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Melbourne Water platypus monitoring program: survey results 2024

Prepared for: Melbourne Water

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Owner	Ecology Australia Pty Ltd	
Project	24-025	
Author	Preston T., Snowball G., Walker G., Bloink C.	
File	MW Platypus 2024_FIN01.docx	
Bioregion	N/A	
Distribution	Al Danger	Melbourne Water

Document History

Status	Changes	Author	Reviewer	Date
Draft 1	First draft	Preston T., Snowball G., Walker G., Bloink C.	Serena M., Kinsela T.	6/05/2025
Final	Minor changes	Preston T., Walker G.	Danger A., Burrows R.	28/05/2025

Citation: Preston T., Snowball G., Walker G., Bloink C. (2025). Melbourne Water platypus monitoring program: survey results 2024. Report to Melbourne Water, Ecology Australia Pty. Ltd., Thomastown, Victoria.

Cover photo: Platypus from Bunyip River, Bryce Halliday

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Acknowledgments

Ecology Australia acknowledges the Traditional Custodians of Country throughout Australia, and we pay our respects to their Elders past, present and future.

We gratefully acknowledge the assistance of:

Dr Al Danger	Melbourne Water
Dr Ryan Burrows	Melbourne Water
Dr Rhys Coleman	Melbourne Water
Josh Griffiths	EnviroDNA
Will Webster	EnviroDNA
Prof. Tim Fletcher	University of Melbourne
Darren Bos	University of Melbourne
Dana Dekkers	University of Melbourne
Dr Melody Serena	Australian Platypus Conservancy
Dr Jessica Thomas	Healesville Sanctuary
Dr Helen McCracken	Healesville Sanctuary
Dylan McLean	Ecology Australia
Bryce Halliday	Ecology Australia
Dr Timon van Asten	Ecology Australia
Dr Brett Goodman	Ecology Australia
Alice Ewing	Ecology Australia
Matthew Linn	Ecology Australia
Josie Bailey	Ecology Australia
Lotta Atzenbeck	Ecology Australia

Summary

Live-trapping platypus surveys were conducted at 17 locations across the Melbourne Water region during autumn and spring 2024, as part of the long-term Melbourne Water Urban Platypus Program. These surveys resulted in the capture of 133 platypuses from 211 trap nights. Only 14 juveniles were recorded.

Most of the platypus captures were from spring, with the highest catch per unit effort (CPUE) results on record for the Bacchus Marsh, Olinda and Chum Creek locations. The CPUE for all other sites was within the range of the historical values in both autumn and spring.

Key recommendations from the 2024 platypus monitoring are:

- Ensure timing of surveys is consistent in each season, as male, female and juvenile platypus capture rates vary across the year
- Conduct analysis of historical data to determine magnitude of actual platypus population changes through time
- Consider a workshop to discuss how best to integrate camera-based monitoring technology into the MWUPP, both to strengthen the reliability of trapping-related findings and potentially provide input to and/or test predictions gained through Habitat Suitability Modelling.

1 Introduction

The platypus, *Ornithorhynchus anatinus*, is a notable freshwater species endemic to eastern Australia. Although deemed as being of least concern under threatened species listings used in Queensland, New South Wales and Tasmania, they are listed as vulnerable in Victoria under the *Flora and Fauna Guarantee Act 1988.* The listing as a threatened species in Victoria was supported by data from multiple sources, including that from the Melbourne Water Urban Platypus Program (MWUPP), which has been running since 1995. The platypus is believed to have occupied all reliably flowing waterways in the Greater Melbourne region prior to European settlement, and was still found at sites located within 5 km of central Melbourne as recently as the 1950s (Faithfull 1987). However, based on information obtained through the MWUPP, populations located within ~15 km of the city centre were deemed to have effectively disappeared from the Yarra and Maribyrnong catchments by the early 2000s (Serena and Pettigrove 2005). Elsewhere, only a small number of animals remained in the Dandenong Creek catchment by the early 2000s, with extinctions apparently having occurred by then in the Bass River and Cardinia and Toomuc Creeks in the Westernport Catchment (Serena and Williams 2008). Further extirpations of geographically isolated populations have been reported (Griffiths *et al.* 2017; Griffiths *et al.* 2018), with platypus being particularly sensitive to increasing urbanisation and reduced streamflow (Coleman et al. 2021).

