods for large-scale production, storage, and transport of the carp virus

APVMA approval requires that virus production, packaging, and distribution processes are standardised, quality-controlled, limit opportunities for mutation or inclusion of adventitious agents, and generally conform to standards similar to those expected of animal health vaccines. From a logistical perspective, the capacity to produce large quantities of virus in forms that enable effective transport and deployment throughout the control area is an essential operational requirement for carp biocontrol.

Potential approaches to producing the virus that meet both APVMA requirements and operational challenges have been discussed by the NCCP Operations Working Group, and a project proposal procured. However, virus production and storage capabilities are logistical questions relevant to the implementation, rather than feasibility assessment, phase of a biocontrol program, and the proposal was consequently not funded under the NCCP. If governments elect to proceed towards implementation, this work will be essential.

7.2.5 Ongoing mapping and investigation of carp aggregations

Understanding the timing and location of carp aggregations is critically important to ensure effective carp virus biocontrol. Scientific knowledge about carp aggregations is currently limited. The NCCP completed a citizen science project that collected important information on the location and characteristics of carp aggregations (NCCP planning investigation 1). Continuation of this project, and research using the data it generates, is recommended.

7.2.6 Decision-support and mapping tools for operational activities

If carp biocontrol is implemented, a suite of decision-support and mapping tools will enhance operational planning and response capabilities. Prospective tools for development have been scoped under the NCCP.

The most important operational support tool will be an online Geographic Information System (GIS) incorporating carp biomass data from both wet and dry years, carp aggregation locations and spawning hotspots, areas important for human use and biodiversity, and carp sub-populations. This GIS would in turn provide the basis for developing a range of decision-support tools to assist operational managers to visualise and explore diverse virus deployment and carcass management scenarios. The ecological and administrative complexity of carp biocontrol operations will mean that visualisation capacity of this nature is essential for effective operational management. Building this system would require modelling and mapping of carp sub-populations through the entire range of biocontrol operations. The NCCP epidemiological modelling project has mapped and modelled carp sub-populations in selected case study catchments, so methodological approaches and data requirements are now well-known.

7.2.7 Assessing carp virus salinity tolerance

Carp inhabit numerous waterways with elevated salinity. Most obviously, coastal waterways such as the Gippsland Lakes (Victoria), Albert and Logan Rivers (Queensland), and the Lower Lakes (South Australia) are saline to varying degrees, and are inhabited by carp. Some inland waterways inhabited by carp are also saline. The carp virus's salinity tolerance is currently poorly understood, so it is possible that the virus's capacity to infect or kill carp could be reduced or eliminated under saline conditions. Research investigating the virus's likely effectiveness in saline conditions would therefore usefully inform operational planning.

7.2.8 Assessing animal welfare implications of carp biocontrol

The Royal Society for the Prevention of Cruelty to Animals (RSPCA) acknowledges the need for pest animal control, but notes that control methods should be as humane as possible for all species, including fish. Under laboratory conditions, carp can take up to 16 days to die from the disease caused by the carp virus (NCCP research project 6). Disease progression involves gill necrosis (breakdown) and haemorrhaging, and probably involves some level of suffering.

Assessing the welfare implications of carp biocontrol in consultation with animal welfare experts is recommended. Preliminary discussions involving the NCCP Science Advisory Group, external scientists with expertise in animal welfare, and representatives of the RSPCA have yielded some initial ideas about how such an assessment could be conducted. The recommended next step is to convene a meeting or workshop expanding upon this early work.

7.2.9 Monitoring the evolving relationship between carp and virus

Following virus deployment, Australian carp populations and the carp virus would begin a co-evolutionary 'arms race'. Tracking this evolving relationship is an important aspect of measuring a biological control program's progress. A pilot study under the NCCP has developed the tools necessary to track the evolution of genetic resistance in Australian carp population if virus release did eventually occur (NCCP research project 7).

Primary areas of uncertainty in predicting the emergence of resistance in Australian carp populations are:

- The potential role that carp-Goldfish hybrids, which are less likely to die following infection with the carp virus than are 'pure' carp, could play in promoting resistance remains uncertain. The Australian freshwater research community has considerable expertise in carp and Goldfish ecology and genetics, and a useful and low-cost next step in addressing this uncertainty could involve convening an expert workshop to review this issue. This recommendation is included in the NCCP monitoring and evaluation plan shown at Appendix 2.
- Research to further investigate the potential existence of the alleles conferring genetic resistance to the carp virus among Australian carp populations is recommended. Exploratory NCCP research found no evidence of these alleles (NCCP research project 7), but did not constitute a comprehensive genetic survey of Australian carp populations. This research did, however, develop the tools required for further assessing this question.



7.3 Implementation planning recommendations

Implementation planning is recommended to address the following important issues:

- mitigation of high to moderate ecological risks identified for ephemeral dryland river systems and Ramsar wetlands including the South Australian Lower Lakes systems and the associated marine system immediately outside of the Murray River mouth (NCCP research project 15),
- improving regionally specific knowledge of carp movement and aggregation behaviour, and
- developing plans and estimating costs associated with potential targeted 'fish down' activities in high density sub-populations.

Further recommendations and guidelines for implementation planning are given in Technical Paper 6.

7.4 Community relations recommendations

The general community and specific stakeholder groups have a high level of interest in the NCCP. If governments choose to proceed with activities to further inform eventual decision making on carp biocontrol, ongoing community consultation and stakeholder engagement is important. All stakeholders have indicated that they would appreciate continued communications and engagement.

Traditional Owners have an important connection to inland waterways and carp control. In NCCP workshops, Traditional Owners have expressed a strong desire to not only be informed about progress towards biocontrol implementation, but also to be actively involved in decision making. The NCCP has begun the process of engaging with Traditional Owners on carp biocontrol. Ongoing dedicated engagement is recommended as planning towards implementation proceeds.

Communications recommendations include:

- continue NCCP science communication through the next phases of research, approvals, and decision-making phase, if governments choose to proceed with these activities,
- develop a comprehensive communications and engagement plan that includes strategies for specific stakeholder groups listed in the NCCP, spans all phases of biocontrol implementation, and is integrated with jurisdictions and regions, and
- communicate reasons for not proceeding towards virus deployment, if Australian governments choose this approach.

Community consultation recommendations include:

- undertake specifically designed and more extensive consultation with Traditional Owners, and
- undertake specifically designed consultation with other stakeholder groups identified by the NCCP.

If governments decide to proceed with activities to support decision making, stakeholder engagement recommendations include:

- actively engage with Traditional Owners in decision making and enterprise development about possible carp biocontrol and its management,
- engage local knowledge and stakeholders in regional implementation planning, and
- acknowledge possible stakeholder impacts, including anticipatory impacts.

APPENDIX 1 OVERVIEW OF NCCP RESEARCH

MEETING A COMPLEX RESEARCH CHALLENGE

Controlling established pests is always challenging. Pest species tend to be hardy and adaptable, and are often widespread. Freshwater pest fish pose particular control challenges because they inhabit inter-connected and often ecologically sensitive environments. Major fish kills can therefore have implications for water quality in freshwater ecosystems. More subtly, established high-impact pests often shaped ecosystems around themselves and become integral to new modes of ecosystem function. Removing these species (or, more realistically, reducing their abundance) can have unforeseen consequences for ecosystems and the human communities that depend upon them for livelihoods and recreation.

Given this complexity, NCCP research needed to span biological, physical, economic, and social questions. Important research areas included understanding carp population size and distribution, the virus's likely effects on these populations, potential impacts of dead carp on water quality and water treatment, community and stakeholder views on carp control, and development of virus release and carcass management strategies. By engaging with these issues, the NCCP research program has produced new knowledge that will inform decision making on future directions for carp biocontrol.

RESEARCH PROGRAM OVERVIEW

The NCCP research program consists of 19 peer-reviewed projects and five investigations spanning the biophysical sciences, social sciences, and applied economics. The research program's 'blueprint' is the NCCP Strategic Research and Technology Plan (available at <https://www.frdc.com.au/knowledge-hub/national-carp-control-plan>), which defines three key themes for NCCP research; environment, communities, and informing possible implementation. These key themes emphasise the multi-disciplinary and applied nature of the NCCP research program. Under each theme sit one or more priority areas that guided development of targeted research projects.

The NCCP research program has made progress towards resolving the uncertainty and complexity inherent in viral biocontrol of an established pest fish. For perspective, no other biological control proposal has received such an intensive research effort to inform decisions on possible release. NCCP research has developed new knowledge that provides:

- the most comprehensive estimate of Australian carp biomass ever obtained,
- a national-scale understanding of the carp virus's likely dynamics in, and impacts on, Australian carp populations,
- understanding of how the carp virus could be deployed to maximise effectiveness,
- clearer insights into the impacts various dead carp concentrations could have on water quality and water treatment processes, and
- potential pathways for implementation.

Inevitably, given the scale and complexity of the carp problem, uncertainties and knowledge gaps remain. The NCCP identifies the key uncertainties for each research theme and explains implications for decision making. Where relevant, actions to reduce these uncertainties are described.

RESEARCH MANAGEMENT

Recognising the need for a broad-ranging investigation, in 2016 the Australian Government provided \$10.211 million for the NCCP's development. The Fisheries Research and Development Corporation (FRDC), a statutory corporation under the *Primary Industries Research and Development Act 1989*, was contracted to develop the NCCP, with the then Commonwealth Department of Agriculture and Water Resources (DAWR, now the Department of Agriculture, Fisheries and Forestry (DAFF)) acting as program manager. A steering committee, comprising senior officials from DAWR, the Department of the Environment and Energy, and the Department of Industry, Innovation, and Science, provided strategic oversight at the programmatic level. Soon after the NCCP's inception, four advisory groups, combining jurisdictional representation with subject-matter expertise, were established to oversee the program's research (Science Advisory Group – see next section), policy, communications, and operations components. By late 2018 the NCCP's Policy Advisory Group had completed its functions, and oversight of policy matters relevant to the NCCP was adopted by the Commonwealth's Environment and Invasives Committee.

THE NCCP SCIENCE ADVISORY GROUP

The NCCP's Science Advisory Group (SAG) has been the principal body overseeing the research program and providing advice to the NCCP Secretariat and National Coordinator. The SAG was formed to provide advice to FRDC on the planning and implementation of the research program. Since its inception in December 2016, and up to the conclusion of the main portion of the NCCP's research program in late 2019, the SAG met quarterly to fulfil its functions. The SAG's tasks included setting research priorities to address knowledge gaps, reviewing and providing feedback on proposals to fill research needs, and reviewing and providing feedback on research outputs. These functions were facilitated by quarterly Principal Investigator Workshops, at which researchers working on NCCP projects presented project updates and results to audiences that include members of SAG and other NCCP advisory groups.

In addition to review by the SAG, NCCP project final reports were reviewed by at least two independent subject-matter experts. These expert reviews were then considered by SAG, which made a final decision on whether or not to formally 'accept' the project reports. The SAG formally accepted a research project if (i) all project objectives were met, and (ii) comments from external reviewers and the SAG (where applicable) were adequately addressed. This process ensured that all NCCP research project final reports were subject to a review process approximately analogous to that involved in peer-reviewed scientific journal publications. Table 9 summarises the SAG's deliberations on NCCP research project final reports.

In order to adequately serve the advisory needs of the NCCP, SAG members were nominated to represent relevant scientific expertise from Queensland, New South Wales, South Australia, Victoria, the Australian Capital Territory, Tasmania, and Western Australia. Disciplines and subject areas represented on the SAG included fish ecology, biology, virology, and epidemiology, human health, and socio-economics. The SAG also included representatives from the then Department of the Environment and Energy (now the Department of Climate Change, Energy, the Environment and Water), and DAFF.

As the main body of NCCP research concluded in 2019, limited additional research questions emerged that, if successfully answered, were likely to reduce some key uncertainties. Consequently, a provisional NCCP was submitted to DAFF in January 2020, with an agreement to update the document on completion of the additional research projects. Completion of these additional research projects, most of which required biosecure laboratory facilities, was delayed by the COVID-19 pandemic, which saw Australian laboratories accredited for research on exotic viruses prioritising COVID-19 research. These projects were completed from early-mid 2022. A modified SAG, referred to as the NCCP 'Special SAG', was convened to assess these projects and advise on their integration into the NCCP. The Special SAG included scientists with the expertise necessary to evaluate the newly completed projects, or with broad, cross-program interests in NCCP research and its application. These discussions occurred over four meetings during early-mid 2022, and the new projects, with the modified SAG's assessment of them, have been included in Table 9.

Table 9: NCCP research project final report acceptance status.

Project number: Project title	Status	Additional comments from SAG or Special SAG
2016-132: Impact costs of carp and expected benefits and costs associated with carp control in the Murray-Darling Basin.	Not fully evaluated, but SAG input to drafts.	The Final Report for this project was submitted in August 2020, well after the original NCCP SAG had concluded its functions and ceased meeting. Therefore, this project was not formally considered for SAG acceptance, but SAG did provide input on drafts, which was accepted and implemented by the project investigators, and engaged with the project team through the project's life, primarily at NCCP Principal Investigator Workshops.
2016-152/2018-189: Building community support for carp control: Understanding community and stakeholder attitudes and assessing social effects/Socio-economic impact assessment and stakeholder engagement.	Not fully evaluated, but SAG input to drafts.	Final Reports for these two linked projects were submitted in December 2019, after the original NCCP SAG had concluded its functions and ceased meeting. Therefore, this project was not formally considered for SAG acceptance, but SAG did provide input on drafts, which was accepted and implemented by the project investigators, and engaged with the project team through the projects' lives, primarily at NCCP Principal Investigator Workshops.
2016-153: Preparing for carp herpesvirus: A carp biomass estimate for eastern Australia.	Accepted.	
2016-158: Development of strategies to optimise release and clean-up strategies underpinning possible use of herpesvirus 3 (CyHV-3) for carp biocontrol in Australia.	Accepted.	

Project number: Project title	Status	Additional comments from SAG or Special SAG
2016-170: Development of hydrological, ecological and epidemiological modelling to inform a CyHV-3 release strategy for the biocontrol of carp in the Murray-Darling Basin.	Accepted (with conditions).	SAG acknowledged that this is an innovative, complex, and detailed body of work. However, given this complexity and detail SAG requested that the published version include a more detailed discussion of current knowledge regarding the epidemiology of CyHV-3 infections and disease outcomes, and clarification of the model assumptions and parameter estimates, particularly regarding immunology, transmission and the role of water temperature effects. The complexity of this work, and the importance of its underlying assumptions, have been acknowledged throughout the NCCP, accompanied where relevant by recommendations for further research to either test key assumptions or to generate key epidemiological rates to inform the models. This research is currently being published in the peer-reviewed scientific literature, with two papers published at the time of writing (September 2022).
2016-180: Assessment of options for utilisation of virus-infected carp.	Accepted.	
2016-183: Cyprinid herpesvirus 3 and its relevance to humans.	Accepted.	
2017-054: Social, economic, and ecological risk assessment for use of Cyprinid herpesvirus 3 (CyHV-3) for carp biocontrol in Australia.	Accepted.	
2017-055/2017-056: Expanded modelling to determine anoxia risk in main river channel and shallow wetlands/Investigation of nutrient interception pathways to enable circumvention of cyanobacterial blooms following carp mortality events.	Accepted.	
2017-094: Review of carp control via commercial exploitation.	Accepted.	
2017-104: The likely medium- to long-term ecological outcomes of major carp population reductions.	Accepted.	

Project number: Project title	Status	Additional comments from SAG or Special SAG
2017-127: Defining best practice for viral susceptibility testing of non-target species to Cyprinid herpesvirus 3: A discussion paper based on systematic quantitative literature reviews.	Not accepted.	SAG acknowledged the extent of the work, which informed design of further studies for non-target species testing for the NCCP. The SAG did not accept this project on the basis that the work did not meet the objective of determining 'best practice' in non-target species susceptibility (as defined by OIE) testing through a practical set of targeted recommendations, but rather provided broad advice for testing of non-target species resistance. To provide more targeted advice on next steps for non-target species testing, a small committee including the Principal Investigator for this study and SAG members with relevant subject-matter expertise was formed. The deliberations of this group led to project 2019-176, which aimed to re-test the susceptibility of Murray Cod, Silver Perch, and Rainbow Trout to infection by the carp virus.
2017-135: Essential studies on Cyprinid herpesvirus 3 (CyHV-3) prior to release of the virus in Australian waters: Excretion and seasonality.	Not accepted (by NCCP Special SAG)*	This work aimed to provide preliminary 'proof of concept' that carp could be infected by the virus, then returned to temperatures below the permissive range to induce a latent infection that would reactive when temperature rose into the permissive range. The work used juvenile carp, and was not intended to provide definitive proof that latency and recrudescence would occur under field conditions. Rather, the experiment was intended as a short-term test of the concept to determine whether or further investigation may (or may not) be useful. The NCCP Special SAG did not to accept this project, not because of its preliminary and short-term nature, but due to some concerns regarding the experiment's execution. These concerns centred on morbidities in some fish tanks that the Special SAG considered had not been adequately explained, water-temperature fluctuations that occurred around tank-water exchanges, and inadequate or unclear explanation of these issues in the project report. Nonetheless, the Special SAG further noted that these limitations do not mean that the study's results should be completely discounted, but rather that they should be presented in context as requiring cautious interpretation.

Project number: Project title	Status	Additional comments from SAG or Special SAG
2017-148: Identifying synergistic genetic biocontrol options for <i>Cyprinus carpio</i> in Australia.	Accepted.	
2017-237: Risks, costs and water industry response.	Accepted.	
2018-120: Population dynamics and carp biomass estimates.	Accepted.	
2019-176: Determination of the susceptibility of Silver Perch, Murray Cod and Rainbow Trout to infection with CyHV-3.	Not accepted (by NCCP Special SAG)*	<p>This project aimed to distil the broad recommendations of project 2017-127 into a more defined and practical scope by re-testing three non-target fish species using best-practice methods. The Special SAG did not accept this work for several reasons. Major mortalities in Rainbow Trout due to inadvertent exposure to chlorinated water at the research facility well before challenge with the virus meant that this species could not be tested. Consequently, the project was unable to meet one of its objectives – testing the susceptibility of rainbow trout to the carp virus.</p> <p>Other key reasons for non-acceptance centred on unexplained mortalities in both test (i.e. exposed to the virus) and control (not exposed to virus) fish, and insufficient data to support a determination of susceptibility or otherwise in test fish.</p> <p>Recognising the importance of determining the virus's specificity to carp with the highest level of confidence practically achievable, the NCCP recommends additional non-target species susceptibility testing to inform decision making on carp biocontrol.</p>
2020-104: Evaluating of the role of direct fish-to-fish contact on horizontal transmission of Koi herpesvirus	Accepted (by NCCP Special SAG)*	
2019-163: NCCP: Understanding the genetics and genomics of carp strains and susceptibility to CyHV-3	Accepted (by NCCP Special SAG)*	

* The NCCP Special SAG was an NCCP Advisory Group formed to assess projects that began later in the overall duration of the NCCP program, and which therefore attained completion after the original NCCP SAG had completed its functions and ceased meeting. The Special SAG included members with the subject-matter expertise necessary to assess the remaining projects, as well as those with broad scientific interests across NCCP research and its implications.

RESEARCH APPROACH

Projects within the NCCP research program use a range of research approaches, including experimentation in biosecure laboratories, field-based research assessing carp abundance, decomposition and associated water-quality impacts, reviews of the scientific literature, diverse modes of social enquiry, and economic modelling. Some crucial NCCP research projects use computer modelling, in which mathematical representations of key environmental variables play out in many different combinations. Modelling was essential to the NCCP for two main reasons. First, modelling enables exploration of phenomena that occur over long timescales and large geographic areas, such as medium- to long-term impacts of the virus on carp populations. These phenomena would be difficult or impossible to study using a traditional experimental approach. Second, the carp virus must remain in a biosecure laboratory until all necessary legislative approvals are gained, severely limiting opportunities for field experimentation. Wherever possible, NCCP modelling has been underpinned by data from field observations, helping to ensure that the modelled system mimics key aspects of Australian aquatic ecosystems as accurately as possible. Additionally, some of the modelling that helps to understand how the virus could impact carp populations is data-driven, which means that researchers search large datasets to identify underlying patterns, rather than beginning with predefined assumptions (see Technical Paper 2 for more detailed discussion of data-driven modelling).

Despite these attempts to ensure that the modelling accurately represents the study systems, assumptions and simplification remained unavoidable. Whenever assumptions are made in modelling, there is a chance that they could be incorrect to some degree. Incorrect assumptions in modelling studies can have consequences for the accuracy of conclusions ranging from minor to severe, depending upon the exact nature of the assumptions. Often, the validity of model outputs can only be assessed by collecting and analysing relevant data from the study system(s). Therefore, the NCCP has identified and communicated key assumptions underpinning research conclusions, and has recommended further work to enable cross-checking/ground-truthing of these assumptions where practical.

RESEARCH AND INVESTIGATIONS PROJECTS

NCCP research and investigations projects are shown in Figure 11, grouped by the broad themes of understanding biocontrol effectiveness, understanding and managing risks, and assessing benefits and costs.