The continuation of the MWUPP in 2024 provides critical data on the long-term trajectory of platypus populations throughout the Melbourne Water region. This data will inform waterway works investment decisions by Melbourne Water to assist achievement of performance objectives within the Healthy Waterways Strategy (2018), where platypus are listed as a key value. The state and trajectory of platypus populations are key evaluation questions (KEQs) within the Rivers Monitoring and Evaluation Plan (MEPSs) (Melbourne Water 2020). Although non-invasive monitoring techniques such as community observations and environmental DNA (eDNA) can provide information on platypus distribution across a broad expanse of waterways, live trapping currently remains the only reliable method to determine population abundance, sex ratios, recruitment, body condition, genetic diversity and rates of litter entanglement. This information is needed to answer the Rivers MEPs KEQs. Further, updated Habitat Suitability Modelling (HSM) predicts that environmental conditions for platypus under ongoing climate change are worse than modelling originally suggested (Chee et al. 2023). The best quality habitat for platypus (based on adult female requirements) is predicted to be reduced by a further 28–75% by 2070, even with planned interventions to improve riparian habitat and manage stormwater. Most of these reductions are predicted to occur in the upper Yarra catchment, which has been considered the most important regional stronghold for platypus (Chee *et al.* 2023). Additionally, HSM is developed using a number of assumptions that may not be met, including flows (particularly baseflow) being maintained through interventions which could offset likely climate change drying conditions, no increase in attenuated imperviousness, and a 20 m vegetated buffer either side of all priority reaches. Since many of these assumptions will not be met for most locations, the suitability of habitat for platypus may be reduced more than predicted. While HSMs are a great predictive tool for evaluating potential climate change and management intervention impacts, the only reliable way to determine platypus population responses is via ongoing live-trapping surveys. Implementation of rapid (and potentially novel) mitigation measures may be required where declines are evident.

Data from the MWUPP has contributed significantly to the broader scientific knowledge on platypus (refer to Preston et al. 2024 for summary). Additionally, Melbourne Water has worked in collaboration

with researchers from the University of Melbourne and Ecology Australia staff to address a paucity of information about breeding burrow inundation due to flows (Jacobs et al. 2016). This has included infra-red camera monitoring and transmitter attachment to platypus to determine movements and burrow locations in the Monbulk Creek and the use of cameras to monitor behaviour of platypuses encountering nets during live trapping surveys. These studies have contributed to updated guidance on fyke-net setting (Serena *et al.* 2024a).

Melbourne Water engaged Ecology Australia (EA) to undertake live-trapping platypus surveys at 10 locations during autumn 2024, with EnviroDNA undertaking surveys at seven locations. Ecology Australia undertook platypus surveys at all 17 locations during spring 2024. Data from all surveys (including those conducted by EnviroDNA) is presented in this report.