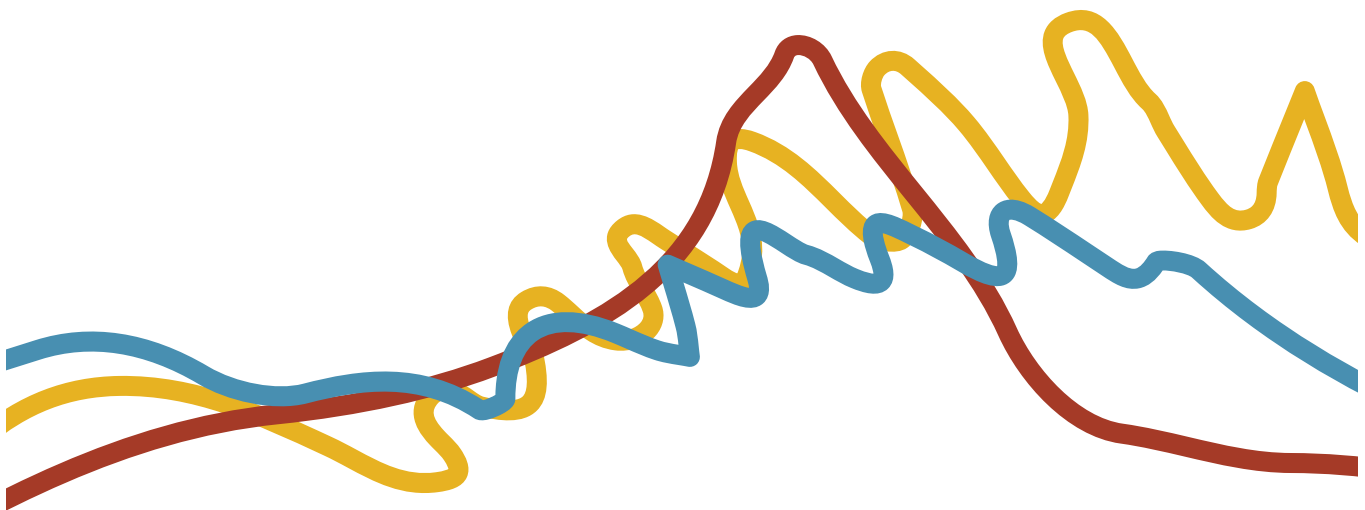


Figure 11: NCCP research and investigations and outputs. Research projects that are peer reviewed are in 'roman' text. Investigations that are not peer reviewed are in 'italic' text. Numbers in the white boxes refer to NCCP research project numbers as cited throughout the Plan's text.



APPENDIX 2 MONITORING AND EVALUATION PLAN

Monitoring design for carp biocontrol using CyHV-3

Introduction

Monitoring and evaluation are essential to successful implementation of any biological control program, including carp control using Cyprinid herpesvirus 3 (CyHV-3). Monitoring enables evaluation of biocontrol success and return on investment, measured against economic, social, and environmental criteria. Crucially, monitoring also enables detection of potential declines in biocontrol effectiveness, such as might emerge from the evolution of host resistance, or attenuation of viral virulence. These declines signal the need to implement additional control measures.

This appendix to the NCCP outlines key monitoring priorities, with the aim of delineating a broad scope for a carp biocontrol monitoring program. Monitoring associated with a carp biocontrol program could encompass three broad themes:

- a. changes in carp abundance, distribution, and population structure following virus release,
- b. ecological and biophysical responses to carp reductions, and
- c. the evolving relationship between carp and the virus, including the latter's progress through, and prevalence in, Australian carp populations.

Conceptually, these three monitoring themes can be divided into those that address questions of population and community ecology (a and b) and those that primarily address questions in the disciplines of virology, epidemiology, and immunology (c). Carp population ecology (point a) and ecological responses to carp reduction (point b), are linked by the concept of 'damage thresholds', which posits that there are threshold carp densities at which impacts on various ecosystem attributes or components begin to manifest (Technical Paper 2; NCCP research project 4).

Monitoring to refine carp threshold densities

The threshold densities at which carp impacts begin to manifest will likely differ considerably among ecosystem components. For example, the carp densities at which impacts on aquatic plants manifest will almost certainly differ from those at which, say, aquatic invertebrates, are affected. Similarly, a given ecosystem attribute or component may exhibit different response thresholds in different areas of carp's Australian range. Understanding the ecological mechanisms underpinning these differing responses to carp reduction should be a key goal of the ecological monitoring that accompanies carp biocontrol. Considerable research effort has been devoted to identifying these damage thresholds internationally, particularly in the United States, but they remain poorly understood in Australia. An improved understanding of these thresholds would be of considerable utility in developing quantitative management targets as carp control activities proceed (if the virus is eventually used a biocontrol agent in Australia). A well-designed ecological monitoring program represents an opportunity to efficiently gather information on carp-impact threshold densities.

Variables for ecological monitoring

Recognising the importance of damage thresholds as a structuring concept for ecological monitoring, key attributes for inclusion in a monitoring program are likely to include:

- carp population density and recruitment dynamics,
- waterbody physico-chemical attributes,
- plankton (both phytoplankton and zooplankton),
- macrophytes,
- aquatic invertebrates,
- fish (non-carp species),
- birds, and
- amphibians.

For each of these attributes, Stocks and Gilligan (2017) and Brooks (2018) list testable hypotheses, key evaluation questions, and potential monitoring designs and sampling protocols. Neither Stocks and Gilligan (2017) nor Brooks (2018) have undergone formal peer review, but would likely provide useful ‘blueprints’ for developing a national-scale ecological monitoring program. Therefore, expanding upon these reports through workshops or other collaborative mechanisms is recommended as the next step towards developing an ecological monitoring plan for carp biocontrol.

Monitoring the evolving relationship between carp and virus

In any viral biocontrol program, tracking the agent’s progress through the host population and monitoring the evolving host-virus relationship is essential for measuring impact on the target pest. These tasks require diagnostic tools that can:

- a. detect the virus’s presence in carp populations or sub-populations,
- b. monitor recurrent outbreaks once the virus becomes established in carp populations, and
- c. assess exposure to the virus among carp at the population level, and how this variables change through time. This monitoring component encompasses tracking the evolving relationship between carp and the virus, including the potential emergence of genetic resistance.

In relation to (a), environmental DNA (eDNA) approaches could be useful if their capacity to detect the carp virus at low levels could be confirmed. As for ecological monitoring, the variables listed in points a–c are only a general guide to the kinds of responses that should be monitored. NCCP research has identified cost-effective tools and approaches for monitoring the potential emergence of genetic resistance (NCCP research project 7), but more detailed consultation with subject-matter experts is recommended to develop a detailed plan for monitoring host-virus relationships if governments eventually decide to proceed towards carp biocontrol implementation. This aspect of monitoring is particularly important, as it provides the only means to detect and counteract declines in biocontrol effectiveness.

Baseline monitoring (pre virus release): The foundation for success

Inherent in the concept of monitoring the impact of any intervention is the need for information on pre-intervention conditions to form a ‘baseline’ against which change can be measured. Thus, both ecological response and host-virus relationship monitoring would need to begin before any future deployment of the virus against Australian carp populations.

A pilot ecological response monitoring program, collecting baseline ecological data from 24 sites across four river systems (i.e. six sites per river system) within the New South Wales portion of the Murray–Darling Basin has already begun (Stocks and Gilligan, 2017). This network of monitoring sites could be expanded to cover a larger portion of carp’s Australian distribution. More detailed guidelines for development of ecological and biophysical monitoring programs are provided by Stocks and Gilligan (2017) and Brooks (2018).

Finally, pre-release reference samples of both carp and virus should be retained. Just as pre-release ecological monitoring establishes a baseline against which responses to carp reductions can be assessed, maintaining pre-release samples of virus and host provide a benchmark against which post-release evolutionary change can be measured. Advice from subject-matter experts should be sought regarding appropriate sampling designs for collection of these reference samples.

Monitoring costs

Detailed monitoring plans have not been developed, so detailed costings are not available. However, funding for monitoring and associated data handling could be allocated to participating states and territories, with coordination to ensure that monitoring results feed back into adaptive management.

Conclusions

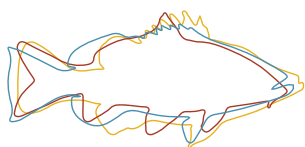
A well-designed monitoring program is essential for evaluating the success of any biocontrol program, and hence for calculating return on investment. Monitoring also provides the only realistic opportunity for managers to detect declining biocontrol effectiveness and implement new control measures. Thus, monitoring needs to encompass:

- a. changes in pest abundance, distribution and recruitment,
- b. ecological responses to pest reductions, and
- c. the evolving relationship between the biological control agent (virus) and host.

For carp control, structuring monitoring for the ecological response component (point b) around the organising concept of damage thresholds will help to ensure that monitoring delivers optimum value for managers. Under the NCCP, frameworks for monitoring both changes to carp populations (point a) and ecological responses (point b) have been developed. These frameworks could be refined and expanded if governments continue with further activities to inform a decision on whether or not carp biocontrol should proceed. Both state/territory and Commonwealth natural-resource and fisheries-management agencies have abundant expertise in monitoring variables encompassed by points (a) and (b) and could usefully contribute to this work. A conceptual framework for monitoring the evolving relationship between carp and virus is less developed, but basic requirements are known, and the expertise to build such a program is available. Finally, monitoring the three key themes listed in points a–c is only useful if baseline conditions against which future changes can be monitored are available. Therefore, establishment of appropriate sampling designs and collection of baseline data and samples will be key priorities if governments proceed with activities to inform decision making on carp biocontrol, and particularly if, after additional research and attainment of legislative approvals, implementation of a carp biocontrol program appears possible.

REFERENCES

- Brooks, S. (2018). Monitoring and evaluating ecosystem responses to release of Cyprinid herpesvirus 3. Unpublished report to the National Carp Control Plan (draft only).
- Stocks, J.R. and Gilligan, D.M. (2017). Baseline data collection to monitor the aquatic ecosystem response within the Murray Darling Basin to the proposed release of Cyprinid herpesvirus 3. Unpublished draft report to the National Carp Control Plan. New South Wales Department of Primary Industries, Batemans Bay, NSW.



NATIONAL CARP CONTROL PLAN



www.carp.gov.au

9.4 REQUEST FOR DONATION - RFDS ROWATHON

File Number: RPT/25/538

Responsible Officer: Ken Ross - General Manager
 Responsible Division: Office of the General Manager
 Reporting Officer: Gayle Marsden - Executive Assistant

Objective: 1.0 Wentworth Shire is a vibrant, growing and thriving region
 Strategy: 1.2 Promote the Wentworth Region as a desirable visitor and tourism destination

Summary

Council is in receipt of a request for a donation for the RFDS Rowathon. Council has supported this event through Donations, Contributions and Grants previously.

Recommendation

That Council approve a donation of \$5,000 to the RFDS Rowathon.

Detailed Report

Purpose

The purpose of this report is for Council to consider the request for a donation for the RFDS Rowathon event being held 13 September 2025.

Background

The RFDS Rowathon Committee is a volunteer organisation that supports the Royal Flying Doctor Service, who have previously applied for, and received funding through Councils Donations, Contributions and Grants. This year the Committee applied for funding through the events funding and due to staff absences, the application was overlooked. The event will occur on 13 September 2025 and has been held in the Wentworth Shire for the past 14 years.

Report Detail

The application for this event was overlooked due to some staff being on leave. The Committee is requesting funding of \$5,000, which in previous years has been funded through the Donations Contributions & Grants. This request is tabled at this council meeting, even though the event has occurred, as the applicants should not be disadvantaged by Council overlooking the application. The Royal Flying Doctor Service is an organisation that is very important to all people in the Shire and Council has seen fit to support this event and organization in the past.

The application, budget and authority to fundraise for the service are attached.

Conclusion

Council is in receipt of a request for a donation for the RFDS Rowathon. Council has supported this event through Donations, Contributions and Grants previously.

Attachments

1. Request for funding (Under Separate Cover) ➡
2. Application for Event Funding - (Under Separate Cover) ➡
3. Budget (Under Separate Cover) ➡
4. Authority to Fundraise (Under Separate Cover) ➡

5. Operational Plan (Under Separate Cover) [⇒](#)

9.5 BURONGA GOL GOL SPORTING MASTERPLAN LAND ACQUISITION PROGRESS

File Number: RPT/25/536

Responsible Officer: Ken Ross - General Manager
Responsible Division: Office of the General Manager
Reporting Officer: Ken Ross - General Manager

Objective: 3.0 Wentworth Shire is a community that works to enhance and protect its physical and natural environment

Strategy: 3.5 Infrastructure meets the needs of our growing Shire

Summary

Significant work has been undertaken in the creation of the Buronga Gol Gol Masterplan. This work included consultation with key stakeholders and an identified site for the future staged development of a sporting precinct.

Recommendation

That Council authorises the General Manager to action this item from the options listed below.

Detailed Report

Purpose

The purpose of this report is to inform Council of the actions to date relative to the resolution of Council.

Background

At the May meeting of Council it was resolved by Council *“That Council endorses the Draft Buronga Gol Gol Sporting Masterplan as a guiding document for future sporting infrastructure and commits phased funding and implementation to achieve outlined and will work to identify a suitable parcel of land that can satisfy the intent and spirit of the masterplan.”*

Report Detail

Within the Buronga Gol Gol master plan the concept detail was positioned within a parcel of land in close proximity to the existing Carramar Oval complex. To date a suitable mechanism for the acquisition of the subject land has not delivered satisfactory results to secure the future of the sporting needs of the expanding community.

This report realizes the fact of the above and now seeks guidance from the Council as to what the next steps may be based on the following options.

- Set an upper limit for negotiation for the acquisition by agreement for the land nominated within the adopted masterplan.
- Investigate alternate sites within the Buronga Gol area that would satisfy the intent of the resolution of Council being that the land identified should be suitable to satisfy the intent and spirit of the masterplan.

Conclusion

With the adopted masterplan being considered in conjunction with the resolution of Council, acknowledging the lack of progress toward securing that identified parcel of land within the masterplan, council should explore options to progress the land acquisition.

Attachments

Nil

9.6 MONTHLY FINANCE REPORT - AUGUST 2025

File Number: RPT/25/497

Responsible Officer: Simon Rule - Director Corporate Services

Responsible Division: Corporate Services

Reporting Officer: Vanessa Lock - Finance Officer

Objective: 4.0 Wentworth Shire is supported by strong and ethical civic leadership with all activities conducted in an open, transparent and inclusive manner

Strategy: 4.1 A well engaged and informed community

Summary

Rates and Charges collections for the month of August 2025 were \$3,072,073.96. After allowing for pensioner subsidies, the total levies collected are now 32.52%. For comparison purposes 32.91% of the levy had been collected at the end of August 2024. Council currently has \$44,143,240.58 in cash and investments.

Recommendation

That Council receives and notes the Monthly Finance Report for August 2025.

Detailed Report

Purpose

The purpose of this report is to indicate to Council the position in relation to the rate of collections and the balance of cash books.

Reconciliation and Balance of Funds held as at 31 August 2025

The reconciliation has been carried out between the Cash Book of each fund and the Bank Pass Sheet as at 31 August 2025.

	Combined Bank Account
Cash Balance as at 1 August 2025	\$ 4,103,828.90
Add: Receipts for the Period Ending 31 August 2025 Rates, Debtors, Miscellaneous	\$ 12,624,888.46
Less: Payments for the Period Ending 31 August 2025 Cash Book entries for this Month	\$ 9,730,653.51
Cash Balance of Operating A/C as at 31 August 2025	\$ 6,998,063.85
Trust Fund Balance	\$ 1,145,176.73
Total Investments as at 31 August 2025	\$ 36,000,000.00
TOTAL FUNDS AVAILABLE	\$ 44,143,240.58

Collection of Rates and Charges

Rates and Charges collections for the month of August 2025 were \$ 3,072,073.96. After allowing for pensioner subsidies, the total levies collected are now 32.52%. A summary of the Rates and Charges situation as at 31 August 2025 is as follows:

Note: For comparison purposes 32.91% of the levy had been collected at the end of August 2024.

LEVIES	RATES & CHARGES	
Balance Outstanding at 30 June 2024 - Rates / Water	799,031.20	
Rates and Charges Levied 21 July 2025	11,941,099.57	\$ 12,740,130.77
+ Additional Water Charges	638,878.21	
+ Supplementary Rates and Charges	6,887.56	
+ Additional Charges	6,847.33	
- Credit Adjustments	8,002.82	
- Abandonments	853.48	\$ 13,383,887.57
DEDUCTIONS		
- Payments	4,184,269.08	
- Less Refunds of Payments	1,791.32	\$ 4,182,477.76
		\$ 9,201,409.81
- Pensioner Subsidy		
Government Subsidy	93,273.55	
Council Subsidy	76,314.73	\$ 169,588.28
RATES/WATER CHARGES OUTSTANDING 31 AUGUST 2025		\$ 9,031,821.53

Rates/Water write offs and adjustments

The following rates or charges have been written off or adjusted under the delegated authority of the General Manager for the month of August 2025.

Account	Date	Amount	Comment
Rates			
1524	13/08/2025	286.00	Cancelled 2nd Garbage Service on property
Debtors			
441-4	26/08/2025	252.00	Charged a Permissive Occupancy twice in error

Council Loans Report

Name	Institution	Purpose	Interest Rate	Loan Amount	Amount Outstanding	Due Date
Loan 202	ANZ Bank	Civic Centre	3.47% Fixed	\$ 850,000.00	\$ 471,489.97	21/10/2026
Loan 203	National Australia Bank	Midway Centre	3.586% Fixed	\$ 1,900,000.00	\$ 1,157,356.73	1/06/2033
Loan 204	Bendigo Bank	Buronga Landfill	5.29% Fixed	\$ 1,500,000.00	\$ 1,063,968.93	12/05/2037
CFWC310604	T-Corp	Trentham Cliffs Sewer	1.82% Fixed	\$ 750,000.00	\$ 465,972.63	4/06/2031
CFWC310624	T-Corp	Burong/Gol Gol Stormwater	1.79% Fixed	\$ 1,250,000.00	\$ 776,818.34	24/06/2031
Loan 205	National Australia Bank	Willowbend Caravan Park	2.2% Fixed	\$ 1,500,000.00	\$ 1,006,351.90	25/01/2027
Loan 206	Bendigo Bank	Buronga Landfill #3	1.85% Fixed	\$ 900,000.00	\$ 433,035.59	25/09/2028
Loan 207	National Australia Bank	Willowbend Caravan Park	1.933% Fixed	\$ 1,500,000.00	\$ 1,078,305.81	31/03/2028
Loan 207	National Australia Bank	Civic Centre	1.933% Fixed	\$ 1,500,000.00	\$ 1,406,564.40	31/03/2028
CFWC440209	T-Corp	Civic Centre	5.45% Fixed	\$ 4,000,000.00	\$ 3,824,399.57	9/02/2044
CFWC440523	T-Corp	Stormwater	5.73% Fixed	\$ 2,000,000.00	\$ 1,944,523.00	23/05/2044
CFWC440822	T-Corp	Buronga Landfill	5.48% Fixed	\$ 12,000,000.00	\$ 11,657,863.74	22/08/2044
TOTAL					\$ 25,286,650.61	

Overtime and Travelling

Month	August	Pay Periods	3 & 4			
Overtime from	19/07/2025 to 15/08/2025					
Overtime						
	Time and a Half Includes Time		Double Time		Total	2025/26 Accumulative Total
Department	Hours	Amount	Hours	Amount		
Animal Services	12.00	690.95	11.25	\$ 928.76	1619.71	\$ 2,573.46
Accountant					0.00	\$ -
Assets					0.00	\$ 213.92
Building Maintenance	2.50	179.62	0.50	\$ 47.90	227.52	\$ 323.32
BioSecurity Officer					0.00	\$ -
Civil	4.50	250.97	7.00	\$ 469.69	720.66	\$ 889.43
Council Roads	158.50	8,324.66	91.00	\$ 6,195.47	14520.13	\$ 30,745.92
Customer Service Office					0.00	\$ -
Depot Store					0.00	\$ -
Finance					0.00	\$ -
GM's Office					0.00	\$ 319.53
Health & Planning	2.00	102.13	0.50	\$ 34.04	136.17	\$ 136.17
Indoor Engineers					0.00	\$ -
IT Support	0.50	41.84			41.84	\$ 1,429.44
Landfill Transfer Stations	2.00	99.98	6.50	\$ 433.23	533.21	\$ 533.21
Library	5.00	327.73	6.00	\$ 517.02	844.75	\$ 1,121.63
Parks & Gardens	10.00	546.10	15.50	\$ 1,233.30	1779.40	\$ 2,758.45
Private Works					0.00	\$ -
RMS Roads	12.00	722.60			722.60	\$ 1,691.42
Subdivision Officer	2.00	164.73			164.73	\$ 164.73
Tourism & Promotion	2.00	121.57	3.00	\$ 243.15	364.72	\$ 718.71
Water & Waste Water	78.00	4,734.17	83.00	\$ 6,908.91	11643.08	\$ 19,623.68
Workshop	9.00	595.56			595.56	\$ 1,210.57
Workshop/Mechanics	0.50	25.34			25.34	\$ 50.68
Total	300.50	\$16,927.95	224.25	\$ 17,011.47	\$ 33,939.42	\$ 64,504.27
Travel Allowance						
Department	Kms	Amount				
Total	0	0				
Grand Total		\$ 33,939.42				

Note: Overtime costs for the Roads Department during this period is associated with the completion of external Natural Disaster grant funded construction projects on the Old Broken Hill Road and Roo Roo Road with additional time incurred for travel to remote locations.

Overtime for the Water & Waste Water team relates to programmed after hours water supply connection works to Murray St Wentworth.

Other after hours work during this period included Programmed after hours work to install new Wentworth Water Treatment Plant flow meters.

Conclusion

The report indicates to Council that its finances are in a favourable position.

Attachments

Nil

9.7 MONTHLY INVESTMENT REPORT - AUGUST 2025

File Number: RPT/25/498

Responsible Officer: Simon Rule - Director Corporate Services
 Responsible Division: Corporate Services
 Reporting Officer: Ned Lamond - Financial Services Coordinator

Objective: 4.0 Wentworth Shire is supported by strong and ethical civic leadership with all activities conducted in an open, transparent and inclusive manner

Strategy: 4.4 Manage public resources responsibly and efficiently for the benefit of the community

Summary

As of 31 August 2025, Council had \$36 million invested in term deposits and \$8,143,240.58 in other cash investments. Council received \$232,467.41 from its investments for the month of August 2025.

In August 2025 Council investments averaged a rate of return of 3.93% and it currently has \$6,522,314.93 of internal restrictions and \$31,621,844.63 of external restrictions.

Recommendation

That Council receives and notes the monthly investment report for August 2025.

Detailed Report

Purpose

The purpose of this report is to update Council on the current status of its investments as required by the *Local Government Act 1993* (NSW) and the associated regulation.

Matters under consideration.

As of 31 August 2025, Council had \$42,998,063.85 invested with eight (8) financial institutions and one (1) Treasury Corporation. This is an increase of \$749,058.22 from the previous month.

The investment of surplus funds remains in line with Council's Investment Policy. This ensures sufficient working capital is retained, and restrictions are supported by cash and investments that are easily converted into cash.

Interest Received from Cash Investments in August 2025

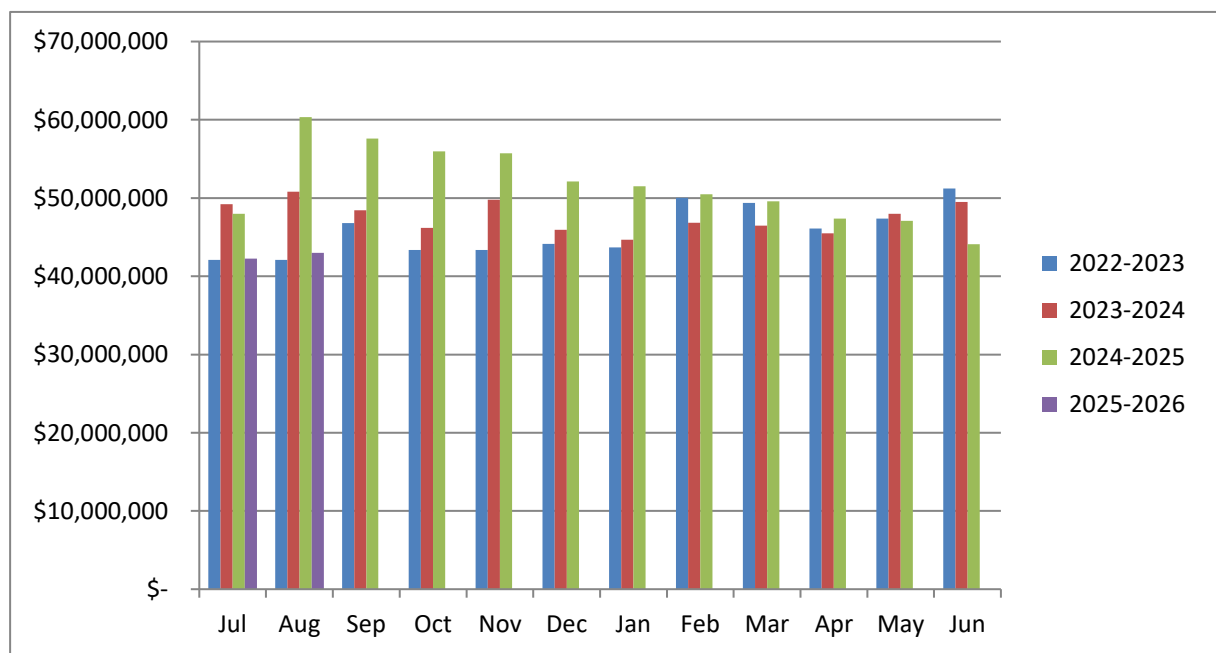
22 deposits matured or provided interest in August earning Council \$232,467.41 in interest. The budget for August was \$117,083.33. Year to date Council has received \$449,673.17 in interest based on cash accounting compared to the budget to August of \$354,416.66.

Expired investments are now shown in the attached report along with a summary of accrued interest. The budget for the financial year was set at \$2,125,000.00

Restrictions

Internal Restrictions		
- Employee Entitlements	\$2,300,921.00	
- Future Development Reserve	\$576,217.20	
- Trust Account	\$1,145,176.73	
- Capital Projects	\$1,000,000.00	
- Plant Replacement Reserve	\$1,500,000.00	\$6,522,314.93
External Restrictions		
- Water Fund	\$12,220,792.94	
- Sewer Fund	\$6,818,506.65	
- T-Corp Loan Balance	\$2,259,944.00	
- Developer Contributions Reserve	\$1,085,000.00	
- Landfill Expansion Loan	\$3,088,398.24	
- Unexpended Grants	\$5,353,806.59	
- Crown Reserves Reserve	\$208,296.22	
- Prepayments Cemeteries	\$587,099.99	\$31,621,844.63
Day to Day Liquidity		\$5,999,081.02
Total Funds Available		\$44,143,420.58

Total Funds Invested



Summary – Unexpended Grants as at 31 August 2025

Grant	Amount	Expiry
Resources for Regions Round 9	\$ 111,618.26	31/12/2025
OLG Flood Recovery Grants	\$ 578,329.49	30/06/2026
LRCIP Phase 4	\$ 158,866.39	30/06/2025
Planning Cadet Grant	\$ 15,880.00	No Set Date
RFS M & R Grant	\$ -	30/06/2025
Crown Reserve Improvement Fund Astronomy Park	\$ 656,000.21	30/06/2026
Roads to Recovery	\$ 27,462.35	30/06/2026
Main Roads Block Grant	\$ 802,959.92	30/06/2026
Regional Emergency Road Repair Program	\$ 2,926,840.47	31/10/2027
Drought Resilience Funding	\$ 75,849.50	30/11/2025
Total	\$ 5,353,806.59	

Conclusion

The Director Corporate Services has certified that all investments have been made in accordance with the *Local Government Act 1993* (NSW), Local Government (General) Regulations 2021 and Council's Investment Policy. Council is investing its funds prudently to optimise returns and reduce exposure to risk in accordance with legislation and its own investment policy.

Attachments

1. Yield Hub Report - August 2025 [↓](#)



Wentworth Shire Council

Holdings Report

As At 31st of August, 2025

Important Disclaimer



Disclaimer

This document is for informational purposes only and is intended for wholesale investors as defined under the Corporations Act 2001 (Cth). It does not constitute financial advice, an offer, solicitation, or recommendation to buy, sell, or hold any financial products.

While reasonable care has been taken to ensure the accuracy of the information, we make no representations or warranties as to its completeness, reliability, or fitness for any purpose. Any opinions, estimates, or assumptions contained in this document are subject to change without notice.

Before making any investment decision, you should seek independent financial, legal, and tax advice to determine the appropriateness of any information in the context of your own circumstances.

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Regulatory Information

The YieldHub platform is powered by Curve Securities Ltd.
ABN 94 143 558 598 | AFS Licence 405751
Phone: (02) 9690 2188 | Curve: 1300 128 783 | Email: yield@curve.com.au
Suite 1801, Level 18, 1 Bligh St, Sydney, NSW, 2000


Portfolio Performance Dashboard as at 31/08/2025






Portfolio Cost

\$36,000,000




Portfolio Value

\$36,000,000




Unrealised Gain/Loss

\$0



Weighted Avg. Term

59.7 days




Weighted Avg. Yield

3.9953%




August 2025 Interest

\$232,570



FY26 Interest

\$450,298



Accrued Interest

\$451,248

Portfolio metrics current as of reporting date

Investment Distribution by Value

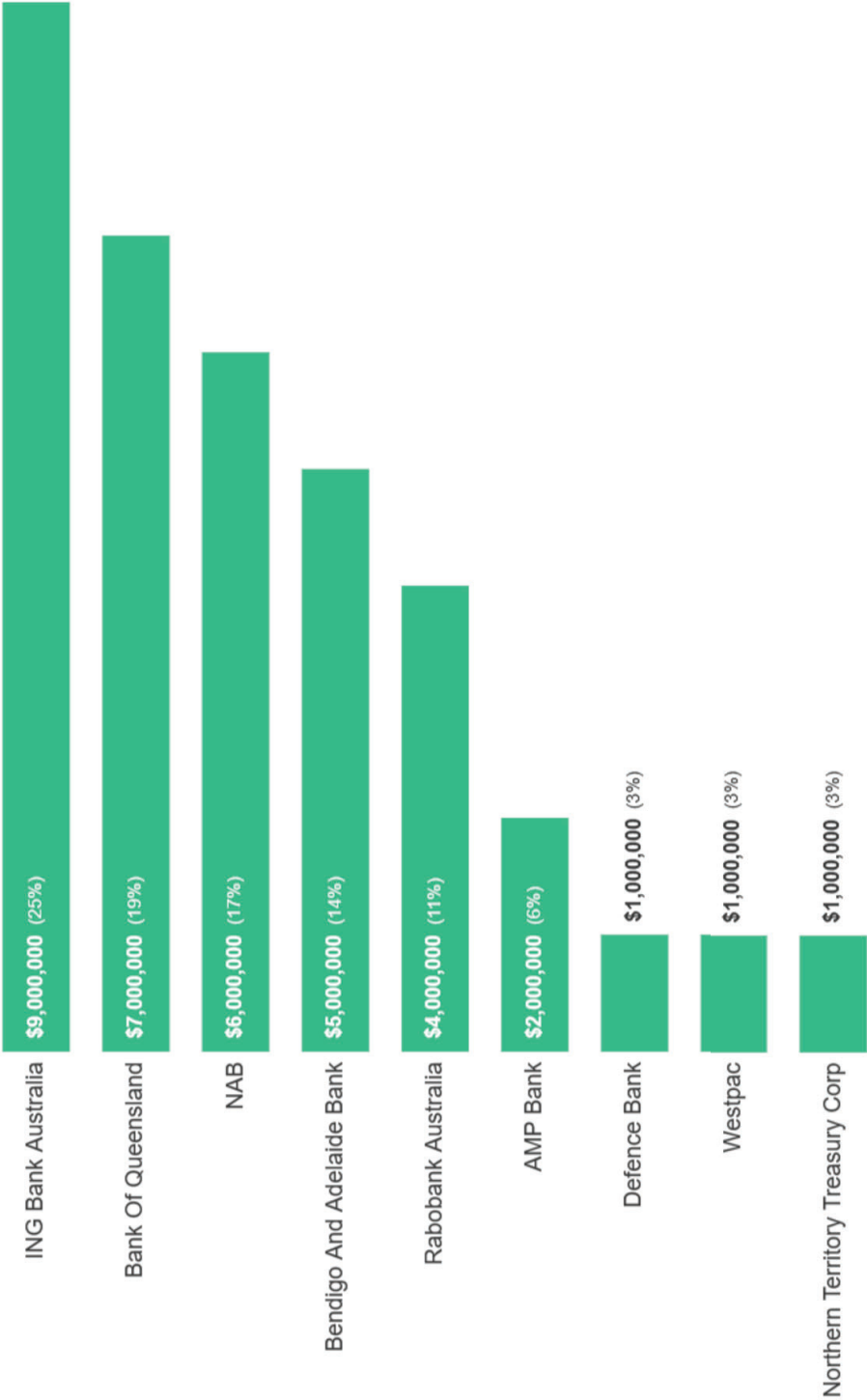


Investments as at 31/08/2025



This chart shows the distribution of investments by product type based on current portfolio value.
Values used: Term Deposits use Consideration value. NCDs use Consideration value. Bonds use Gross Value (market value including accrued interest at month end). Cash Accounts use Current Balance.

Investment Distribution by Counterparty



TERM DEPOSITS (36) | Total Consideration (excl. accrued): \$36,000,000

INVESTMENT	INSTITUTION	S&P EQUIV. RATING	CONSIDERATION	SETTLEMENT DATE	TERM (DAYS)	MATURITY DATE	YIELD	INTEREST FREQUENCY	INTEREST ACCRUED	TOTAL DEPOSIT INTEREST	NEXT PAYMENT DATE	COMMENTS
CN# 095002 Wentworth Shire Council	Bank of Queensland.	A-2 / A-	\$1,000,000	28/08/2025	32	29/09/2025	3.5500%	At maturity	Monthly: \$389.04 Total: \$389.04	\$3,112.33	29/09/2025	
CN# 095001 Wentworth Shire Council	NAB	A-1+ / AA-	\$1,000,000	28/08/2025	32	29/09/2025	3.4000%	At maturity	Monthly: \$372.6 Total: \$372.6	\$2,880.82	29/09/2025	
CN# 095002 Wentworth Shire Council	ING Bank (Australia)	A-1 / A	\$1,000,000	27/08/2025	33	29/09/2025	3.5600%	At maturity	Monthly: \$487.67 Total: \$487.67	\$3,218.63	29/09/2025	
CN# 095001 Wentworth Shire Council	ING Bank (Australia)	A-1 / A	\$1,000,000	27/08/2025	33	29/09/2025	3.5600%	At maturity	Monthly: \$487.67 Total: \$487.67	\$3,218.63	29/09/2025	
CN# 095000 Wentworth Shire Council	ING Bank (Australia)	A-1 / A	\$1,000,000	27/08/2025	33	29/09/2025	3.5600%	At maturity	Monthly: \$487.67 Total: \$487.67	\$3,218.63	29/09/2025	
CN# 095059 Wentworth Shire Council	ING Bank (Australia)	A-1 / A	\$1,000,000	27/08/2025	33	29/09/2025	3.5600%	At maturity	Monthly: \$487.67 Total: \$487.67	\$3,218.63	29/09/2025	
CN# 095058 Wentworth Shire Council	Rabobank Australia	A-1 / A	\$1,000,000	27/08/2025	33	29/09/2025	3.5500%	At maturity	Monthly: \$486.3 Total: \$486.3	\$3,209.59	29/09/2025	
CN# 095005 Wentworth Shire Council	Rabobank Australia	A-1 / A	\$1,000,000	25/08/2025	31	25/09/2025	3.5500%	At maturity	Monthly: \$680.82 Total: \$680.82	\$3,015.07	25/09/2025	
CN# 095004 Wentworth Shire Council	Rabobank Australia	A-1 / A	\$1,000,000	25/08/2025	31	25/09/2025	3.5500%	At maturity	Monthly: \$680.82 Total: \$680.82	\$3,015.07	25/09/2025	
CN# 095003 Wentworth Shire Council	Bank of Queensland.	A-2 / A-	\$1,000,000	25/08/2025	31	25/09/2025	3.5500%	At maturity	Monthly: \$680.82 Total: \$680.82	\$3,015.07	25/09/2025	
CN# 095032 Wentworth Shire Council	NAB	A-1+ / AA-	\$1,000,000	11/08/2025	30	10/09/2025	3.5500%	At maturity	Monthly: \$2,042.47 Total: \$2,042.47	\$2,917.81	10/09/2025	
CN# 095031 Wentworth Shire Council	ING Bank (Australia)	A-1 / A	\$1,000,000	11/08/2025	31	11/09/2025	3.6800%	At maturity	Monthly: \$2,117.26 Total: \$2,117.26	\$3,125.48	11/09/2025	
CN# 095030 Wentworth Shire Council	Bank of Queensland.	A-2 / A-	\$1,000,000	11/08/2025	31	11/09/2025	3.5500%	At maturity	Monthly: \$2,042.47 Total: \$2,042.47	\$3,015.07	11/09/2025	
CN# 095008 Wentworth Shire Council	Bendigo and Adelaide Bank.	A-2 / A-	\$1,000,000	08/08/2025	31	08/09/2025	3.6500%	At maturity	Monthly: \$2,400 Total: \$2,400	\$3,100	08/09/2025	
CN# 095066 Wentworth Shire Council	Bendigo and Adelaide Bank.	A-2 / A-	\$1,000,000	07/08/2025	32	08/09/2025	3.7000%	At maturity	Monthly: \$2,534.25 Total: \$2,534.25	\$3,243.84	08/09/2025	

Term Deposits (continued)

INVESTMENT	INSTITUTION	S&P EQUIV. RATING	CONSIDERATION	SETTLEMENT DATE	TERM (DAYS)	MATURITY DATE	YIELD	INTEREST FREQUENCY	INTEREST ACCRUED	TOTAL DEPOSIT INTEREST	NEXT PAYMENT DATE	COMMENTS
CN# 095465 Wentworth Shire Council	Bendigo and Adelaide Bank.	A-2 / A-	\$1,000,000	07/08/2025	32	08/09/2025	3.7000%	At maturity	Monthly: \$2,534.25 Total: \$2,534.25	\$3,243.84	08/09/2025	
CN# 095462 Wentworth Shire Council	Bank of Queensland.	A-2 / A-	\$1,000,000	07/08/2025	32	08/09/2025	3.6500%	At maturity	Monthly: \$2,500 Total: \$2,500	\$3,200	08/09/2025	
CN# 095461 Wentworth Shire Council	ING Bank (Australia)	A-1 / A	\$1,000,000	07/08/2025	32	08/09/2025	3.6800%	At maturity	Monthly: \$2,520.55 Total: \$2,520.55	\$3,226.3	08/09/2025	
CN# 095391 Wentworth Shire Council	ING Bank (Australia)	A-1 / A	\$1,000,000	05/08/2025	31	05/09/2025	3.7200%	At maturity	Monthly: \$2,751.78 Total: \$2,751.78	\$3,159.45	05/09/2025	
CN# 095390 Wentworth Shire Council	NAB	A-1+ / AA-	\$1,000,000	05/08/2025	31	05/09/2025	3.5000%	At maturity	Monthly: \$2,589.04 Total: \$2,589.04	\$2,972.6	05/09/2025	
CN# 095389 Wentworth Shire Council	Rabobank Australia	A-1 / A	\$1,000,000	05/08/2025	31	05/09/2025	3.8000%	At maturity	Monthly: \$2,810.96 Total: \$2,810.96	\$3,227.4	05/09/2025	
CN# 095273 Wentworth Shire Council	AMP Bank Ltd	A-2 / BBB+	\$1,000,000	30/07/2025	91	29/10/2025	4.2000%	At maturity	Monthly: \$3,567.12 Total: \$3,797.26	\$10,471.23	29/10/2025	
CN# 095168 Wentworth Shire Council	Bank of Queensland.	A-2 / A-	\$1,000,000	28/07/2025	60	26/09/2025	3.9000%	At maturity	Monthly: \$3,312.33 Total: \$3,739.73	\$6,410.96	26/09/2025	
CN# 095167 Wentworth Shire Council	Bank of Queensland.	A-2 / A-	\$1,000,000	28/07/2025	60	26/09/2025	3.9000%	At maturity	Monthly: \$3,312.33 Total: \$3,739.73	\$6,410.96	26/09/2025	
CN# 092043 Wentworth Shire Council	Bendigo and Adelaide Bank.	A-2 / A-	\$1,000,000	27/03/2025	365	27/03/2026	4.4800%	At maturity	Monthly: \$3,804.93 Total: \$19,392.88	\$44,800	27/03/2026	
CN# 081123 Wentworth Shire Council	Defence Bank	A-2 / BBB+	\$1,000,000	07/01/2025	330	03/12/2025	4.9500%	At maturity	Monthly: \$4,204.11 Total: \$32,141.1	\$44,753.42	03/12/2025	
CN# 081122 Wentworth Shire Council	AMP Bank Ltd	A-2 / BBB+	\$1,000,000	07/01/2025	269	03/10/2025	5.0500%	At maturity	Monthly: \$4,288.04 Total: \$32,790.41	\$37,217.81	03/10/2025	
CN# 081121 Wentworth Shire Council	NAB	A-1+ / AA-	\$1,000,000	07/01/2025	261	25/09/2025	4.8500%	At maturity	Monthly: \$4,119.18 Total: \$31,491.78	\$34,680.82	25/09/2025	
CN# 080628 Wentworth Shire Council	Westpac	A-1+ / AA-	\$1,000,000	27/11/2024	365	27/11/2025	5.0900%	At maturity	Monthly: \$4,323.01 Total: \$38,767.67	\$50,900	27/11/2025	
CN# 080627 Wentworth Shire Council	Bendigo and Adelaide Bank.	A-2 / A-	\$1,000,000	20/11/2024	365	20/11/2025	5.0500%	At maturity	Monthly: \$4,288.04 Total: \$39,431.51	\$50,500	20/11/2025	