2 Study area

Individual netting sites within 17 distinct geographic areas (referred to hereafter as locations) were selected based on where sites had previously been established by the Australian Platypus Conservancy or EnviroDNA (previously known as cesar). An initial list of potential netting sites was developed that provided adequate coverage across all Melbourne Water major catchments and satisfied criteria related to spacing between sites, access, safety, recent eDNA results and HWS priorities. Reconnaissance trips were performed by Ecology Australia to narrow the historical site lists to a minimum of five and maximum of seven net sites per location (achievable to survey in one night) and to determine the current suitability of the sites in terms of safe access, appropriate depth and a sufficient supply of on-site rocks needed to set nets effectively. These reconnaissance trips were undertaken at 10 locations prior to the 2023 autumn season (Belgrave, Sunbury, Werribee, Bacchus March, Cardinia, Eltham, Mullum Mullum, Lilydale, Chum Creek, Woori Yallock) and the remaining seven locations prior to the spring 2024 season (Lang Lang, Bunyip, Labertouche, Lower Tarago, Upper Tarago, McMahons Creek, Warburton). These trips determined that some locations needed to be split into two survey nights rather than one (Lower Tarago and Labertouche were undertaken on separate evenings, as were McMahons and Warburton) to reduce the overall distance travelled on each check and minimise the safety risk of driving long distances while fatigued, and ensure that nets could be checked at appropriate intervals to ensure platypus welfare. The exact position of net sites was decided based on safety, access, ability to block channel effectively, and the suitability of depth and flow velocity conditions at the time of survey.

The number of net sites at each location surveyed was kept as consistent as possible between autumn and spring sampling. Sampling locations and site numbers are described below (Table 1), with sub-catchment names kept consistent with those defined in the Healthy Waterways Strategy (2018).

Note that the spring survey in Belgrave was delayed until summer for the purposes of identifying lactating female platypuses and attaching radio-transmitters, as part of the Smart Tank project.

Table 1 Live trapping locations: autumn and spring 2024.

System	Surveyed area	Sites	Seasons
Dandenong Catchment			
Belgrave Monbulk Creek. Corhanwarrabul, Monbulk and Ferny Creek sub-catchment.	From Park Drive to Birdsland Reserve, Belgrave, autumn. From Nixon Road to Belgrave-Gembrook Rd summer.	5 (autumn 2024). 10 per survey (2 surveys conducted, Dec 2024 and Jan 2025).	Autumn and summer.
Maribyrnong Catchment			
Sunbury Jacksons Creek. Jacksons Creek sub-catchment.	From Homestead Way Sunbury to Organ Pipes National Park.	9 (autumn 2024). 10 (spring 2024).	Autumn and spring.

System	Surveyed area	Sites	Seasons
Werribee Catchment			
Werribee Werribee River. Werribee River Lower sub-catchment.	From Riverbend Historical Park to Princes Freeway, Werribee.	6	Autumn and spring.
Bacchus Marsh Middle Werribee River. Werribee River Middle sub-catchment.	Werribee Vale Road to Fisken Street, Bacchus Marsh.	5	Autumn and spring.
Western Port Catchment			
Athlone Lang Lang River, Minnieburn Creek. Lang Lang River sub-catchment.	From Main South Road bridge, Poowong East, to Drouin-Korumburra Road.	6	Autumn (EnviroDNA). Spring (EA).
Bunyip Upper Bunyip River and tributaries, including Diamond Creek and Snake Creek. Bunyip River Middle and Upper sub-catchment.	From Main South Road bridge, Poowong East, to Drouin-Korumburra Road.	5	Autumn (EnviroDNA). Spring (EA).
Cardinia Cardinia Creek. Cardinia, Toomuc, Deep and Ararat Creeks sub-catchment.	From Manestar Rd to Beaconsfield-Emerald Rd, Beaconsfield.	7	Autumn and spring.
Labertouche Labertouche Creek. Tarago River sub-catchment.	From the confluence with the Tarago River to McDonald Road.	6	Autumn (EnviroDNA). Spring (EA).
Lower Tarago Lower Tarago River. Tarago River sub-catchment.	From Labertouche Road to Tarago Reservoir.	6	Autumn (EnviroDNA). Spring (EA).
Upper Tarago Upper Tarago River, Quartz Creek. Tarago River sub-catchment.	From Tarago Reservoir to Spion Kopje Track.	6	Autumn (EnviroDNA). Spring (EA).
Yarra Catchment			
Eltham Diamond Creek. Diamond Creek (Rural) sub-catchment.	From Allendale Rd to Eltham Lower Park, Eltham.	6	Autumn and spring.
McMahons McMahons Creek Yarra River Upper sub-catchment.	From the Road 18 to the confluence with the Yarra River.	6	Autumn (EnviroDNA). Spring (EA).
Mullum Mullum Mullum Mullum Creek. Mullum Mullum Creek sub-catchment.	From Old Warrandyte Rd to Main Yarra Trail, Warrandyte.	6	Autumn and spring.