Term Deposits (continued)

INVESTMENT	INSTITUTION	S&P EQUIV. RATING	CONSIDERATION	SETTLEMENT DATE	TERM (DAYS)	MATURITY DATE	YIELD	INTEREST FREQUENCY	INTEREST ACCRUED	TOTAL DEPOSIT INTEREST	NEXT PAYMENT DATE	COMMENTS
CN# 060427 Wentworth Shire Council	ING Bank (Australia)	A-1 / A	\$1,000,000	21/11/2024	365	21/11/2025	5.1500%	At maturity	Monthly: \$4,373.97 Total: \$40,071.23	\$51,500	21/11/2025	
CN# 078571 Wentworth Shire Council	NAB	A-1+ / AA-	\$1,000,000	03/09/2024	365	03/09/2025	4.9500%	At maturity	Monthly: \$4,204.11 Total: \$49,228.77	\$49,500	03/09/2025	
CN# 078570 Wentworth Shire Council	NAB	A-1+ / AA-	\$1,000,000	03/09/2024	365	03/09/2025	4.9500%	At maturity	Monthly: \$4,204.11 Total: \$49,228.77	\$49,500	03/09/2025	
CN# 069374 Wentworth Shire Council	ING Bank (Australia)	A-1 / A	\$1,000,000	04/01/2024	732	05/01/2026	5.1400%	Annually	Monthly: \$4,365.48 Total: \$33,515.62	\$103,081.64	05/01/2026	
CN# 068928 Wentworth Shire Council	Bank of Queensland.	A-2 / A-	\$1,000,000	04/12/2023	1095	03/12/2026	5.2500%	Annually	Monthly: \$4,458.9 Total: \$38,979.45	\$157,500	04/12/2025	
CN# 054172 Wentworth Shire Council	Northern Territory Treasury Corporation (Territory Bonds)	NR / AA-	\$1,000,000	16/09/2021	1916	15/12/2026	1.3500%	Quarterly	Monthly: \$1,146.58 Total: \$2,847.95	\$70,865.75	16/09/2025	

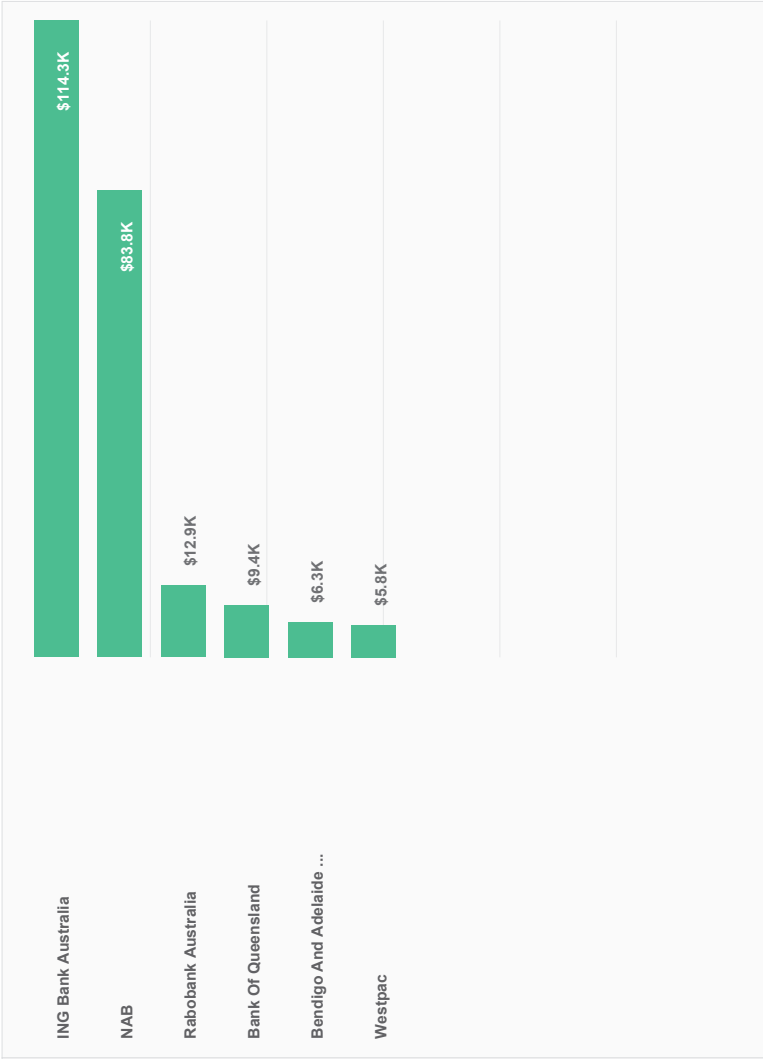
Transaction Activity (01/08/2025 to 31/08/2025)



TRANSACTION TOTALS



INTEREST PAYMENTS BY COUNTERPARTY



Transaction Summaries by Counterparty (01/08/2025 to 31/08/2025)



Investments	
Counterparty	Amount
ING Bank Australia	\$7,000,000
Bank Of Queensland	\$4,000,000
Rabobank Australia	\$4,000,000
NAB	\$3,000,000
Bendigo And Adelaide...	\$3,000,000
TOTAL	\$21,000,000

Maturities	
Counterparty	Amount
ING Bank Australia	\$7,000,000
Rabobank Australia	\$4,000,000
NAB	\$4,000,000
Bank Of Queensland	\$3,000,000
Bendigo And Adelaide...	\$2,000,000
Westpac	\$2,000,000
TOTAL	\$22,000,000

Interest Payments	
Counterparty	Amount
ING Bank Australia	\$114,294.52
NAB	\$83,804.11
Rabobank Australia	\$12,909.59
Bank Of Queensland	\$9,442.47
Bendigo And Adelaide...	\$6,327.4
Westpac	\$5,792.33
TOTAL	\$232,570.41

Transaction Summaries by Investment Type (01/08/2025 to 31/08/2025)



Investments	
Investment Type	Amount
Term Deposit	\$21,000,000.00
TOTAL	\$21,000,000.00

Maturities	
Investment Type	Amount
Term Deposit	\$22,000,000.00
TOTAL	\$22,000,000.00

Interest Payments	
Investment Type	Amount
Term Deposit	\$232,570.41
TOTAL	\$232,570.41

Portfolio Performance Summary As at 31/08/2025



Time Period	Term Deposits	Total Avg Yield	RBA Cash	1m BBSW	3m BBSW	AusBond Bank Bill	AusBond Annualised	vs RBA	vs 1m BBSW	vs 3m BBSW	vs AusBond
As At 31/8/2025	4.00%	4.00%	3.60%	3.55%	3.57%	10186.125	---	+0.40%	+0.45%	+0.43%	---
1m	4.18%	4.18%	3.85%	3.68%	3.68%	0.32%	3.77%	+0.33%	+0.50%	+0.50%	+0.41%
3m	4.52%	4.52%	3.85%	3.75%	3.73%	0.94%	3.74%	+0.67%	+0.77%	+0.79%	+0.78%
6m	4.88%	4.88%	4.10%	4.09%	4.12%	2.00%	3.97%	+0.78%	+0.79%	+0.76%	+0.91%
12m	5.05%	5.05%	4.35%	4.30%	4.39%	4.25%	4.25%	+0.70%	+0.75%	+0.66%	+0.80%

UNDERSTANDING YOUR PERFORMANCE DATA:

- Portfolio Weighted Average Yield: Your yield is calculated by examining each investment and weighting its contribution based on its size relative to your total portfolio. Larger investments have greater influence on the overall portfolio yield.
- Benchmark Comparisons: The "vs" columns show how your portfolio yield compares to standard market references, helping you understand whether your investment strategy is delivering returns above or below alternatives. Green values indicate outperformance.
- Time Periods: Rows labeled "1m", "3m", "6m", and "12m" represent historical lookback periods from your report date, allowing you to track how your portfolio and market yields have changed over time and evaluate long-term performance.

Note: Historical performance data is provided for informational purposes only and does not guarantee future results.

9.8 AUDIT, RISK & IMPROVEMENT COMMITTEE ANNUAL REPORT

File Number: RPT/25/507

Responsible Officer: Simon Rule - Director Corporate Services

Responsible Division: Corporate Services

Reporting Officer: Simon Rule - Director Corporate Services

Objective: 4.0 Wentworth Shire is supported by strong and ethical civic leadership with all activities conducted in an open, transparent and inclusive manner

Strategy: 4.3 Provide a governance framework that is transparent and builds trust in local leadership

Summary

The Audit, Risk and Improvement Committee (ARIC) is established under section 428A of the *Local Government Act 1993* (NSW) and in accordance with the guidelines for *risk management and internal audit for local councils in NSW*.

The ARIC provides independent assurance and advice to Council on governance, risk management and internal control, financial reporting, service reviews, continuous improvement and compliance.

This Annual Report provides an overview of the Committee's activities during 2024-2025 and demonstrates compliance with the Guidelines.

Matters under consideration

Committee Membership

- Independent Chair: Rosanne Kava
- Independent Member: Dianne Schmidt
- Independent Member: Caroline Smith
- Councillor Representative: Cr Brian Beaumont – until August 2024 and Cr Jody Starick from October 2024

The Committee met 5 times during the reporting year. All meetings were conducted in accordance with the adopted Terms of Reference.

- 7 August 2024
- 4 October 2024 (standalone meeting to review the Annual Financial Statements)
- 7 November 2024
- 14 February 2025
- 9 May 2025

Recommendation

That Council receives and notes the Audit, Risk and Improvement Committee Annual Report for the year end 30 June 2025

Detailed Report

Purpose

The purpose of this report is to outline the Audit, Risk & Improvement Committee's activities for the 2024-2025 financial year.

Background

The Audit, Risk and Improvement Committee (ARIC) is established under section 428A of the *Local Government Act 1993* (NSW) and in accordance with the guidelines for *risk management and internal audit for local councils in NSW*.

The ARIC provides independent assurance and advice to Council and has the following responsibilities as set out in its Terms of Reference:

- Reviewing and monitoring Council's governance, risk management and control frameworks
- Providing oversight of the internal audit function
- Monitoring external audit activity and Council's implementation of audit recommendations
- Reviewing financial management and reporting
- Considering issues of compliance, legislative obligations and ethical conduct
- Advising on continuous improvement, value for money and efficiency in service delivery
- Monitoring implementation of Council's Community Strategic Plan

This Annual Report provides an overview of the Committee's activities during 2024-2025 and demonstrates compliance with the Guidelines.

Matters under consideration

Committee Membership

- Independent Chair: Rosanne Kava
- Independent Member: Dianne Schmidt
- Independent Member: Caroline Smith
- Councillor Representative: Cr Brian Beaumont – until August 2024 and Cr Jody Starick from October

The Committee met 5 times during the reporting year. All meetings were conducted in accordance with the adopted Terms of Reference.

- 7 August 2024
- 4 October 2024 (standalone meeting to review the Annual Financial Statements)
- 7 November 2024
- 14 February 2025
- 9 May 2025

Focus Area	Activity / Report Considered
External Audit	Audit Office of NSW Update; Review of Annual Financial Statements
Internal Audit	Quarterly Updates; Extreme & High Risk Recommendations; Review of Internal Audit Charter; Endorsement of 2025–2026 Work Plan
Governance	Review of Committee Terms of Reference; Oversight of Annual Report; Delegations Manual
Risk Management	Quarterly Risk Reports; Oversight of Child Safe Standards Implementation; Compliance Framework; Business Continuity Plan

Focus Area	Activity / Report Considered
Financial Management	Quarterly Budget Review Statements; 2025-2026 Budget/Operational Plan Presentation; Investment Policy
Fraud & Corruption Control	Quarterly Fraud Reports; Biennial fraud assessment update
Work Health & Safety	Quarterly WHS Reports
Legislative Compliance	Quarterly Legislative Updates
Service Delivery & Performance	Quarterly Operational Plan Progress Reports
Forward Planning	Endorsement of ARIC Work Plan for 2025–2026

Guideline Requirement	Status	Evidence (Agenda Items 2024–25)
ARIC Terms of Reference in place and reviewed	✓	Review of Committee Terms of Reference
Internal Audit Charter in place and reviewed	✓	Review of Internal Audit Charter
Internal Audit Work Plan developed and monitored	✓	Internal Audit Quarterly Update; Proposed 2025–2026 Work Plan
Regular reporting on Internal Audit activities	✓	Internal Audit Quarterly Update; Extreme & High Risk Recommendations
Oversight of risk management framework	✓	Quarterly Risk Report; WHS Report; Oversight of Child Safe Standards Implementation; Compliance Framework; Business Continuity Plan
Oversight of compliance with laws/regulations	✓	Quarterly Legislative Update; Child Safe Standards Implementation
Oversight of fraud control arrangements	✓	Quarterly Fraud Report; Biennial fraud assessment update
Oversight of financial management & reporting	✓	Audit Office Update; Quarterly Budget Review; Annual Financial Statements; 2025-2026 Budget/Operational Plan Presentation; Investment Policy
Oversight of governance and service delivery	✓	Quarterly Operational Plan Progress Report; Annual Report; Delegations Manual
Work planning & forward scheduling of Committee business	✓	Proposed 2025–2026 Work Plan
Support for GM attestation in Council Annual Report	✓	Annual Report; Committee's activities across all agenda items

Additional Comments

At the August 2024 meeting the Director Corporate Services and the Director Roads and Engineering provided an update to the Committee on recent Waste Management activities focusing on the independent operations assessment, Buronga Landfill Development Application/Planning Approval and update on the Buronga Landfill Extension project including the recent tenders that were approved at the June 2024 Council Meeting.

At the February 2025 meeting the General Manager and the Director Corporate Services in conjunction with Sara Wrate Manager, FOSO & Trail of Lights from Mildura Rural City Council provided the Committee an overview of the Fibre Optic Symphonic Orchestra (FOSO) project that Council is undertaking in conjunction with Mildura Rural City Council.

Conclusion

The Committee is satisfied that:

- Council has in place appropriate systems and frameworks to support good governance, risk management and compliance
- Internal and external audit functions are operating effectively and with sufficient independence
- Council management is responsive to recommendations and committed to continuous improvement

The Committee considers that its work has added value to Council's decision making and oversight processes, and that it has met its obligations under the Act and the Guidelines.

The Committee affirms its independence and commitment to providing timely, high-quality advice and assurance to assist Council in fulfilling its governance responsibilities.

Attachments

Nil

9.9 DEVELOPMENT APPLICATION DETERMINATION REPORT - AUGUST 2025

File Number: RPT/25/528

Responsible Officer: Ken Ross - General Manager
 Responsible Division: Office of the General Manager
 Reporting Officer: Gayle Marsden - Executive Assistant

Objective: 3.0 Wentworth Shire is a community that works to enhance and protect its physical and natural environment
 Strategy: 3.1 An urban environment that maintains and enhances our sense of identity and place

Summary

For the month of August 2025, a total of seven (7) Development Applications and one (1) Modification Application were determined.

The estimated value of the determined developments was \$1,779,643.00. This brings the year to date total to 19 Development Applications with an estimated development value of \$5,803,746.77 and 3 Modification Applications.

Recommendation

That Council receives and notes the report for the Determined Development Applications for the month of August 2025.

Detailed Report

Purpose

The purpose of this report is to provide Council with a list of Development Applications as tabled in the attachment, determined in the month of August 2025.

Conclusion

The total value of determinations was \$1,779,643.00 for the month of August 2025. The average determination time was 85 days.

Attachments

1. Development Applications Determined August 2025 [↓](#)

DETERMINATION OF DEVELOPMENT APPLICATIONS FOR THE MONTH OF AUGUST 2025

FILE NUMBER	APPLICANT	LOCATION	DESCRIPTION	VALUE (EX GST)	DETERMINATION DATE	COMMUNITY VIEWS	ACTIVE DAYS
DA2024/134 PAN 462667	James Golsworthy Consulting	623 River Road Lot 989 DP 756961 & 28 Jindalee Road Lot 1 DP 1264484 Coomealla	Extension to existing rural industry	\$23,182,680.00	20/08/25 REFUSED BY COUNCIL	21	123
DA2025/081 PAN 525199	James Golsworthy Consulting	143 Hendy Road Lot 1 DP 1213735 Buronga	Change of use to Medical Centre (Osteopath Clinic) Including internal works - Tenancies Three (3) & Four (4)	\$0.00	27/08/25	0 submissions received	116
DA2025/083 PAN 528735	Gowers Homes Pty Ltd	11 Cielo Court Lot 8 DP 1300407 Gol Gol	Dwelling with Garage, pool house, swimming pool and safety barrier	\$933,785.00	20/08/25	0 submissions received	105
DA2025/085 PAN 528841	Robert David Poole	74 William Street Lot 1 Section 8 DP 758456 Gol Gol	Free standing verandah	\$11,130.00	20/08/25	0 submissions received	104
DA2025/087 PAN 521614	The Trustee for James D Harwood Trust	141 Summer Drive Lot 8 DP 1293754 Gol Gol	Dwelling with Garage - Storage Shed & Retaining wall	\$752,998.00	22/08/25	0 submissions received	104

DETERMINATION OF DEVELOPMENT APPLICATIONS FOR THE MONTH OF AUGUST 2025

DA2025/103 PAN 541109	Jackson Planning	3 Ray Court Lot 38 DP 1293754 Gol Gol	Storage shed	\$44,000.00	1/08/25	1 submission received, assessed and considered	57
DA2025/105 PAN 541771	Mark Hooper Designs	9 Grandview Drive Lot 13 DP 1300121 Buronga	TWO (2) Lot Subdivision	\$0.00	12/08/25	0 submissions received	68
S4-55/2025/019 (2) PAN 540141	BW&A National Building Consultants	56 Pitman Avenue Lot 869 DP 756961 Buronga	Modify DA2023/104 Proposed TWO (2) Lot Subdivision with Neighbourhood Property - Amend Lot 2 with carriageway easement in favour of Lot 1	\$0.00	8/08/25	No submissions received	50
DA2025/110 PAN 539963	Paul Schmidt	12 Murray Court Lot 11 DP 264252 Wentworth	Alterations to existing dwelling	\$37,730.00	4/08/25	No submissions received	40

9.10 DA2025/084 DEFERRED COMMENCEMENT (DWELLING) 119B LAGOON ROAD LOT 119 DP 756994 WENTWORTH

File Number: RPT/25/522

Responsible Officer: Ken Ross - General Manager
Responsible Division: Office of the General Manager
Reporting Officer: Kerrie Copley - Planning Officer

Objective: 3.0 Wentworth Shire is a community that works to enhance and protect its physical and natural environment

Strategy: 3.1 An urban environment that maintains and enhances our sense of identity and place

Summary

A development application (DA2025/084) was received by Council on 08 May 2025 for deferred commencement of a dwelling at 119B Lagoon Road Lot 119 DP 756994 Wentworth, on a lot below the minimum lot size within the RU1 Primary Production zone.

Under the RU1 Primary Production zoning of the *Wentworth Local Environmental Plan 2011 (WLEP 2011)*, the proposed development (deferred commencement of a dwelling) is permitted with consent if requirements under relevant clauses of the WLEP2011 are met. This application has been assessed against relevant criteria and is non-compliant with the objectives of clause 4.2B.

The proposed development is to be located on a lot measuring 8.7ha, while the minimum lot size for a dwelling on land under the RU1 Primary Production zone is 10,000ha. The proposed deferred commencement of a dwelling on the site does not meet the standard under clause 4.2B of the WLEP 2011, as the lot is below the minimum lot size allowable for a dwelling house. As part of the application, a request for a variation to this standard (usually referred to as a 4.6 variation) has been supplied.

Due to the variation being greater than 10%, the application cannot be determined under delegated authority and must be determined by Council.

Recommendation

That Council:

1. Approve subject to conditions DA2025/084 for deferred commencement of a dwelling 119B Lagoon Road Lot 119 DP 7569944, Wentworth.
2. Call a division in accordance with S375A of the Local Government Act 1993 (NSW).

Detailed Report

Purpose

The purpose of this report is to provide information for Council to determine Development Application DA2025/084, having consideration to the detail provided both within this report and the attachments provided.

Background

A Development Application was lodged with Council on 8 May 2025 seeking consent for deferred commencement of a dwelling.

The subject lot is located in the RU1 Primary Production zone under the Wentworth Local Environmental Plan 2011 (WLEP 2011). Under clause 4.2B of the WLEP 2011,

“(3) Development consent must not be granted for the erection of a dwelling house on land in a zone to which this clause applies unless the land is-

(a) a lot that is at least the minimum lot size specified for that land by the Lot Size Map”

Based on the above clause the proposed development does not meet the standard.

Where an application cannot achieve the development standards required by a Local Environmental Plan, the applicant may apply to vary the development standards. An application to vary a development standard is made under clause 4.6 of the WLEP 2011.

Under clause 35B of the Environmental Planning & Assessment Regulation 2021, applications involving contravention of development standards must be accompanied by a document that sets out the grounds on which the applicant seeks to demonstrate that –

- Compliance with the development standard is unreasonable or unnecessary in the circumstances, and
- There are sufficient environmental planning grounds to justify the contravention of the development standard.