System	Surveyed area	Sites	Seasons
Lilydale Olinda Creek. Olinda Creek sub-catchment.	From Mount Evelyn Recreation Reserve/Glenholme Ave to Akarana Rd, Lilydale.	6 autumn, 5 spring.	Autumn and spring.
Warburton Yarra River tributaries. Yarra River Upper sub-catchment.	McKenzie King and Surrey Road Creeks, from McKenzie King Drive, Millgrove to Woods Point Rd bridge, East Warburton, and Big Pats Creek from the Yarra River to Big Pats Creek Rd.	5	Autumn (EnviroDNA). Spring (EA).
Chum Creek Chum, Myers and Donnellys Creeks and Grace Burn. Watts River sub-catchment.	From Myers Creek Rd to Lowes Rd, Chum Creek. One site in Myers Creek, Donnellys Creek and Grace Burn.	7	Autumn and spring.
Woori Yallock Woori Yallock, Sassafras and Menzies Creek. Woori Yallock Creek sub-catchment.	From Kallista-Emerald Rd to Baynes Park, Monbulk.	6	Autumn and spring.

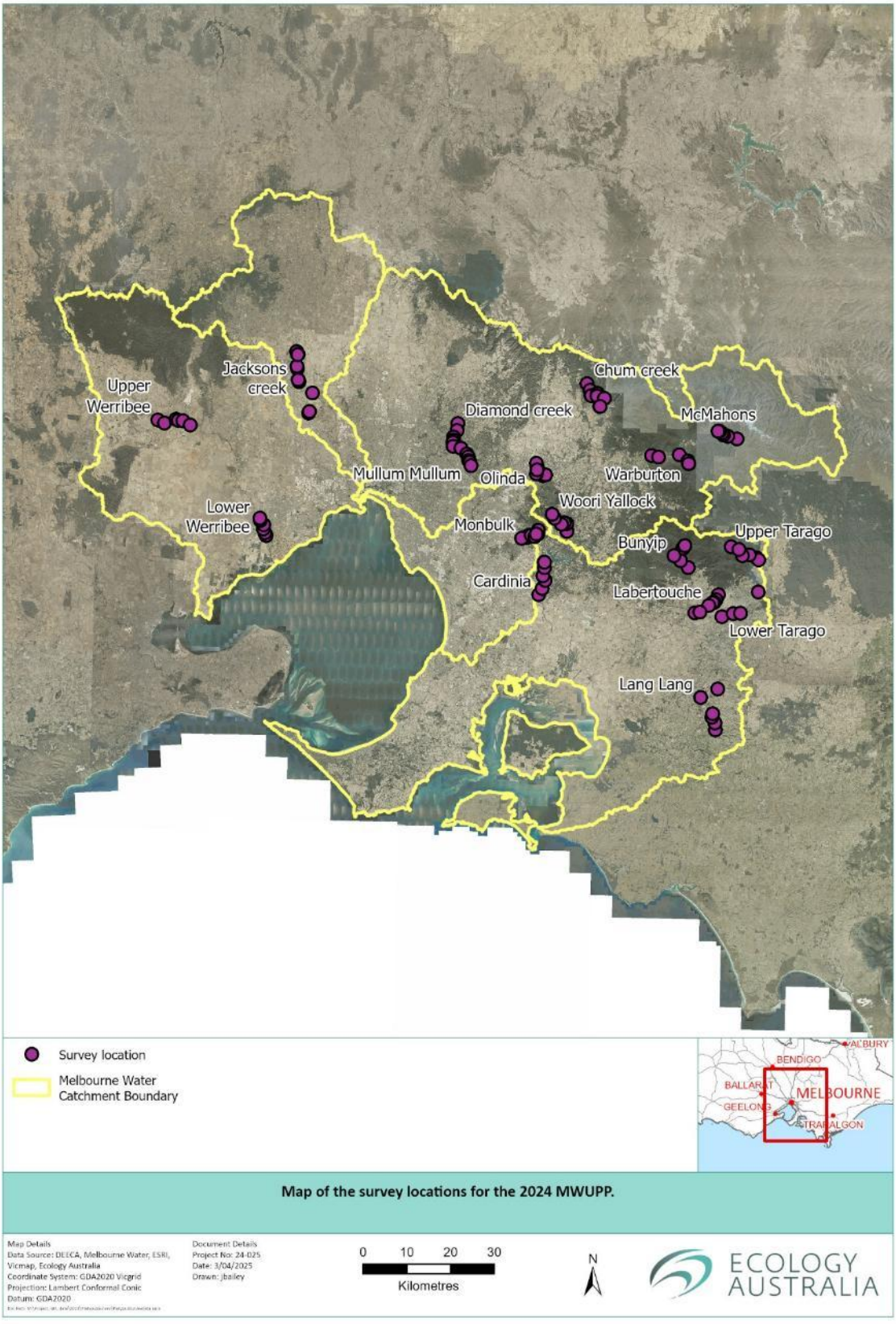

Figure 1 Map of platypus survey locations 2024.

3 Methods

3.1 Live-trapping surveys

3.1.1 Fyke net deployment

All platypus surveys were undertaken using fyke nets. The fyke nets were constructed of knotless nylon mesh (15 x 15 mm) and consisted of a 'D' entrance at one end and a central capture chamber at the other, with several one-way internal funnels (two or three) designed to detain the animal in the chamber without entanglement. Two mesh wings (~85 cm high and 5 m long) extend either side of the 'D' entrance.

Prior to net setting, weather conditions and flow/depth were checked for each location. If conditions for the entirety of the day and night were expected to remain suitable, nets were set during the afternoon and removed at dawn the following day.

Fyke nets were set at each site with one facing upstream and one facing downstream, targeting platypus travelling in either direction. Selected net sites were confirmed when setting, based on current water depth, flow velocity and bank stability. We followed the approach described in Serena et al. (2024a), which was employed by the Australian Platypus Conservancy (APC) for the MWUPP from 1995–2007 and by Ecology Australia at 'roving' MWUPP sites in 2013/14, as well as for the MWUPP in 2023. The method typically involves ~45 minutes of net setting time per site, with considerable effort applied to eliminate all gaps between the channel bed and entire lower margin of the net and wings with rocks and to hold the top margin of the wings 5–10 cm above the water with sticks or stakes. Particular care is also taken to eliminate all gaps between the banks and the net. The two 'D' entrances of the fyke net frames are usually attached to each other with cord (ensuring no gaps between the frames) and either extending the distal end of each wing is either extended at least 1 m up onto the bank or, in the case of vertical banks, pinned or otherwise attached firmly to the bank substrate, with the two wings and 'D' entrances forming a perpendicular angle to the banks (Figure 2). This technique typically minimises the length of the wings needed to reach the bank. In situations where the channel is too narrow and there isn't sufficient space to arrange the nets this way (connecting the two 'D' entrances), the two nets are set separately, one net facing each direction, with all four wings deployed at a perpendicular angle to the banks to minimise the number of rocks and effort required to eliminate all gaps under the wings. With both techniques, the distal end of the capture chamber was securely suspended above water level using a stable star picket stake to allow captured platypuses (and bycatch) access to air. Both techniques use the fyke net wings to block the stream with an impenetrable wall of netting, directing the platypus to search along the wing wall for the net entrance. Before finishing each site, a final check was performed by checking the entire bottom length of the wings and entrances, and the sides of the netting against the banks, to ensure there were no gaps or points of weakness.