Due to changes made by the NSW Government, Clause 4.6 of the Standard Instrument LEP has been reformed to make the planning system faster, simpler, and more transparent. The reform came into effect on 1 November 2023 and removes the requirement to obtain the Planning Secretary's concurrence for a variation with new reporting framework. As such, Council has authority to approve or refuse 4.6 variation applications.

The WLEP 2011 prescribes an MLS of 10,000ha for the subject land, the application proposing to depart from this standard, creating a variation of 99.02%. As the variation is greater than 10%, this application cannot be determined under delegated authority and is presented to Council for consideration.

Refer to attachment 1 – Development Application

Refer to attachment 2 – Statement of Environmental Effects

Refer to attachment 3 – 4.6 Variation request

Refer to attachment 4 - Plans

Matters under consideration

In determining a development application that requires consent, the consent authority must take into consideration matters prescribed in Section 4.15 of the *Environmental Planning and Assessment Act 1979* as relevant to the development.

The proposed development was assessed and complies with relevant provisions of Chapter 5 of the State Environmental Planning Policy (Biodiversity and Conservation) 2021.

The proposed development is permitted with consent and meets the zone objectives of the RU1 – Primary Production zoning under the Wentworth Local Environmental Plan 2011 as development of a dwelling house can be used to support ongoing agricultural land use at the site.

The lot where the proposed dwelling (to be approved as deferred commencement) does not meet the prescribed minimum lot size as per Clause 4.2B, however, the Clause 4.6 variation request submitted with the application provides adequate justification for the contravention of development standards seen in Clause 4.2B.

Due to the zoning and Wentworth Local Environmental Plan 2011 mapping impacting the land, the development application was assessed against clauses 4.2B, 4.6, 5.21, 7.1, 7.4, & 7.5 of the Wentworth Local Environmental Plan 2011 and a 4.6 variation to the development standard applied.

Refer to attachment 5 – 4.15 Assessment Report

Refer to attachment 6 – 4.6 variation assessment report

Refer to attachment 7 – Letter from Cadell Consulting Services

Refer to attachment 8 – Agency response (RFS)

Refer to attachment 9 – Agency response (DCCEEW)

Refer to attachment 10 – Conditions of Consent

Options

Based on the information contained in this report, the options available to address this matter are to:

Approve Development Application 2025/084 based on the following grounds:

- The application satisfies the points for consideration under section 4.15 of the Environmental Planning & Assessment Act 1979.
- The application, although not consistent with clause 4.2B of the Wentworth Local Environmental Plan 2011, requested a variation to development standards under clause 4.6, which is considered acceptable in this instance.

Legal, strategic, financial or policy implications

Should Council issue a determination to the application, the applicant has the right to submit a request for review of the determination to Council under Section 8.2 of the *Environmental Planning & Assessment Act 1987*.

The applicant also has the right to appeal the decision made by Council to the Land and Environment Court pursuant to Section 8.7 of the *Environmental Planning & Assessment Act 1987*.

Conclusion

Having consideration to the content of this report it is concluded that the appropriate course of action is to issue development approval for DA2025/084.

Attachments

1. Attachment 1 - Development application (Under Separate Cover)⇒
2. Attachment 2 - Statement of Environmentla Effects (Under Separate Cover)⇒
3. Attachment 3 - 4.6 Variation request↓
4. Attachment 4 - Plans↓
5. Attachment 5 - 4.15 Assessment Report (Under Separate Cover)⇒
6. Attachment 6 - 4.6 Variation Assessment↓
7. Attachment 7 - Letter from Cadell Consulting Services (Under Separate Cover)⇒
8. Attachment 8 - Agency response NSW Rural Fire Service (Under Separate Cover)⇒
9. Attachment 9 - Agency response Department of Climate Change, Energy, the Environment and Water - (Under Separate Cover)⇒
10. Attachment 10 - Conditions of consent↓



Request to vary under *Clause 4.6 Exceptions to development standards in the Wentworth Local Environmental Plan 2011*

Date	23 April 2025
Address	119B Lagoon Road, Wentworth NSW 2648 Lot 119 DP756994

1. Site description

The subject site is an allotment containing approximately 8.7 hectares and is an irregular square in shape. Agriculture (horticulture) covers almost the entire site.

2. Proposed development

This variation request seeks consent for the (deferred commencement) of a dwelling on the subject site that does not satisfy the minimum lot requirement.

3. What is the environmental planning instrument you are seeking to vary?

Wentworth Local Environmental Plan 2011

4. Zone of subject site

RU1 Primary Production

5. Development standard to be varied

Minimum Lot Size

Clause 4.2B Erection of dwelling houses on land in Zone RU1, RU4, R5, C3 and C4 (3)(a)

(1) The objectives of this clause are as follows—

- (a) to minimise unplanned rural residential development,
- (b) to enable the replacement of lawfully erected dwelling houses in rural and conservation zones.
- (a) there is a lawfully erected dwelling house on the land, and
- (b) the dwelling house to be erected is intended only to replace the existing dwelling house.

6. Type of variation

Numerical variation

7. The numeric value of the development standard in the Wentworth LEP 2011

PO Box 26
Wentworth NSW 2648

michele@cadellconsulting.com.au

1
0429 021 494

MLS 10,000 hectares

8. The numeric and percentage variation
--

The proposed development exceeds the development standard by 9,992 hectares which is a variation of 99.02%
--

9. How is compliance with the development standard unreasonable or unnecessary in this particular case?
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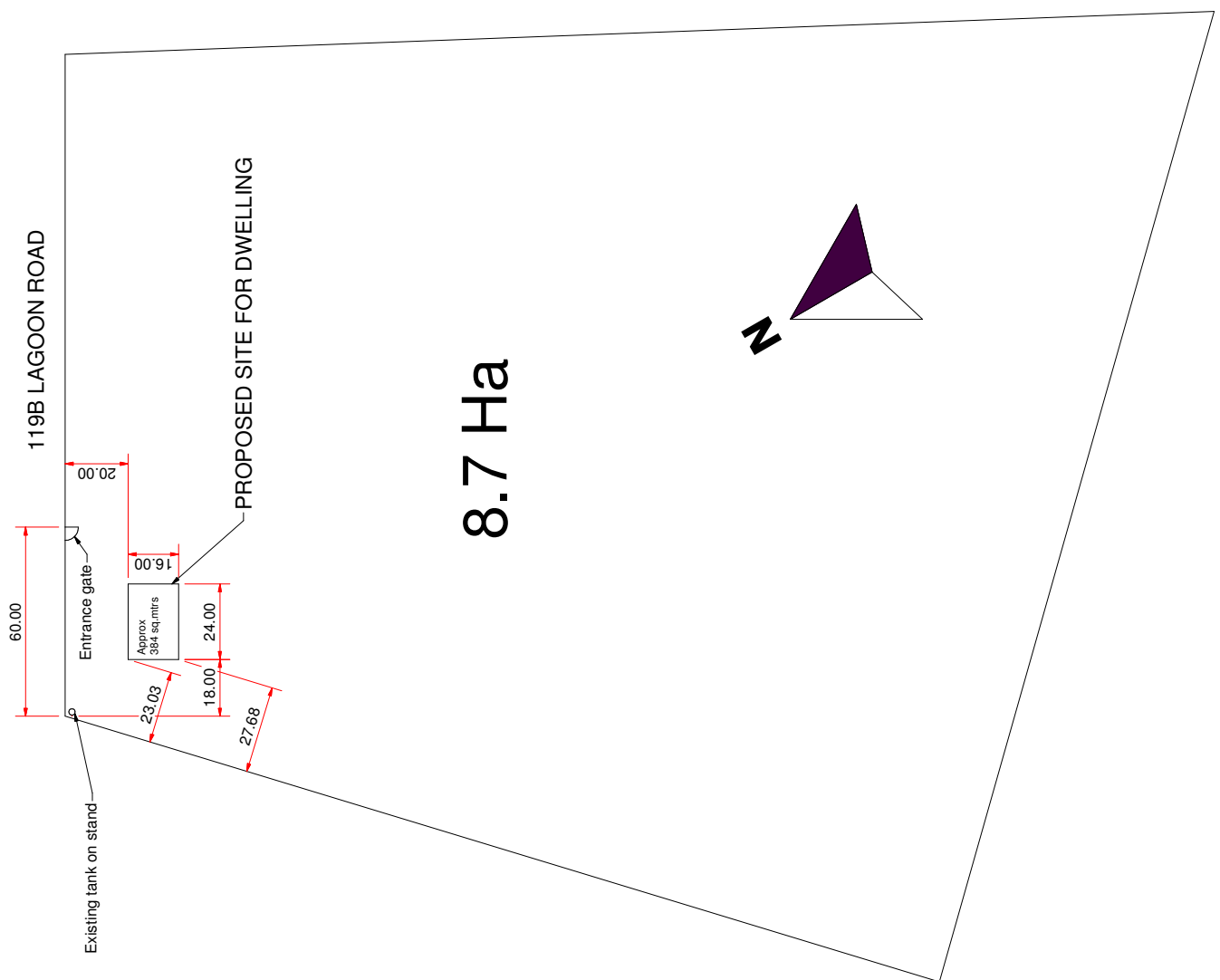
- | | |
|----|--|
| a) | The enforcement of the development standard applied to the subject site is considered unnecessary in this instance. The proposed development of a dwelling on the subject site will not contravene objective 1(a) of Clause 4.2B of the WLEP 2011. This is determined by the fact that the property will remain being rated as farming land and used for agricultural purposes, despite containing a dwelling. |
| b) | The enforcement of compliance with the development standard is considered unreasonable in this instance. The purpose of the proposed dwelling is to allow for the landowner to reside on site to enable the efficient and productive management of the rural enterprise, whilst protecting the property and assets that are required to operate a rural business. |
| c) | Compliance with the development standard is considered unreasonable as the settlement pattern surrounding the subject site includes dwellings on a range of allotment sizes (ranging from 8.9 hectares to 9.9 hectares), where none of these comply with the 10,000 hectare minimum lot size. |

10. Grounds for justification to contravene the development standard

- | | |
|----|---|
| a) | The capacity to be used for primary production will not be impacted by the proposed development. Permitting the landowner to reside on site, enables the property to be farmed in a more efficient, productive and economically sustainable manner. |
| b) | Promotes economic benefit to the landowner by enabling the property to increase its financial capacity to supplement off-farm income, reduce costs of requiring alternative residential accommodation, whilst enabling future financial security and the potential for future rural enterprise expansion. |
| c) | The surrounding rural residential properties were once used for agricultural purposes, however, as the agricultural uses ceased, these sites have continued to be used for rural residential purposes, with no detriment to the surrounding environment. |

11. Additional information to justify the variation of the development standard
--

- | | |
|----|---|
| a) | There is a current and active water allocation for irrigation purposes for the site. Access to the water allocation is via a licenced pipeline from the Murray River. |
| b) | The subject site has recently been granted freehold status with the provision of an easement for access from DPHI Crown Lands. |
| c) | The subject site previously contained a dwelling. |



 <p>Wentworth SHIRE COUNCIL</p>	<p>Health & Planning Department 61 Darling Street PO Box 81 WENTWORTH NSW 2648 Tel: 03 5027 5027 council@wentworth.nsw.gov.au</p>	<p>4.6 Variation Assessment</p>
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4.6 VARIATION ASSESSMENT

Approving 4.6 variations

Under clause 35B of the *Environmental Planning and Assessment Regulation 2021*:

(2) The development application must be accompanied by a document that sets out the grounds on which the applicant seeks to demonstrate that –

- (a). compliance with the development standard is unreasonable or unnecessary in the circumstances, and*
- (b). there are sufficient environmental planning grounds to justify the contravention of the development standard.*

The variation proposed is greater than 10% (99.02%), due to changes made by the NSW Government, Clause 4.6 of the Standard Instrument LEP has been reformed to make the planning system faster, simpler, and more transparent. The reform came into effect on 1 November 2023 and removes the requirement to obtain the Planning Secretary's concurrence for a variation with new reporting framework. As such, council has authority to approve or refuse 4.6 variation applications.

Standard being varied

Clause 4.2B does not permit the building of a dwelling on land within the listed zones, on a lot below the MLS, as such the proposed development requires a 4.6 variation to be applied to the development. This variation to the development standard will be a numerical variation of 99.02%.

Clause 4.6 Exemptions to development standards

This clause provides flexibility to vary the development standards specified within the Standard Instrument where it can be demonstrated that the development standard is unreasonable or unnecessary in the circumstances of the case, and where there are sufficient environmental grounds to justify this departure.

(1) The objectives of this clause are as follows—

- (a) to provide an appropriate degree of flexibility in applying certain development standards to particular development,*
- (b) to achieve better outcomes for and from development by allowing flexibility in particular circumstances.*

(2) Development consent may, subject to this clause, be granted for development even though the development would contravene a development standard imposed by this or any other

environmental planning instrument. However, this clause does not apply to a development standard that is expressly excluded from the operation of this clause.

(3) Development consent must not be granted to development that contravenes a development standard unless the consent authority is satisfied the applicant has demonstrated that—

(a) compliance with the development standard is unreasonable or unnecessary in the circumstances, and

(b) there are sufficient environmental planning grounds to justify the contravention of the development standard.

Note—

The [Environmental Planning and Assessment Regulation 2021](#) requires a development application for development that proposes to contravene a development standard to be accompanied by a document setting out the grounds on which the applicant seeks to demonstrate the matters in paragraphs (a) and (b).

(4) The consent authority must keep a record of its assessment carried out under subclause (3).

(5) (Repealed)

(6) Development consent must not be granted under this clause for a subdivision of land in Zone RU1 Primary Production, Zone RU2 Rural Landscape, Zone RU3 Forestry, Zone RU4 Primary Production Small Lots, Zone RU6 Transition, Zone R5 Large Lot Residential, Zone C2 Environmental Conservation, Zone C3 Environmental Management or Zone C4 Environmental Living if—

(a) the subdivision will result in 2 or more lots of less than the minimum area specified for such lots by a development standard, or

(b) the subdivision will result in at least one lot that is less than 90% of the minimum area specified for such a lot by a development standard.

(7) (Repealed)

(8) This clause does not allow development consent to be granted for development that would contravene any of the following—

(a) a development standard for complying development,

(b) a development standard that arises, under the regulations under the Act, in connection with a commitment set out in a BASIX certificate for a building to which [State Environmental Planning Policy \(Building Sustainability Index: BASIX\) 2004](#) applies or for the land on which such a building is situated,

(c) clause 5.4,

(caa) clause 5.5,

(ca) clause 6.2 or 6.3.

Applicants' response:

Permissibility of development in the zone

Dwelling houses are permissible with consent

- It will enable the use of the subject site for improved, sustainable rural purposes
- It will promote the diversity of the use of the subject site by allowing small scale agriculture to take place
- The proposed dwelling will not create land use conflict with existing surrounding land uses and development

Clause 4.2B Erection of dwelling houses on land in Zones RU1, RU4, R5, C3 and C4 requires land to be at least the minimum lot size that is specified in the Lot Size Map. The specified minimum lot size for the subject site is 10,000 hectares. The subject site encompasses 8 hectares. As such, this development application also includes a Request to vary the development standard as specified in Clause 4.6 Exceptions to development standards and in accordance with the Department of Planning and Environment Guide to Varying Development Standards November 2023.

Justification for the proposed variation: The five-part test:

The Court has held that there are at least five different ways, and possibly more, through which an applicant might establish that compliance with a development standard is unreasonable or unnecessary (see *Wehbe v Pittwater Council* [2007] NSWLEC 827).

The five ways of establishing that compliance is unreasonable or unnecessary are:

1. The objectives of the development standard are achieved notwithstanding non-compliance with the standard.
2. The underlying objective or purpose is not relevant to the development with the consequence that compliance is unnecessary.
3. The objective would be defeated, thwarted or undermined (*Linfield Developments Pty Ltd v Cumberland Council* [2019] NSWLEC 131 at [24]) if compliance was required with the consequence that compliance is unreasonable.
4. The development standard has been virtually abandoned or destroyed by the Council's own actions in granting consents departing from the standard and hence the standard is unreasonable and unnecessary; and
5. The zoning of the land is unreasonable or inappropriate.

Consideration of the applicants written request – Clause 4.6(3) (a) and (b)

Does the written request adequately address clause 4.6(3)(a) "compliance with the development standard is unreasonable or unnecessary in the circumstances, and".

The applicant provides the following addressing the clause:

How is compliance with the development standard unreasonable or unnecessary in this particular case?

- a) The enforcement of the development standard applied to the subject site is considered unnecessary in this instance. The proposed development of a dwelling on the subject site will not contravene objective 1(a) of Clause 4.2B of the WLEP 2011. This is determined by the fact that the property will remain being rated as farming land and used for agricultural purposes, despite containing a dwelling.
- b) The enforcement of compliance with the development standard is considered unreasonable in this instance. The purpose of the proposed dwelling is to allow for the landowner to reside on site to enable the efficient and productive management of the rural enterprise, whilst protecting the property and assets that are required to operate a rural business.
- c) Compliance with the development standard is considered unreasonable as the settlement pattern surrounding the subject site includes dwellings on a range of allotment sizes (ranging from 8.9 hectares to 9.9 hectares), where none of these comply with the 10,000 hectare minimum lot size.

Officers comments: Council agrees that the proposed dwelling (deferred commencement) does not result in unplanned rural residential development if the dwelling is associated with the ongoing agricultural use of the land, however, as discussed under the assessment of Clause 4.2B above, the proposed development of a dwelling on the site could potentially be encouraging rural residential development that is not associated with any agricultural land use. Further to this, the applicant has identified that a dwelling existed on this site, as well as on surrounding sites, but Council has no records indicating that these dwellings were lawfully constructed. Images of the site available to Council dating back to 2014, do not identify a dwelling on the site and there are no remaining remnants of the dwelling for this to be a replacement dwelling.

Considering the surrounding site is a conservation zone, it could be determined that the site is not appropriate for a dwelling, however, there are no legislative constraints preventing this development upon this site with adherence to conditions of consent to mitigate and manage environmental impacts. Council also points out that dwelling houses are permitted with consent within the RU1 Primary Production zone, the variation to the standard in this instance is not in relation to the permissibility of a dwelling house on the site, but the size of the site being 99.02% smaller than the lot size for a dwelling house within this zone. This also can be considered acceptable, given there are many other sites within the Wentworth Shire Council area that despite being below the MLS, contain dwellings.

Does the written request adequately address clause 4.6(3)(b) "there are sufficient environmental planning grounds to justify the contravention of the development standard".

The applicant provides the following addressing the clause:

Grounds for justification to contravene the development standard.

- a) The capacity to be used for primary production will not be impacted by the proposed development. Permitting the landowner to reside on site, enables the property to be farmed in a more efficient, productive and economically sustainable manner.
- b) Promotes economic benefit to the landowner by enabling the property to increase its financial capacity to supplement off-farm income, reduce costs of requiring alternative residential accommodation, whilst enabling future financial security and the potential for future rural enterprise expansion.
- c) The surrounding rural residential properties were once used for agricultural purposes, however, as the agricultural uses ceased, these sites have continued to be used for rural residential purposes, with no detriment to the surrounding environment.

Officers comments: The site contains a poly water tank on an elevated stand and viticulture that is no longer viable. There are no other structures on the site that support the ongoing use as an agricultural property (e.g. machinery sheds). With the cessation of agricultural use in the surrounding properties along with the site, the subject of this application, Council questions the suitability of the soil for agricultural practice. Access to water, considering the landowner has water entitlement from the Murray River (specified within the SEE) does not appear to be the reason that agriculture is no longer viable. Permitting a dwelling on the site via a 4.6 variation of 99.02% within the RU1 Primary Production zone, without viable primary production use of the site, has the potential to be a conflict to land use and ultimately result in unplanned residential use of the site. A document provided by the applicant stating that the site will remain agricultural land, supporting diversification of agricultural uses indicates the intended ongoing use into the future.

It is noted that the proposed development is located within Bushfire prone land, Flood Planning, Terrestrial biodiversity and Wetland mapped areas of the WLEP2011. These impacts have been discussed within the SEE provided by the applicant and further assessed by the assessing officer within the clauses of the State Environmental Planning Policy (Biodiversity and Conservation) 2021, WLEP2011 & DCP2011.

 <p>Wentworth SHIRE COUNCIL</p>	<p>Health & Planning Department 61 Darling Street PO Box 81 WENTWORTH NSW 2648 Tel: 03 5027 5027 council@wentworth.nsw.gov.au</p>	<p>TEMPLATE CONDITIONS</p>
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**DA2025/084 DWELLING (DEFFERED COMMENCEMENT) 119B LAGOON ROAD LOT 119 DP 756994
WENTWORTH**

GENERAL CONDITIONS

1.	<p>Approved development</p> <p>Approval is for a dwelling.</p> <p>Condition reason: To ensure all parties are aware of the approved development.</p>
2.	<p>Approved Plans and Documentation</p> <p>The development shall be in accordance with the following plans, documentation and recommendations made there in:</p> <ul style="list-style-type: none"> • Site Plan No additional details provided. <p>In the event of any inconsistency between the approved plans and the supporting documentation, the approved plans prevail. In the event of any inconsistency between the approved plans and a condition of this consent, the condition prevails.</p> <p>Note: an inconsistency occurs between an approved plan and supporting documentation or between an approved plan and a condition when it is not possible to comply with both at the relevant time.</p> <p>Condition reason: To ensure all parties are aware of the approved plans and supporting documentation that applies to the development.</p>
3.	<p>Asset Protection Zones</p> <p>From the commencement of building works and in perpetuity, the property around the proposed dwelling must be maintained as an inner protection area to the following distances and aspects in accordance with the following requirements of Appendix 4 of Planning for Bush Fire Protection 2019:</p> <ul style="list-style-type: none"> • north & west to the boundary; and • east & south for a distance of 18 metres. <p>When establishing and maintaining an inner protection area, the following requirements apply:</p> <ul style="list-style-type: none"> • tree canopy cover should be less than 15% at maturity; • trees at maturity should not touch or overhang the building; • lower limbs should be removed up to a height of 2 m above the ground; • tree canopies should be separated by 2 to 5 m; • preference should be given to smooth-barked and evergreen trees; • large discontinuities or gaps in the shrubs layer should be provided to slow down or break the progress of fire towards buildings; • shrubs should not be located under trees; • shrubs should not form more than 10% ground cover;

	<ul style="list-style-type: none"> • clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation; • grass should be kept mown (as a guide, grass should be kept to no more than 100mm in height); and • leaves and vegetation debris should be removed regularly. <p>Condition reason: The intent of measures is to minimise the risk of bush fire attack and provide protection for emergency services personnel, residents and others assisting firefighting activities.</p>
4.	<p>Compliance with Building Code of Australia and insurance requirements under Home Building Act 1989</p> <ul style="list-style-type: none"> • It is a condition of a development consent for development that involves building work that the work must be carried out in accordance with the requirements of the Building Code of Australia. • It is a condition of a development consent for development that involves residential building work for which a contract of insurance is required under the Home Building Act 1989, Part 6 that a contract of insurance is in force before building work authorised to be carried out by the consent commences. • It is a condition of a development consent for a temporary structure used as an entertainment venue that the temporary structure must comply with Part B1 and NSW Part H102 in Volume 1 of the Building Code of Australia. • In subsection (1), a reference to the Building Code of Australia is a reference to the Building Code of Australia as in force on the day on which the application for the construction certificate was made. • In subsection (3), a reference to the Building Code of Australia is a reference to the Building Code of Australia as in force on the day on which the application for development consent was made. • This section does not apply- <ul style="list-style-type: none"> a. to the extent to which an exemption from a provision of the Building Code of Australia or a fire safety standard is in force under the Environmental Planning and Assessment (Development Certification and Fire Safety) Regulation 2021, or b. to the erection of a temporary building, other than a temporary structure to which subsection (3) applies. <p>Condition reason: Prescribed condition under section 69 of the Environmental Planning and Assessment Regulation 2021.</p>
5.	<p>Erection of signs</p> <ol style="list-style-type: none"> 1. This section applies to a development consent for development involving building work, subdivision work or demolition work. 2. It is a condition of the development consent that a sign must be erected in a prominent position on a site on which building work, subdivision work or demolition work is being carried out: <ol style="list-style-type: none"> a. showing the name, address and telephone number of the principal certifier for the work, and

	<ul style="list-style-type: none"> b. showing the name of the principal contractor, if any, for the building work and a telephone number on which the principal contractor may be contacted outside working hours, and c. stating that unauthorised entry to the work site is prohibited. <p>3. The sign must be-</p> <ul style="list-style-type: none"> a. maintained while the building work, subdivision work or demolition work is being carried out, and b. removed when the work has been completed. <p>4. This section does not apply in relation to-</p> <ul style="list-style-type: none"> a. building work, subdivision work or demolition work carried out inside an existing building, if the work does not affect the external walls of the building, or b. Crown building work certified to comply with the Building Code of Australia under the Act, Part 6. <p>Condition reason: Prescribed condition under section 70 of the Environmental Planning and Assessment Regulation 2021.</p>
6.	<p>Fulfilment of BASIX commitments</p> <p>It is a condition of a development consent for the following that each commitment listed in a relevant BASIX certificate is fulfilled</p> <ul style="list-style-type: none"> 1. BASIX development, 2. BASIX optional development, if the development application was accompanied by a BASIX certificate. <p>Condition reason: Prescribed condition under section 75 of the Environmental Planning and Assessment Regulation 2021.</p>
7.	<p>Landscaping Assessment</p> <p>Landscaping within the required asset protection zone must comply with Appendix 4 of Planning for Bush Fire Protection 2019.</p> <p>Condition reason: The intent of measures is to minimise the risk of bush fire attack and provide protection for emergency services personnel, residents and others assisting firefighting activities.</p>
8.	<p>Lapsing of Approval</p> <p>Without the further consent of the Wentworth Shire Council, in writing, this permit shall lapse and have no force or effect unless the use or development hereby permitted is physically commenced within 5 years of the date of this permit.</p> <p>Condition reason: Ensure everyone is aware of the lapsing of the approval.</p>
9.	<p>Notification of Home Building Act 1989 requirements</p> <ul style="list-style-type: none"> 1. This section applies to a development consent for development involving residential building work if the principal certifier is not the council. 2. It is a condition of the development consent that residential building work must not be carried out unless the principal certifier for the development to which the work relates has given the council written notice of the following-

	<ul style="list-style-type: none"> a. for work that requires a principal contractor to be appointed <ul style="list-style-type: none"> i. the name and licence number of the principal contractor, and ii. the name of the insurer of the work under the Home Building Act 1989, Part 6, b. for work to be carried out by an owner-builder <ul style="list-style-type: none"> i. the name of the owner-builder, and ii. if the owner-builder is required to hold an owner-builder permit under the Home Building Act 1989 the number of the owner-builder permit. <p>3. If the information notified under subsection (2) is no longer correct, it is a condition of the development consent that further work must not be carried out unless the principal certifier has given the council written notice of the updated information.</p> <p>4. This section does not apply in relation to Crown building work certified to comply with the Building Code of Australia under the Act, Part 6.</p> <p>Condition reason: Prescribed condition under section 71 of the Environmental Planning and Assessment Regulation 2021.</p>
10.	<p>Works outside the property boundary</p> <p>This development consent does not authorise works outside the property boundaries on adjoining lands.</p> <p>Condition reason: To ensure all approved works occur within the property boundaries.</p>

BUILDING WORK

BEFORE ISSUE OF A CONSTRUCTION CERTIFICATE

11.	<p>Access Point</p> <p>Before the issue of a Construction Certificate, the beneficiary of this consent must build a driveway crossing for the subject land (if one doesn't exist) to Council standards.</p> <p>Access during construction shall only be through the driveway crossing of the subject land.</p> <p>Condition reason: To control vehicular movement on road crossings.</p>
12.	<p>Building Material</p> <p>The proposed building/s and structure/s shall be clad in an approved non-reflective material e.g. colorbond.</p> <p>Condition reason: To ensure the materials of the building not impact the visual amenity of the surrounding character of the area.</p>
13.	<p>Building material and flooding</p> <p>Any building elements below the 1% AEP flood level must be of a durable nature suitable for prolonged periods of inundation.</p> <p>Condition reason: To ensure building materials suitable for inundation are used.</p>

14.	<p>Construction Site Management Plan</p> <p>Before the issue of a construction certificate, the applicant must ensure a construction site management plan is prepared before it is provided to and approved by the certifier. The plan must include the following matters:</p> <ul style="list-style-type: none"> • location and materials for protective fencing and hoardings to the perimeter on the site • provisions for public safety • pedestrian and vehicular site access points and construction activity zones • details of construction traffic management, including proposed truck movements to and from the site and estimated frequency of those movements, and measures to preserve pedestrian safety in the vicinity of the site • protective measures for on-site tree preservation (including in accordance with AS 4970-2009 Protection of trees on development sites) and trees in adjoining public domain • details of any bulk earthworks to be carried out • location of site storage areas and sheds • equipment used to carry out all works< • a garbage container with a tight-fitting lid • dust, noise and vibration control measures • location of temporary toilets. <p>The applicant must ensure a copy of the approved construction site management plan is kept on-site at all times during construction.</p> <p>Condition reason: To ensure construction works are adequately managed to protect the surrounding amenity.</p>
15.	<p>Construction Standards</p> <p>Construction of the proposed dwelling must comply with section 3 and section 6 (BAL 19) Australian Standard AS3959-2018 <i>Construction of buildings in bushfire-prone areas</i> or the relevant requirements of the <i>NASH Standard - Steel Framed Construction in Bushfire Areas</i> (incorporating amendment A - 2015). New construction must also comply with the construction requirements in Section 7.5 of <i>Planning for Bush Fire Protection 2019</i>.</p> <p>New fences and gates must comply with Section 7.6 of <i>Planning for Bush Fire Protection 2019</i>. New fences and gates are to be made of either hardwood or non-combustible material. Where a fence or gate is constructed within 6m of a dwelling or in areas of BAL-29 or greater, they must be made of non-combustible material only.</p> <p>Condition reason: The intent of measures is to minimise the risk of bush fire attack and provide protection for emergency services personnel, residents and others assisting firefighting activities.</p>
16.	<p>Erosion and Sediment Control</p>

	<p>Before the issue of a construction certificate, the beneficiary of this consent is to ensure that an erosion and sediment control plan is prepared in accordance with the following documents before it is provided to and approved by the certifier:</p> <ul style="list-style-type: none"> the guidelines set out in the NSW Department of Housing Manual Managing Urban Stormwater: Soils and Construction Certificate (the Blue Book), and the 'Do it Right On-Site, Soil and Water Management for the Construction Industry'; (Southern Sydney Regional Organisation of Councils and the Natural Heritage Trust). <p>The applicant must ensure the erosion and sediment control plan is kept onsite at all times during site works and construction.</p> <p>Condition reason: To ensure no substance other than rainwater enters the stormwater system and waterways.</p>				
17.	<p>Flood level</p> <p>The construction of a habitable building shall utilise piers and beams to allow for floodwaters to flow under the building with the floor level of the dwelling is to be not less than 750 mm above the 1% AEP flood level. The 1%AEP for the land is 34.5 metres, as such the finished floor level must be 35.25m A.H.D.</p> <p>Condition reason: To provide protection to habitable structures in 1% AEP.</p>				
18.	<p>Long Service Levy</p> <p>Before the issue of a construction certificate, the beneficiary of this consent is to ensure that the person liable pays the long service levy as calculated at the operational date of this consent to the Long Service Corporation or Council under section 34 of the Building and Construction Industry Long Service Payments Act 1986 and provides proof of this payment to the certifier.</p> <p>Condition reason: To ensure the long service levy is paid.</p>				
19.	<p>Payment of Security Deposits</p> <p><i>This condition applies to all construction works \$25,001 and above.</i></p> <p>Before the commencement of any works on the site or the issue of a construction certificate, the beneficiary of this consent must make the following payments to Council and provide written evidence of these payments to the certifier:</p> <table border="1"> <tr> <td>Infrastructure Bond (Security Deposit):</td><td>\$3,000.00</td></tr> <tr> <td>Infrastructure Protection Permit Fee (includes inspections)</td><td>\$244.00</td></tr> </table> <p>The payments will be used for the cost of:</p> <ul style="list-style-type: none"> making good any damage caused to any council property (including street trees, kerb, road etc) as a consequence of carrying out the works to which the consent relates, completing any public work such as roadwork, kerbing and guttering, footway construction, stormwater drainage and environmental controls, required in connection 	Infrastructure Bond (Security Deposit):	\$3,000.00	Infrastructure Protection Permit Fee (includes inspections)	\$244.00
Infrastructure Bond (Security Deposit):	\$3,000.00				
Infrastructure Protection Permit Fee (includes inspections)	\$244.00				

	<p>with this consent, and</p> <ul style="list-style-type: none"> any inspection carried out by Council in connection with the completion of public work or the making good any damage to council property. <p>The Infrastructure Bond will be returned on completion of the construction of the proposed development, subject to no damage being done to any council property (including street trees, kerb, road etc) as a consequence of carrying out the works to which the consent relates. The owner / developer is to arrange an inspection with an Officer of Wentworth Shire Council before any work commences on site. Any damage incurred to Council infrastructure will be repaired at the owners / developers expense and the balance of the Infrastructure Bond will be returned to the owner / developer on completion of the construction.</p> <p>Note: The inspection fee includes Councils fees and charges and includes the Public Road and Footpath Infrastructure Inspection Fee (under the Roads Act 1993). The amount payable must be in accordance with councils fees and charges at the payment date.</p> <p>Condition reason: To ensure any damage to public infrastructure is rectified and public works can be created.</p>
20.	<p>Plumbing and Drainage - AWTS</p> <p>Before issuance of the Construction Certificate, a Plumbing and Drainage Approval Application under Section 68 of the Local Government Act NSW 1993, for an onsite Aerated WasteWater Treatment system (AWTS) sewerage management system with a Land Capability Assessment (LCA), is to be submitted to and approved by Council before carrying out any plumbing and drainage work (stormwater, water and sewerage).</p> <p>Note: All stormwater from the site is to be directed towards a legal point of discharge. A septic system will not be allowed on the property. All plumbing and drainage work is to be carried out by a plumber and drainer, or other authorised person, licensed with the New South Wales Department of Fair Trading.</p> <p>Condition reason: To ensure plumbing and drainage works are carried out appropriately.</p>
21.	<p>Property Access</p> <p>Property access roads must comply with the following requirements of Table 7.4a of Planning for Bush Fire Protection 2019:</p> <ul style="list-style-type: none"> property access roads are two-wheel drive, all-weather roads; the capacity of road surfaces is sufficient to carry fully loaded firefighting vehicles (up to 23 tonnes); there is suitable access for a Category 1 fire appliance to within 4m of the static water supply where no reticulated supply is available; minimum 4m carriageway width; a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches; property access must provide a suitable turning area in accordance with Appendix 3; curves have a minimum inner radius of 6m and are minimal in number to allow for rapid access and egress; the minimum distance between inner and outer curves is 6m; the cross fall is not more than 10 degrees; and

	<ul style="list-style-type: none"> maximum grades for sealed roads do not exceed 15 degrees and not more than 10 degrees for unsealed roads. <p>Condition reason: The intent of measures is to minimise the risk of bush fire attack and provide protection for emergency services personnel, residents and others assisting firefighting activities.</p>
22.	<p>Stormwater Management Plan</p> <p>Before the issue of a construction certificate the beneficiary of this consent is to design and submit to Council for approval a Stormwater Management Plan for the development. The design is to be approved by Council before any work takes place on this site. All work detailed by the approved design is to be constructed by the beneficiary of this consent under supervision of the Principal Certifying Authority. All work is to be carried out at the beneficiary of this consent's expense.</p> <p>The plan is to include treatment measures for the water if it is to be discharged into a waterway.</p> <p>Condition reason: To ensure stormwater run-off is appropriately managed.</p>
23.	<p>Utilities and services</p> <p>Reticulated water is not available at the site, as such the beneficiary of this consent must ensure that the proposed dwelling is provided access to potable water.</p> <p>Note: Stock and domestic water entitlement may be attached to the proposed dwelling site.</p> <p>Condition reason: To ensure the proposed dwelling is provided with appropriate servicing.</p>
24.	<p>Waste management plan</p> <p>Before the issue of a construction certificate, the applicant is to ensure that a waste management plan is prepared in accordance with the EPA's Waste Classification Guidelines and the following requirements before it is provided to and approved by the certifier:</p> <p>Details the following:</p> <ul style="list-style-type: none"> the contact details of the person(s) removing the waste an estimate of the waste (type and quantity) and whether the waste is expected to be reused, recycled or go to landfill the address of the disposal location(s) where the waste is to be taken <p>The applicant must ensure the waste management plan is referred to in the construction site management plan and kept on-site at all times during construction.</p> <p>Condition reason: To ensure resource recovery is promoted and local.</p>
25.	<p>Water and Utility Services</p> <p>The provision of water, electricity and gas must comply with Table 7.4a of Planning for Bush Fire Protection 2019:</p> <ul style="list-style-type: none"> a 20,000 litre static water supply, tank, pool, dam or the like, must be provided on-site,

	<ul style="list-style-type: none"> • an outlet for firefighting purposes is located within the IPA or non-hazard side and away from the structure • 65mm Storz connection with a ball valve is fitted to the outlet, • the ball valve, pipes and tank penetration are adequate for the full 50mm inner diameter water flow through the Storz fitting and are constructed of a metal material, • underground tanks have an access hole of 200mm to allow tankers to refill, direct from the tank, • a hardened ground surface for truck access is supplied within 4m of the water outlet or access hole, • above-ground tanks are manufactured from concrete or metal, • raised tanks have their stands constructed from non combustible material or bush - fire-resisting timber. The bush fire-resisting timbers are Silvertop Ash, Blackbutt, Red or River Gum, Spotted Gum, Red Ironbark, Kwila (Merbau) or Turpentine, • unobstructed access can be provided at all times, • underground tanks are clearly marked, • tanks on the hazard side of a building are provided with adequate shielding for the protection of firefighters, • all exposed water pipes external to the building are metal, including any fittings, • where pumps are provided, they are a minimum 5hp or 3kW petrol or diesel-powered pump, and are shielded against bush fire attack, • any hose and reel for firefighting connected to the pump must be 19mm internal diameter, • fire hose reels are constructed in accordance with AS/NZS 1221:1997, and installed in accordance with the relevant clauses of AS 2441:2005, • A Static Water Supply (SWS) sign must be obtained from the local NSW Rural Fire Service (RFS) and • positioned for ease of identification by RFS personnel and other users of the SWS. In this regard: <ul style="list-style-type: none"> o Markers must be fixed in a suitable location to be highly visible, and o Markers should be positioned adjacent to the most appropriate access for the water supply. • where practicable, electrical transmission lines are underground, • where overhead, electrical transmission lines are proposed as follows: <ul style="list-style-type: none"> o lines are installed with short pole spacing (30m), unless crossing gullies, gorges or riparian areas, and • no part of a tree is closer to a power line than the distance set out in accordance with the specifications in ISSC3 Guideline for Managing Vegetation Near Power Lines. • reticulated or bottled gas is installed and maintained in accordance with AS/NZS 1596:2014 and the requirements of relevant authorities, and metal piping is used, • all fixed gas cylinders are kept clear of all flammable materials to a distance of 10m and shielded on the hazard side, • connections to and from gas cylinders are metal, • polymer-sheathed flexible gas supply lines are not used, and • above-ground gas service pipes are metal, including and up to any outlets. <p>Condition reason: The intent of measures is to minimise the risk of bush fire attack and provide protection for emergency services personnel, residents and others assisting firefighting activities.</p>
26.	Works in Road Reserve

	<p>A Road Opening Permit is required from the Wentworth Shire Council prior to any works or excavation within the road reserve including but not limited to: water tapping, sewer, driveway crossings, tree planting or removal etc.</p> <p>Please contact Councils Roads & Engineering Department on Tel: (03) 5027 5027 to arrange a permit.</p> <p>Condition reason: To control development in the road reserve.</p>
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BEFORE BUILDING WORK COMMENCES

27.	<p>Construction Certificates and Appointment of Principal Certifier</p> <p>Prior to the commencement of any building works, the following requirements must be complied with</p> <ul style="list-style-type: none"> • A Construction Certificate must be obtained from the Council or an Accredited Certifier, in accordance with the provisions of the Environmental Planning & Assessment Act 1979, • A Principal Certifier must be appointed, and Council must be notified in writing of the appointment irrespective of whether Council or a Registered Certifier is appointed; and notify Council in writing of their intention to commence work (at least two [2] days' notice is required). <p>Condition reason: To ensure building works complies with relevant legislation and other codes.</p>
28.	<p>Contractor details notification</p> <p>The certifying authority must advise Council, in writing of:</p> <ol style="list-style-type: none"> 1. The name and contractor licence number of the licensee who has been contracted to do or intends to do the work, or 2. The name and permit of the owner-builder who intends to do the work. <p>If these arrangements are changed, or if a contract is entered into for the work to be done by a different licensee, Council must be immediately informed.</p> <p>Condition reason: To ensure building work is carried out by licensed contractor.</p>
29.	<p>Dial before you dig</p> <p>Underground assets may exist in the area that is subject to your application. In the interest of health and safety and in order to protect damage to third party assets please contact Dial before you dig at www.1100.com.au or telephone 1100 before excavating or erecting structures (this is the law in NSW). If alterations are required to the configuration, size, form or design of the development upon contact the Dial before You Dig service, an amendment to the development consent (or a new development application) may be necessary.</p> <p>Individuals owe asset owners a duty of care that must be observed when working in the vicinity of plant or assets. It is the individual's responsibility to anticipate and request the nominal location of plant or assets on the relevant property via contacting the Dial before you dig service in advance of any construction or planning activities.</p> <p>Condition reason: To ensure existing infrastructure is identified.</p>