Nets were checked at regular intervals during the night to remove captured platypuses and bycatch in accordance with relevant animal ethics guidelines (Serena *et al.* 2024a), and to carry out running repairs on any holes made by rakali *Hydromys chrysogaster*.

Figure 2 Nets set in Woori Yallock Creek (site SAS02_Core) in spring 2024.

3.1.2 Morphometric measurements and condition

If a platypus was captured during regular net checks throughout the night, it was carefully removed from the net and placed into an alpha-numeric-coded calico bag. All platypuses were firstly scanned for the presence of an individually coded microchip (Passive Integrated Transponder, PIT). Any platypus that had been captured earlier in the same night, was immediately released. All others were transported to a central processing base after each round of net checks was completed, and then returned to the waterway on the following two-hourly check. This method maximises net checking and processing efficiency while minimising holding time in nets if more than one platypus is encountered in each round. Animals were placed in fresh alpha-numeric-coded calico bags upon capture and again after being processed (if the bag was soiled), carefully recording the details to ensure animals were released at the correct site.

Processing involved several steps. If no microchip was present, one was inserted subcutaneously between the scapulae (BioMark APT12).

Body mass was recorded to the nearest 1 g using bench scales. Standard morphometric measurements were taken to the nearest 0.1 mm using electronic callipers (bill width, bill length and frontal shield tip-

to-crease) or the nearest 1 mm using a flexible measuring tape (total body length), when the animal was relaxed enough for this measurement to be repeatable. A small tissue sample was obtained from the distal edge of the front foot toe webbing and preserved in ethanol for future genetic analysis. Each platypus was assessed visually and manually for evidence of litter entanglement, particularly around the neck, in front of the shoulder and behind the front legs. An estimated percentage of dorsal moult was also recorded. Raw data from these measurements are presented separately to Melbourne Water.

A five-point tail volume index (TVI) was used to characterise body condition (Grant and Carrick 1978). As platypus store a large proportion of total body fat in their tail, this index uses tail shape and thickness as a broad indicator of body condition (Table 2).

Table 2 Five-point tail volume index (TVI) categories (Grant and Carrick 1978).

Category	Condition description
1	Excellent – tail turgid with the ventral side convex.
2	Good – tail able to be folded slightly at lateral edges. Ventral side flat. Rest of tail turgid.
3	Average – lateral edges of tail can be easily rolled. Ventral side slightly concave. Rest of tail turgid.
4	Fair – tail can be folded along ventral midline. Whole tail soft.
5	Poor – vertebrae showing through tissue on ventral side. Whole tail soft.

The sex and age class of each platypus was assigned based on presence or absence and morphology of the calcaneal spurs (Williams et al. 2013; Grant et al. 2024). Two female and three male age classes can be identified reliably in this manner (Table 3).

Table 3 Age class and spur descriptions (Williams *et al.* 2013; Grant *et al.* 2024).

Age class	Spur description	Age
Females		
Juvenile	Vestigial spur sheath 1-4 mm present on one or both ankles.	≤ 10 months
Adult/Sub-adult	No vestigial spur sheath present on either ankle.	>10 months
Males		
Juvenile	Signs of spur sheath (gradual exsheathment up to approximately 10 months), no epidermal collar.	≤ 12 months
Sub-adult	Epidermal collar present, covering from 1/3 spur, regressing down toward the base of the spur.	13–24 months
Adult	Epidermal collar has receded to be just visible above the basal skin cuff (<0.24 of the total spur length). Spurs may be worn or more darkly pigmented in older platypus.	> 24 months

3.1.3 Bycatch identification

Bycatch were identified using relevant field guides, including McDowall (1996) (fish); Cogger (2014) (turtles); McCormack (2012) (spiny crayfish); and Menkhorst and Knight (2011) (rakali). However, the presence of rakali are usually identified by the occurrence of characteristic holes in nets, as rakali are well known to chew holes through mesh in order to escape when caught (Williams and Serena 2018; Serena *et al.* 2024a) and are only occasionally encountered in a net during checks. Full bycatch data are provided with raw data to Melbourne Water.