30.	<p>Erosion and sediment controls in place</p> <p>Before the commencement of any site or building work, the developer must be satisfied the erosion and sediment controls in the erosion and sediment control plan, (as approved by Council) are in place until the site is rectified (at least 70% ground cover achieved over any bare ground on site).</p> <p>Condition reason: To ensure runoff and site debris do not impact local stormwater systems and waterways.</p>
31.	<p>Notice of commencement of works</p> <p>Subject to approval to commence works two days before any site works, building or demolition begins, the beneficiary of this consent must:</p> <ol style="list-style-type: none"> 1. Forward to Council notice of commencement of work and appointment of Principal Certifying Authority. 2. Notify the adjoining owners that work will commence. <p>Condition reason: To provide notification of works commencing.</p>
32.	<p>Rubbish/Waste Management</p> <p>Throughout the construction period, from commencement of work, a suitable rubbish containment structure is to be located on site and utilised.</p> <p>Condition reason: To ensure the construction site is kept clean and safe at all times.</p>
33.	<p>Storage of materials</p> <p>Throughout the construction period, from commencement of work, the storage of materials is not permitted on footpaths, roadways or in reserves. Rubbish and building materials must be contained on the site.</p> <p>Condition reason: To ensure the construction materials are stored on site in a tidy & safe manner.</p>
34.	<p>Toilet facilities</p> <p>Toilet facilities are to be provided on or in the vicinity of the building site. The toilet must be connected to a public sewer, or if connection to a public sewer is not practicable, an approved chemical closet. The toilet facility must be installed on-site prior to the commencement of any other work.</p> <p>Condition reason: To ensure workers and contractors have access to amenities on site.</p>
35.	<p>Tree protection measures</p> <p>Before the commencement of any site or building work, the principal certifier must ensure the measures for tree protection detailed in the construction site management plan are in place.</p> <p>Condition reason: To protect and retain trees.</p>

DURING BUILDING WORK

36.	<p>Approved Plans</p> <p>A copy of the stamped approved and certified plans, specifications and documents incorporating conditions of approval and certification must be kept on site for the duration of site works and be made available upon request to either the Council or other Government Agencies.</p> <p>Condition reason: To ensure all parties are aware of the approved works to be conducted.</p>
37.	<p>Clearing for asset protection zones (APZ)</p> <p>While site work is being carried out, clearing or modifying vegetation to establish the APZ must be confined within the marked APZ boundary in accordance with the supporting documentation approved under this consent, to the satisfaction of the principal certifier.</p> <p>Condition reason: To ensure vegetation clearance or modification during construction is confined within the APZ.</p>
38.	<p>Construction noise</p> <p>While work is being carried out and where no noise and vibration management plan is approved under this consent, the applicant is to ensure that any noise caused by demolition, vegetation removal or construction does not exceed an LAeq (15 min) of 5dB(A) above background noise, when measured at any lot boundary of the property where the construction is being carried out.</p> <p>Condition reason: To protect the amenity of the neighbourhood.</p>
39.	<p>Contamination discovered during works</p> <p>If during works on the land comprising the lot, the land is found to be contaminated, within the meaning of the Contaminated Land Management Act 1997:</p> <ul style="list-style-type: none"> • all works must stop immediately, and • the Environment Protection Authority and the council must be notified of the contamination. • Land is found to be contaminated for the purposes of this condition if the principal certifying authority knows or reasonably suspects the land is contaminated. <p>Note: Depending on the nature and level of the contamination, remediation of the land may be required before further work can continue.</p> <p>Condition reason: To ensure contaminated land is managed appropriately.</p>
40.	<p>Cut and fill (if applicable)</p> <p>While building work is being carried out, the principal certifier must be satisfied all soil removed from or imported to the site is managed in accordance with the following requirements:</p> <ul style="list-style-type: none"> • All excavated material removed from the site must be classified in accordance with the EPAs Waste Classification Guidelines before it is disposed of at an approved waste management facility and the classification and the volume of material removed must be reported to the principal certifier. • All fill material imported to the site must be Virgin Excavated Natural Material as defined in Schedule 1 of the Protection of the Environment Operations Act 1997 or a material identified

	<p>as being subject to a resource recovery exemption by the NSW EPA.</p> <p>Condition reason: To ensure soil removal & replacement meets requirements..</p>
41.	<p>Encroachment of easements</p> <p>No works are to encroach over any easements.</p> <p>Condition reason: To ensure works are not carried out over easements.</p>
42.	<p>Hours of work</p> <p>The developer must ensure that building work, demolition or vegetation removal is only carried out between:</p> <ul style="list-style-type: none"> • 7.00am to 6.00pm on Monday to Friday • 8.00am to 1.00pm on Saturdays <p>The developer must ensure building work, demolition or vegetation removal is not carried out on Sundays and public holidays, except where there is an emergency.</p> <p>Unless otherwise approved within a construction site management plan, construction vehicles, machinery, goods or materials must not be delivered to the site outside the approved hours of site works.</p> <p>Note: Any variation to the hours of work requires Councils approval.</p> <p>Condition reason: To protect the amenity of the surrounding area.</p>
43.	<p>Implementation of BASIX commitments</p> <p>While building work is being carried out, the applicant must undertake the development strictly in accordance with the commitments listed in the BASIX certificate(s) approved by this consent, for the development to which the consent applies.</p> <p>Condition reason: To ensure BASIX commitments are fulfilled in accordance with the BASIX certificate (prescribed condition under Section 75 EP&A Regulation 2021).</p>
44.	<p>Implementation of site management plans</p> <p>While vegetation removal, demolition and/or building work is being carried out, the applicant must ensure the measures required by the approved construction site management plan and the erosion and sediment control plan are implemented at all times. The applicant must ensure a copy of these approved plans is kept on site at all times and made available to Council officers upon request.</p> <p>Condition reason: To ensure the required site management measures are implemented during construction.</p>
45.	<p>Natural drainage</p> <p>Any works undertaken in the subject land including building and filling shall not cause alteration to the previous drainage in the subject land or adjacent land. Any remedies required to discharge drainage water caused to be accumulated by the works associated with this permit shall be the responsibility of the beneficiary of this consent.</p>

	<p>Condition reason: To ensure natural drainage is maintained where possible.</p>
46.	<p>Procedure for critical stage inspections</p> <p>While building work is being carried out, any such work must not continue after each critical stage inspection unless the principal certifier is satisfied the work may proceed in accordance with this consent and the relevant construction certificate.</p> <p>Condition reason: To require approval to proceed with building work following each critical stage inspection.</p>
47.	<p>Responsibility for changes to public infrastructure</p> <p>While building work is being carried out, the applicant must pay any costs incurred as a result of the approved removal, relocation or reconstruction of infrastructure (including ramps, footpaths, kerb and gutter, light poles, kerb inlet pits, service provider pits, street trees or any other infrastructure in the street footpath area).</p> <p>Condition reason: To ensure payment of approved changes to public infrastructure.</p>
48.	<p>Security fencing</p> <p>An adequate security fence is to be erected around the perimeter of the site prior to commencement of any excavation or construction works, and this fence is to be maintained in a state of good repair and condition until completion of the building project</p> <p>Condition reason: To ensure the site is secured during construction.</p>
49.	<p>Tree protection</p> <p>While site work is being carried out, all required tree protection measures must be maintained in good condition in accordance with:</p> <ol style="list-style-type: none"> 1. The construction site management plan 2. The relevant requirements of any Australian Standard for the protection of trees on development sites <p>This includes maintaining adequate soil grades and ensuring all machinery, builders refuse, spoil and materials remain outside tree protection zones.</p> <p>Condition reason: To protect trees during site works.</p>
50.	<p>Uncovering relics or Aboriginal objects</p> <p>While demolition or building work is being carried out, all such works must cease immediately if a relic or Aboriginal object is unexpectedly discovered. The applicant must notify the Heritage Council of NSW in respect of a relic and notify the Secretary of the Department of Planning, Industry and Environment and the Heritage Council of NSW in respect of an Aboriginal object. Building work may recommence at a time confirmed by either the Heritage Council of NSW or the Secretary of the Department of Planning, Industry and Environment.</p> <p>In this condition:</p> <ul style="list-style-type: none"> • “relic” means any deposit, artefact, object or material evidence that: (a) relates to the settlement of the area that comprises New South Wales, not being Aboriginal settlement, and

	<p>a) is of State or local heritage significance; and</p> <ul style="list-style-type: none"> • “Aboriginal object” means any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises New South Wales, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction and includes Aboriginal remains. <p>Condition reason: To ensure protection of objects of potential significance during works.</p>
51.	<p>Waste management</p> <p>While building work, demolition or vegetation removal is being carried out, the principal certifier must be satisfied all waste management is undertaken in accordance with the approved waste management plan.</p> <p>Upon disposal of waste, the applicant is to compile and provide records of the disposal to the principal certifier, detailing the following:</p> <ul style="list-style-type: none"> • The contact details of the person(s) who removed the waste • The waste carrier vehicle registration • The date and time of waste collection • A description of the waste (type of waste and estimated quantity) and whether the waste is expected to be reused, recycled or go to landfill • The address of the disposal location(s) where the waste was taken • The corresponding tip docket/receipt from the site(s) to which the waste is transferred, noting date and time of delivery, description (type and quantity) of waste. <p>Note: If waste has been removed from the site under an EPA Resource Recovery Order or Exemption, the applicant is to maintain all records in relation to that Order or Exemption and provide the records to the principal certifier and Council.</p> <p>Condition reason: To require records to be provided, during construction, documenting that waste is appropriately handled.</p>

BEFORE ISSUE OF AN OCCUPATION CERTIFICATE

52.	<p>Completion of landscape and tree works</p> <p>Before the issue of an occupation certificate, the principal certifier must be satisfied that all landscape and tree-works, including pruning in accordance with AS 4373-2007 Pruning of amenity trees and the removal of all noxious weed species, have been completed in accordance with the approved plans and any relevant conditions of this consent.</p> <p>Condition reason: To ensure the approved landscaping works have been completed before occupation, in accordance with the approved landscaping plan(s).</p>
53.	<p>Completion of public utility services</p>

	<p>Before the issue of the relevant occupation certificate, the principal certifier must ensure any adjustment or augmentation of any public utility services including gas, water, sewer, electricity, street lighting and telecommunications, required as a result of the development, is completed to the satisfaction of the relevant authority. Before the issue of the occupation certificate, the certifier must request written confirmation from the relevant authority that the relevant services have been completed.</p> <p>Condition reason: To ensure required changes to public utility services are completed, in accordance with the relevant agency requirements, before occupation.</p>
54.	<p>Occupation Certificate</p> <p>The building shall not be occupied or used until an Occupation Certificate is issued either by council or by an accredited certifier.</p> <p>Condition reason: To ensure development is accredited.</p>
55.	<p>Removal of waste upon completion</p> <p>Before the issue of an occupation certificate, the principal certifier must ensure all refuse, spoil and material unsuitable for use on-site is removed from the site and disposed of in accordance with the approved waste management plan. Written evidence of the removal must be supplied to the satisfaction of the principal certifier.</p> <p>Before the issue of a partial occupation certificate, the applicant must ensure the temporary storage of any waste is carried out in accordance with the approved waste management plan to the principal certifier's satisfaction.</p> <p>Condition reason: To ensure waste material is appropriately disposed or satisfactorily stored.</p>
56.	<p>Repair of infrastructure</p> <p>Before the issue of an occupation certificate, the applicant must ensure any public infrastructure damaged as a result of the carrying out of building works (including damage caused by, but not limited to, delivery vehicles, waste collection, contractors, sub-contractors, concreting vehicles) is fully repaired to the written satisfaction of Council, and at no cost to Council.</p> <p>Note: If the council is not satisfied, the whole or part of the bond submitted will be used to cover the rectification work.</p> <p>Condition reason: To ensure any damage to public infrastructure is rectified.</p>

OCCUPATION AND ONGOING USE

57.	<p>Additional structures</p> <p>No additional structures are to be built or installed on the site without permission from the Wentworth Shire Council.</p> <p>Condition reason: To ensure only approved work is carried out</p>
58.	<p>Amenity of the neighbourhood</p>

	<p>The operation of this development shall not adversely affect the amenity of the neighbourhood or interfere unreasonably with the comfort or repose of a person who is outside the premises by reason of the emission or discharge of noise, fumes, vapour, odour, steam, soot, dust, waste water, waste products, grit, oil or other harmful products.</p> <p>Condition reason: To ensure the amenity of the neighbourhood is not compromised unreasonably.</p>
59.	<p>Maintenance of wastewater and stormwater treatment device</p> <p>During occupation and ongoing use of the building, the beneficiary of this consent must ensure all wastewater and stormwater treatment devices (including drainage systems, sumps and traps, and on-site detention) are regularly maintained, to remain effective.</p> <p>Condition reason: To protect sewerage and stormwater systems.</p>
60.	<p>Management of asset protection zones (APZ)</p> <p>During ongoing use of the site, the APZ must be managed in accordance with Planning for Bushfire Protection 2019 and the NSW Rural Fire Services Standards for Asset Protection Zones.</p> <p>Condition reason: To ensure ongoing protection from bush fires.</p>
61.	<p>Ongoing use - dwelling with garage</p> <p>The garage cannot be used for habitation.</p> <p>Condition reason: To ensure appropriate use as per approval.</p>
62.	<p>Release of securities / bonds</p> <p>When Council receives an occupation certificate from the principal certifier, the applicant may lodge an application to release the securities held. Council may use part, or all of the securities held to complete the works to its satisfaction if the works do not meet Councils requirements.</p> <p>Condition reason: To allow release of securities and authorise Council to use the security deposit to complete works to its satisfaction.</p>

9.11 INTEGRATED TRANSPORT COMBINED ACTION STATUS REPORT

File Number: RPT/25/537

Responsible Officer: Geoff Gunn - Director Roads and Engineering

Responsible Division: Roads and Engineering

Reporting Officer: Samantha Wall - Projects Administration

Objective: 3.0 Wentworth Shire is a community that works to enhance and protect its physical and natural environment

Strategy: 3.2 Our public assets are well maintained and able to meet the growing population demands

Summary

This report provides the final item of information as requested by Mayoral Minute at the May 2025 Council meeting regarding transport related matters to enable Council to review, plan, prioritise and advocate effectively for necessary infrastructure

Recommendation

That Council notes the contents of this report.

Detailed Report

Purpose

The purpose of this report is to provide the final item of information as requested by Mayoral Minute at the May 2025 Council meeting regarding transport related matters to enable Council to review, plan, prioritise and advocate effectively for necessary infrastructure.

Background

At the May 2025 Council meeting a mayoral Minute was tabled requesting information regarding transport related matters and specifically details relating to following items.

1. Compile existing strategic transport documents
2. Examine the Mildura Rural City Council Integrated Transport and Land Use Strategy where it is relevant to WSC, namely the bypass and bridge crossing at Monak, and reference appropriate course of advocacy
3. Examine the interaction between the council road network and state highways, particularly our residential growth areas, with the aim of identifying intersection and other upgrades that will effectively accommodate increased traffic flows into the future
4. Identify key infrastructure priorities by short/medium/long term
5. Identify potential location for overtaking lanes on the Sturt Highway and feed into the Sturt Highway Taskforce
6. Consider strategic long-term access to appropriate water and gravel resources that can assist rural road maintenance outcomes, particularly during periods of prolonged dry
7. Compile an action/reference table of requests made to TfNSW and the status of responses

Report Detail

Compiled action/reference table identifying transport and safety related issues within the WSC area, and the status of responses from previous Local Traffic Committee Meetings and Joint Planning Assessment Meetings held with TfNSW.

Local Traffic (TFNSW) Committee Meeting – Action list

14 August 2025

Item	Update
Dareton main street HPAA	Project moved to 25/26 FY Awaiting go-ahead from TfNSW.
WSC Footpath Program	WSC are responsible for the section of footpath in front of Midway Drive toward the IGA. The section of path towards Gol Gol is the responsibility of the developer as per DA requirement.
Buronga School Bus zone	Awaiting design from TfNSW
Gol Gol signage and line marking audit	Awaiting Contractor to attend with other line marking works scheduled 6 - 8 weeks
Wilga Rd / Modikerr Way	To be completed with Gol Gol Audit line marking
Log Bridge Road	Speed Zone review lodged. Awaiting response from TfNSW
Arumpo Road 80km Extension	Speed Zone review lodged. Awaiting response from TfNSW
Sturt Hwy East Gol Gol – Speed zone review	Speed Zone review lodged. Awaiting response from TfNSW
Speed zone review – Lake Victoria, SA Water	Speed zone review lodged. Awaiting Traffic Data
Small footpath by Subdivision near Wood Street	In progress
Bus Stop Hendy Road to Midway Buronga	Actions completed. <ul style="list-style-type: none"> Proposed design requires further consideration Council to apply for CPTIGS Funding
Foot and cycle traffic across Chaffey Bridge	No update

15 May 2025

Arrandale Line Intersection – Advisory Signs & Possible Line Markings	TfNSW has assessed – and propose advanced warning and intersection signage be installed. TfNSW to forward designs for Council for installation
Shell Buronga – Crash Site Repairs & Remedial Works	WSC to reinstate fencing and kerb - Geoff to respond to Steve from Shell
Mildura River View Hotel – Ling Vehicle Parking	The owner of the Mildura River View Hotel contacted WSC querying the no vehicles over 4m parking signs at the front of the hotel, stopping Canavan's. Signage was installed to stop trucks parking in

	the area and will remain. No further action required
70 Year Flood Rally	The 70 Year Wentworth Flood Rally Event organisers have approached Council regarding plans for a Fergie Tractor Convoy to be held in June 2026 – More Details regarding the Route to be provided to the committee as they come to Council.
Trentham Petrol Station Intersection	Trentham Petrol station intersection has been procured contractor awarded. Works to commence shortly once documentation has been approved by TfNSW. works could take 3-4 months.

6 February 2025

Arumpo Road 80km speed zone extension	Review has been logged in the portal - traffic data to be supplied to TfNSW. From July onwards traffic will increase as Mildura begin to bring waste across to the Landfill. Geoff Gunn to provide this reasoning in a letter to TfNSW to form part of the speed zone review.
Bus Stop to Hendy Road to Midway Buronga	Letter of support received from CDC. Community consultation to be conducted for the closing of the service road entrance.
Line marking and sign audit	Audit in progress, findings to be forwarded to LTC on completion
Drings Hill Hwy Crossing	No pedestrians crossed from data collected - Observations found no requirement for a pedestrian crossing to be installed in the area.
Wilga Rd/ Modikerr Way 2 x intersections no sign/line markings	Intersection lines and signs required to prohibit Heavy Vehicles from using Wilga Rd south of Modikerr Way intersection Details have been passed on to TfNSW for consideration and assessment
Speed reduction request near Lake Victoria depot – SA Water	TfNSW have completed the on-site assessment and passed on to deciding body for determination.

14 November 2024

Log Bridge Road	Council would like to Western end speed zone reduction from 100 to 80/60 – Once traffic increases Council to lodge review request in the portal.
Crossing on Sturt Highway – Drings Hill	Pedestrians trying to Cross the Hwy around this area A curb extension may the best option rather than a centre refuge.. Council to perform data counts to track number of pedestrians crossing in the area. Also taking note of any unsafe behaviour in the data collected.
River Bend Estate – Pedestrian Safety	Bus not using stop in the estate and stopping on hwy – Barnaby to speak with CDC regarding the issue. Council to respond Ian Roberts letter with a resolution. Copy of the letter to be forwarded to LTC. TfNSW also to follow up on assessment for the speed zone review.

29 August 2024

Dareon HPAA	To approve the Dareton HPAA Council are required to provide the following information to TfNSW: <ul style="list-style-type: none"> • Community Consultation • Council Correspondence requesting the HPAA • Footprint of the proposed HPAA
John Nolan's Formal Response	Installation of signage as per Mr Nolan's Slip Lane request has been completed by Council. Mr Nolan was contacted by Council however no formal response has been provided. Formal Response to be provided by the LTC
IGA Buronga Bus Stop & entry closure	WSC to follow up on previous proposal and present update to LTC.
Foot & cycle traffic across George Chaffey Bridge	TfNSW to follow up on bridge upgrade program/studies
Gol Gol Public School no stopping signs	The no stopping signage located on the highway at the front of Gol Gol Public school is missing a double arrowed sign, creating the issue of trucks parking in the no stopping zone. Council to replace with a double arrowed sign as advised by TfNSW
Gol Gol Signage & Line Marking Audit	Due to contradicting line marking and signage at intersections in the Gol Gol area. NSW police have requested an audit be performed and correction be made. <ul style="list-style-type: none"> • WSC to perform line and sign audit in the Gol Gol area.

15 February 2024

Keenans Drive Coomealla lowering of speed	Due to upcoming realignment works to occur on Keenans Drive, Concerns have been raised over the speed from the Silver City Hwy coming into the first corner of the road. It has been requested that the current 80km per hour speed zone on this section of road be reduced to 60km with the 80km speed to resume on the other side of the corner. David to obtain an advisory speed for this corner.
Pooncarie Speed Zone review	A proposal for a speed zone review in Pooncarie has been lodged in the TfNSW review portal. A request has been put in for David to assess the area.
Pedestrian Campaign	As part of an upcoming Pedestrian Campaign, look out before you step stickers will be provided to position on highway footpath crossings. David to forward campaign information to Geoff.

14 November 2023

Speed zone review sturt highway (Dawn Avenue to Native Ridge Lane)	TfNSW to follow up on speed zone issues and advise John on review.
Cycling Access	TfNSW to follow up and provide an update to Ash

on Bridge	
Road Train Access	<p>Jindalee Wine's request in 2021 for River Road to be a gazetted road train route from Dareton to Jindalee Road was denied, as the road was found to be unsuitable due to pavement strength and width.</p> <p>Swept paths provided by Goldsworthy Consulting show kerbing and channel may be impacted by road train access.</p> <p>Jindalee Wine's have approached Council to revisit their request.</p> <p>Jenene to forward contact details for Craig, TfNSW Access Coordinator to Geoff for further discussion.</p>
Dareton HPAA	<p>To approve the Dareton HPAA Council are required to provide the following information to TfNSW:</p> <ul style="list-style-type: none"> • Community Consultation • Council Correspondence requesting the HPAA • Specified Traffic Data <p>Footprint of the proposed HPAA</p>
Shared Path Lighting Gol Gol Buronga	<p>Pedestrians are walking on the Sturt Highway at night, due to there being no lighting along the shared path from Gol Gol to Buronga.</p> <p>WSC to investigate funding availability to install solar lighting along the path similar to that being installed along the new Namatjira to Dareton Shared path.</p>

11 July 2023

Buronga Bakery Parking	<p>There are no stopping signs on the highway at the front of the Buronga Bakery. The bakery would like patrons to be able to park there.</p> <p>TfNSW to investigate if/why the signs are needed.</p>
40KM Speed Zone Wentworth	<p>Following up on the proposed 40 speed zone in Wentworth township.</p> <p>In order go ahead WSC are to provide TfNSW with:</p> <ul style="list-style-type: none"> • A summary of the updated traffic count • Confirmation letter from WSC • Reconfirmation of the footprint
Cycling access on bridge	<p>Would like an update on cycling access on the bridge.</p> <p>TfNSW to follow up and provided an update to Ash</p>

Transport for NSW / WSC - Joint Planning Assessment Meeting

20/03/2019

HW14, Seq35 Tapalin Main Rd Intersection

- Issue

- Traffic entering and exiting the side road cause disruption to Highway traffic flow.
- Type S1 line marking (overtaking line) has the potential to cause confusion to motorists particularly if a truck indicates to turn right into side road.
- Intersection not perpendicular to the Highway.

- Solution

- Ideal solution involves 'Basic Right-turn Treatment' (BAR) and acceleration/deceleration lanes and realigning the intersection perpendicular to the Highway. Karel indicated RMS has this in their long term program however not for next financial year.
- Alternative low cost solution is to improve the intersection with lines and signs. TfNSW to investigate and provide a direction to TfNSW for WSC delivery this financial year.

- Other considerations

- Side road provides access to multiple farms. There is seasonal variation in traffic volumes. High number of heavy vehicle usage during harvest period.
- WSC are progressively sealing the side road.

HW14, Seg70 Paringi Rd Intersection

- Issue

- Traffic entering and exiting the side road cause disruption to Highway traffic flow.
- Intersection not perpendicular to the Highway.

- Solution

- Ideal solution involves acceleration/deceleration lanes (BAR treatment already in place) and realigning the intersection perpendicular to the Highway. Karel indicated RMS has this in their long term program however not for next financial year.
- Alternative low cost solution is to improve the intersection with lines and signs. TfNSW to investigate

HW14, Seg90 Bottle Bend Rd Intersection

- Issue

- Traffic entering and exiting the side road cause disruption to Highway traffic flow. High number of caravans and boat trailers which compound the issue due to reduced acceleration.
- Sight distance

- Solution

- Ideal solution involves BAR treatment and acceleration/deceleration lanes. No funding programmed at this point in time.
- Alternative low cost solution is to improve the intersection with lines and signs. TfNSW to investigate and provide a direction to TfNSW for WSC delivery this financial year.

HW22, Seg3150 Brennan Ave Intersection (Cemetery access)

- Issue

- Sporadic high traffic volumes during funeral processions which cause disruption and delays to Highway traffic flow.

- Solution

- Ideal solution involves BAR treatment. All agreed that it was low priority.
- Council will investigate traffic management during large funeral processions.

HW14, Seg85 through to Seg125 – Overtaking lanes

-Issue

- Long stretch of road with lack of opportunity for safe overtaking.

- Solution

- Construct overtaking lanes.
- TfNSW to investigate.

HW14, Monak Deviation

- Major road realignment project
- TfNSW to development.
- Delivery unlikely to be next financial year.

Conclusion

That Council notes the contents of this report

Attachments

Nil

9.12 PROJECT & WORKS REPORT SEPTEMBER 2025

File Number: RPT/25/501

Responsible Officer: Geoff Gunn - Director Roads and Engineering

Responsible Division: Roads and Engineering

Reporting Officer: Megan Jackson - Roads & Engineering Administration Officer

Objective: 3.0 Wentworth Shire is a community that works to enhance and protect its physical and natural environment

Strategy: 3.5 Infrastructure meets the needs of our growing Shire

Summary

This report provides a summary of the projects and major works undertaken by the Roads and Engineering Department which have been completed during the months of August 2025 and the planned activities for September 2025.

Recommendation

That Council receives and notes the major works undertaken in August 2025 and the scheduled works for September 2025.

Detailed Report

Refer below for updates of the works completed in August 2025, and the planned activities for September 2025.

Projects and Works Completed in August 2025 and Scheduled for September 2025.

Roads

Maintenance Grading

- Works have been recently completed on the Springwood and Belvedere Roads and will continue to work in a clockwise direction.
- Works are scheduled to be completed on the Nulla and Tooperoopna Road during September.

Ivanhoe Road Resheeting Works

- Funded by the Regional Emergency Road Repair Fund, a 6km section west of the Wilkurra Road intersection will receive a 100mm top up of locally sourced gravel. It is anticipated this will commence towards the end of September.

Flood Recovery Works

- Various sections the Old Broken Hill Road and one section of the Roo Roo Road are currently receiving an upgrade consisting of 150mm overlay of locally sourced gravel. These works are funded by TfNSW and are required following the damage left from the flooding in the Anabranh in 2023.

Anabranh Mail Road Resheeting Works

- Funded by the Roads to Recovery program, a 2.8km section commencing at the Renmark Road intersection is scheduled to receive a 100mm top up of gravel which will rectify some drainage issues caused by diminishing pavement depth. It is scheduled these works will commence late September or early October.

<p>Roads <i>(continued)</i></p>	<p><u>Wamberra Road Resheeting Works</u></p> <ul style="list-style-type: none"> • All works are completed, which has provided a significant upgrade to the road pavement and provided a safe all-weather surface for road users in the future. <p><u>TfNSW Maintenance</u></p> <ul style="list-style-type: none"> • Pricing for reseals on both the Sturt and Silver City Highways have been submitted to TfNSW and awaiting a response. • Asphalt patching in the Buronga and Gol Gol areas is to be undertaken directly by TfNSW staff, it has not yet been confirmed when this will be completed.
<p>Parks and Gardens</p>	<p><u>Midway Entrance Upgrade</u></p> <ul style="list-style-type: none"> • A request for quotation will be sent out for a new concrete path to be installed from the upper-level carpark to the Midway Centre property boundary towards the Midway Supermarket. No path will be installed in between Midway and the Supermarket until the adjacent land has been developed. • New low-level planting will be installed closer to the highway, and new trees closer to the carpark away from the power lines on completion of the footpath. <p><u>Darling Street Wentworth</u></p> <ul style="list-style-type: none"> • Works are scheduled to commence late September which will include new steel edging and limestone crusher dust surrounding the London Plane Trees, and new Corten steel laser cut bins. The centrally located pedestrian crossing may receive new small plantings and shrubs.
<p>Water and Sewer</p>	<p><u>Gol Gol Buronga Reticulation Modelling</u></p> <ul style="list-style-type: none"> • Calibration of the model needing additional operational data to improve accuracy of modelled outcomes. • First preliminary results likely early September. <p><u>Safe and Secure Water Program (4 activities) – Development</u></p> <ol style="list-style-type: none"> <u>1. Wentworth Water Treatment Plant</u> <u>2. Gol Gol Water Treatment Plant</u> <u>3. Wentworth Raw Water Pump Station</u> <u>4. Dareton Raw Water Pump Station</u> <ul style="list-style-type: none"> • WSC Water Team and NSW Government continuing to review the updated Option Reports • Site visit and workshop held to investigate interim increased water production at Gol Gol Water Treatment Plant. <ul style="list-style-type: none"> ○ Review of existing pump capacities and options to get additional flow. ○ Investigation of additional clear water storage <p><u>Wentworth Raw Water Pipeline</u></p> <ul style="list-style-type: none"> • Site meeting with contractor and their designer. • Additional service proving required at Armstrong Street end due to inaccuracies with WSC GIS information. • Preliminary updated design issued for review • Design review and finalisation expected in late September. <p><u>Sewer Rehabilitation Program</u></p> <ul style="list-style-type: none"> • Sewer re-cleaning in preparation for additional 1000m of sewer

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**Projects
(continued)**

Wentworth Camp Kitchen

- Shed structure and cladding complete
- Cool room installed
- Stainless steel benches / basins and fridges installed.
- Electrical and Plumbing installations
- Building inspections completed prior to the Wentworth Show
- Kitchen successfully used during the Wentworth Show
- Minor finishing touches (including the incorporation of red brick features) to be completed in September

Wentworth Rowing Club Upgrade

- Tender documentation prepared for extension
- Tender out to market and closing in late September

Buronga Riverfront Toilet Block

- Installation of pumps, flow meter, valves and connecting pipework
- Final connection of toilets and basins
- Sewer pump station commissioning
- Open to the public on Friday 22 August.

Wentworth Depot Upgrades

- The new 40mm asphalt has been installed around the perimeter of the new fuel pod.
- The extension of the mechanics pit inside the workshop has been completed, with painting works to finalize the upgrade.

Open Spaces – Dawn Ave Drainage Basin

- Procurement of stormwater pipes with initial delivery on-site
- Quotes for stormwater pipe installation to close in early September, with works on-site starting in early Oct.

Wentworth Kerb Upgrades

- Tender documentation delayed due to staff leave, to now go to market in September

Junction Island Viewing Platform

- Viewing platform steel foundation has been ordered
- On-site works commenced on 25 Aug 2025
- Old timber platform removed and site preparations for newer and larger platform.
- Footpath and bridge to Junction Island intermittently closed by the works until end October

Electric Vehicles (EV) Charging Stations (3 Locations)

- Carpark line marking and signage complete
- Reported use of the Civic Centre EV Charger
- Project complete.

Old Wentworth Water Tower Reserve (formerly Astronomy Park)

- Astronomy Park project included the removal of asbestos from the old Wentworth water tower reserve and development of an astronomy related landscaped park including night glowing features.
- Project re-scoped to still remove asbestos but to now formalise into a typical landscaped park. Astronomy landscaping considered to better suit a location away from light sources such as the hospital / ski reserve / pump stations.
- Site clearing and fence installation anticipated to commence in Sept.

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Attachments

1. Wamberra Road Sheeting [↓](#)
2. NDFR Old Broken Hill Road [↓](#)
3. McLeods Oval Sewer [↓](#)
4. Darling Street Footpath [↓](#)
5. Pooncarie Racecourse Kitchen [↓](#)
6. Wentworth Racecourse Kitchen [↓](#)
7. Buronga Riverfront Toiletblock [↓](#)
8. Buronga Riverfront Sewerpump Station [↓](#)
9. Wentworth Depo Upgrade [↓](#)
10. Mechanics Pit & Depo Upgrades [↓](#)
11. Junction Island Platform [↓](#)
12. Civic EV Charger [↓](#)

























10 NOTICES OF MOTIONS / QUESTIONS WITH NOTICE

10.1 SECOND OVAL AT CARRAMAR DRIVE SPORTING COMPLEX

File Number: RPT/25/486

Councillor Rodda has indicated her intention to move the following motion:

Motion

That Council undertake an investigation on the potential for a second smaller oval at the Reserve as per the club's suggestion to determine if possible with installed infrastructure and provide a scope and costing of clearing and levelling the land, and establishment of an oval to the south west of the current oval as a short term option to meet immediate needs of the clubs.

Councillor Rodda's Background Information from the User Group

The Carramar Drive Sporting Complex is the home to the Gol Gol Hawks Football Netball Club and The Gol Gol Cricket Club. With the addition of women's competitions in both disciplines, the clubs are struggling with training space and with facilities to cater for the ever-growing number of players in both sports.

Gol Gol Cricket Club currently pay for training space in Mildura at Number Three Oval and have paid \$10,000 to upgrade the wicket at that facility.

Whilst the clubs are supportive of the Carramar Drive Sporting Complex Expansion Concept Plan, given the need for additional space is immediate, the addition of a second smaller oval at the current facility, would provide a solution to the capacity issues in a short time frame. The clubs are willing to progress the second oval utilising their workforce resources with council permission and funding support.

Attached are diagrams showing that there is space at the current reserve for the addition of a smaller second oval at the Carramar Drive Complex. The proposal has the support of both clubs.

In regard to the proposal, some car parking on the northern end of the reserve would need to be created and traffic re-routed, with neither of those are big obstacles.

The benefit of the proposed location is that there would be no need to move any other existing infrastructure ie netball & basketball courts.

The proposed location of the second oval avoids having an oval near the drainage overflow in the northwest corner of reserve.

The addition of a second oval would provide an interim solution to the capacity issue experienced by both clubs.



Officers Report

Further to the proposed development of a second oval at the Carramar Sporting Complex as per the locality plan attached;

Significant Council storm water infrastructure currently runs from the NW corner of the complex parallel with the Western boundary fence line. This drainage pipe line connects all incoming storm water flows from the surrounding Buronga residential developments and the Sturt Highway through to the storm water out-fall at the Murray River. This drainage system also incorporates a shallow overflow storm water basin running the full length of the northern section of the complex to cater for high rainfall events.

Due to the restricted depth of the incoming storm water drainage infrastructure and the minimum grade of the pipe line to the out-fall location, this drainage line has very minimal cover to the existing natural surface.

Current residential developments in the Buronga area have also now triggered the need to undertake upgrades to the existing storm water infrastructure leading to the Carramar Sporting Complex location, including the need for duplication of the storm water out-fall pipe line through to the river.

A number of additional issues with regard to the proposed oval duplication that need to be considered include;

1. Approvals for clearing of existing native vegetation.
2. Establishing design oval finished surface levels to maintain required cover to existing drainage outfall pipe line.
3. Allowance for upcoming future drainage pipe line duplication.
4. Depending on the overall oval surface design levels required to achieve pipe line cover, may impact the overall foot print of the oval layout, this may necessitate cut & fill batters impacting the existing oval boundary.
5. Relocation of the existing car park area to the North of the complex will be potentially problematic during times of wet weather when this area is acting as a retention basin for storm water.
6. Second oval location limits access to the clubrooms and netball area via the existing all weather access road, and would potentially require an upgrade to the exiting unmade access track around the Eastern part of the complex.
7. Proposed oval location will impact existing sporting complex storm water system for the Northern part of the existing oval & car parking area and would require significant works to remove and relocate.

Attachments

Nil

11 CONFIDENTIAL BUSINESS – ADJOURNMENT INTO CLOSED SESSION

Despite the right of members of the public to attend meetings of a council, the council may choose to close to the public, parts of the meeting that involve the discussion or receipt of certain matters as prescribed under section 10A(2) of the Local Government Act.

With the exception of matters concerning particular individuals (other than councillors) (10A(2)(a)), matters involving the personal hardship of a resident or ratepayer (10A(2)(b)) or matters that would disclose a trade secret (10A(2)(d)(iii)), council must be satisfied that discussion of the matter in an open meeting would, on balance, be contrary to the public interest.

The Act requires council to close the meeting for only so much of the discussion as is necessary to preserve the relevant confidentiality, privilege or security being protected. (section 10B(1)(a))

Section 10A(4) of the Act provides that a council may allow members of the public to make representations to or at a meeting, before any part of the meeting is closed to the public, as to whether that part of the meeting should be closed.

Section 10B(4) of the Act stipulates that for the purpose of determining whether the discussion of a matter in an open meeting would be contrary to the public interest, it is irrelevant that:-

- (a) a person may misinterpret or misunderstand the discussion, or
- (b) the discussion of the matter may -
 - (i) cause embarrassment to the council or committee concerned, or to councillors or to employees of the council, or
 - (ii) cause a loss of confidence in the council or committee.

Recommendation

That Council adjourns into Closed Session, the recording of the meeting be suspended, and members of the press and public be excluded from the Closed Session, and that access to the correspondence and reports relating to the items considered during the course of the Closed Session be withheld unless declassified by separate resolution.

This action is taken in accordance with Section 10A(2) of the Local Government Act, 1993 as the items listed come within the following provisions:-

12.1 Legal Costs - Ms Vanessa Field. (RPT/25/488)

This item is classified CONFIDENTIAL under the provisions of Section 10A(2) of the Local Government Act 1993, which permits the meeting to be closed to the public for business relating to (g) advice concerning litigation, or advice that would otherwise be privileged from production in legal proceedings on the ground of legal professional privilege. On balance, the public interest in preserving the confidentiality of information about the item outweighs the public interest in maintaining openness and transparency in council decision-making.

12.2 Buronga Landfill - Cell Capping Planting & Maintenance - PT2526/01. (RPT/25/496)

This item is classified CONFIDENTIAL under the provisions of Section 10A(2) of the Local Government Act 1993, which permits the meeting to be closed to the public for business relating to (c) information that would, if disclosed, confer a commercial advantage on a person with whom the Council is conducting (or proposes to conduct) business. On balance, the public interest in preserving the confidentiality of information

about the tender outweighs the public interest in maintaining openness and transparency in council decision-making because disclosure of this information would reveal pricing and confidential information submitted via the tender process which if disclosed would prevent council from achieving its 'value for money' objectives.

12.3 Buronga Landfill Expansion Project. (RPT/25/500)

This item is classified CONFIDENTIAL under the provisions of Section 10A(2) of the Local Government Act 1993, which permits the meeting to be closed to the public for business relating to (c) information that would, if disclosed, confer a commercial advantage on a person with whom the Council is conducting (or proposes to conduct) business. On balance, the public interest in preserving the confidentiality of information about the tender outweighs the public interest in maintaining openness and transparency in council decision-making because disclosure of this information would reveal pricing and confidential information submitted via the tender process which if disclosed would prevent council from achieving its 'value for money' objectives.

12 OPEN COUNCIL - REPORT FROM CLOSED COUNCIL

12.1 LEGAL COSTS - MS VANESSA FIELD

File Number: RPT/25/488

Responsible Officer: Ken Ross - General Manager
 Responsible Division: Office of the General Manager
 Reporting Officer: Allan Graham - Property Officer

Objective: 4.0 Wentworth Shire is supported by strong and ethical civic leadership with all activities conducted in an open, transparent and inclusive manner

Strategy: 4.4 Manage public resources responsibly and efficiently for the benefit of the community

REASON FOR CONFIDENTIALITY

This item is classified CONFIDENTIAL under the provisions of Section 10A(2) of the Local Government Act 1993, which permits the meeting to be closed to the public for business relating to (g) advice concerning litigation, or advice that would otherwise be privileged from production in legal proceedings on the ground of legal professional privilege. On balance, the public interest in preserving the confidentiality of information about the item outweighs the public interest in maintaining openness and transparency in council decision-making.

12.2 BURONGA LANDFILL - CELL CAPPING PLANTING & MAINTENANCE - PT2526/01

File Number: RPT/25/496

Responsible Officer: Geoff Gunn - Director Roads and Engineering

Responsible Division: Roads and Engineering

Reporting Officer: Samantha Wall - Projects Administration

Objective: 3.0 Wentworth Shire is a community that works to enhance and protect its physical and natural environment

Strategy: 3.3 Minimise the impact on our natural environment

REASON FOR CONFIDENTIALITY

This item is classified CONFIDENTIAL under the provisions of Section 10A(2) of the Local Government Act 1993, which permits the meeting to be closed to the public for business relating to (c) information that would, if disclosed, confer a commercial advantage on a person with whom the Council is conducting (or proposes to conduct) business. On balance, the public interest in preserving the confidentiality of information about the tender outweighs the public interest in maintaining openness and transparency in council decision-making because disclosure of this information would reveal pricing and confidential information submitted via the tender process which if disclosed would prevent council from achieving its 'value for money' objectives.

12.3 BURONGA LANDFILL EXPANSION PROJECT

File Number: RPT/25/500

Responsible Officer: Geoff Gunn - Director Roads and Engineering

Responsible Division: Roads and Engineering

Reporting Officer: Samantha Wall - Projects Administration

Objective: 3.0 Wentworth Shire is a community that works to enhance and protect its physical and natural environment

Strategy: 3.2 Our public assets are well maintained and able to meet the growing population demands

REASON FOR CONFIDENTIALITY

This item is classified CONFIDENTIAL under the provisions of Section 10A(2) of the Local Government Act 1993, which permits the meeting to be closed to the public for business relating to (c) information that would, if disclosed, confer a commercial advantage on a person with whom the Council is conducting (or proposes to conduct) business. On balance, the public interest in preserving the confidentiality of information about the tender outweighs the public interest in maintaining openness and transparency in council decision-making because disclosure of this information would reveal pricing and confidential information submitted via the tender process which if disclosed would prevent council from achieving its 'value for money' objectives.

13 CONCLUSION OF THE MEETING
NEXT MEETING