3.2 Abundance estimates

As per previous reports to Melbourne Water for the MWUPP (from Australian Platypus Conservancy, cesar/EnviroDNA and Ecology Australia), a coarse measure of platypus abundance at each location has been determined using the number of platypuses captures per unit effort (CPUE). Limitations of this estimate have been described previously (Serena *et al.* 2024a and references cited therein), but it still remains an accepted measure for determining comparative abundance between sites and temporal trends within sites.

Here we have calculated CPUE as the total number of platypuses captured divided by the number of sites (i.e. one pair of nets) during a single night of survey effort in each location. Any data from previous studies included in the CPUE graphs here has been calculated in the same manner. Where it was unclear from previous data how many sites were set (some previous locations had notations such as 'between 4 and 8 sites'), we have excluded this from analysis.

As per the previous year's report (Preston et al. 2024), we present CPUE as two different calculations. Firstly, we present CPUE calculations including juveniles, which is consistent with the approach of MWUPP reports since 2007. Juveniles comprise a valuable component of healthy wildlife populations and their exclusion would result in a CPUE of zero at locations where only juveniles were captured (typically in autumn), which may be misinterpreted as no platypus present.

Secondly, we provide a calculation of CPUE excluding juveniles, which may better represent the core population at the location surveyed. This assumes that some juveniles disperse from the location or are potentially lost from the population at some point prior to maturity (Serena and Williams 2012) and the number of juveniles each year varies more widely with annual environmental conditions than adult numbers (e.g. rainfall and high flows/flooding; (Serena *et al.* 2014; Serena and Grant 2017).

To complement CPUE calculations in which juveniles are not included, a coarse metric of annual reproductive success is estimated separately by calculating the percentage of juveniles of all captures at each location. To assist informed interpretation of both CPUE and % reproduction metrics in this report, we remind the reader that precision in published values depends closely on the number of data points contributing to the metric. So, for example, if CPUE is calculated based on the number of captures made at 5 sites in a single survey session, CPUE (calculated by dividing captures by trap-nights) will necessarily vary by 0.2 with each additional capture that is recorded: CPUE for 1 capture/5 trap-nights = 0.2, CPUE for 2 captures/5 trap-nights = 0.4, etc. Precision in CPUE improves as sampling increases, but even

doubling the number of trap-nights to 10 will result in CPUE varying by 0.1 with each additional capture that occurs.

In practice, for the sake of consistency we have chosen to report CPUE to two decimal places in our findings below, regardless of the amount of sampling conducted. At the same time, to preserve a defensible approach to describing and interpreting metrics that are inherintly highly imprecise, we have generally refrained from commenting on year-on-year differences apart from noting how the current round of results broadly compares with the entire range of previous values.

4 Results

During 2024, a total of 133 individual platypuses were captured over 211 trap nights (where one trap night = one pair of fyke nets set to block the channel at a given site). In autumn a total of 36 individuals were caught (22 by Ecology Australia and 14 by EnviroDNA), and in spring 97 individuals were captured across all sites. Average CPUE for 2024 across all locations was greater in spring than autumn. More sites were surveyed in spring (118) than autumn (94), due to two expanded surveys on Monbulk Creek (Table 1) for the purposes of attaching radio-transmitters to platypus as part of a research project with the University of Melbourne (Figure 3).

Platypus captured during 2024 comprised 119 adults/subadults and 14 juveniles. By sex, these included 60 adult/subadult males (46% of the total), 59 adult/subadult females (44%), seven juvenile males (5%) and seven juvenile females (5%). Approximately a quarter (26%, 35 individuals) had been previously captured. The proportion of juveniles captured during autumn (19%) was similar to that in 2023 (16%).

Figure 3 Platypus from Monbulk Creek with transmitter attached.

4.1 Dandenong catchment

4.1.1 Belgrave

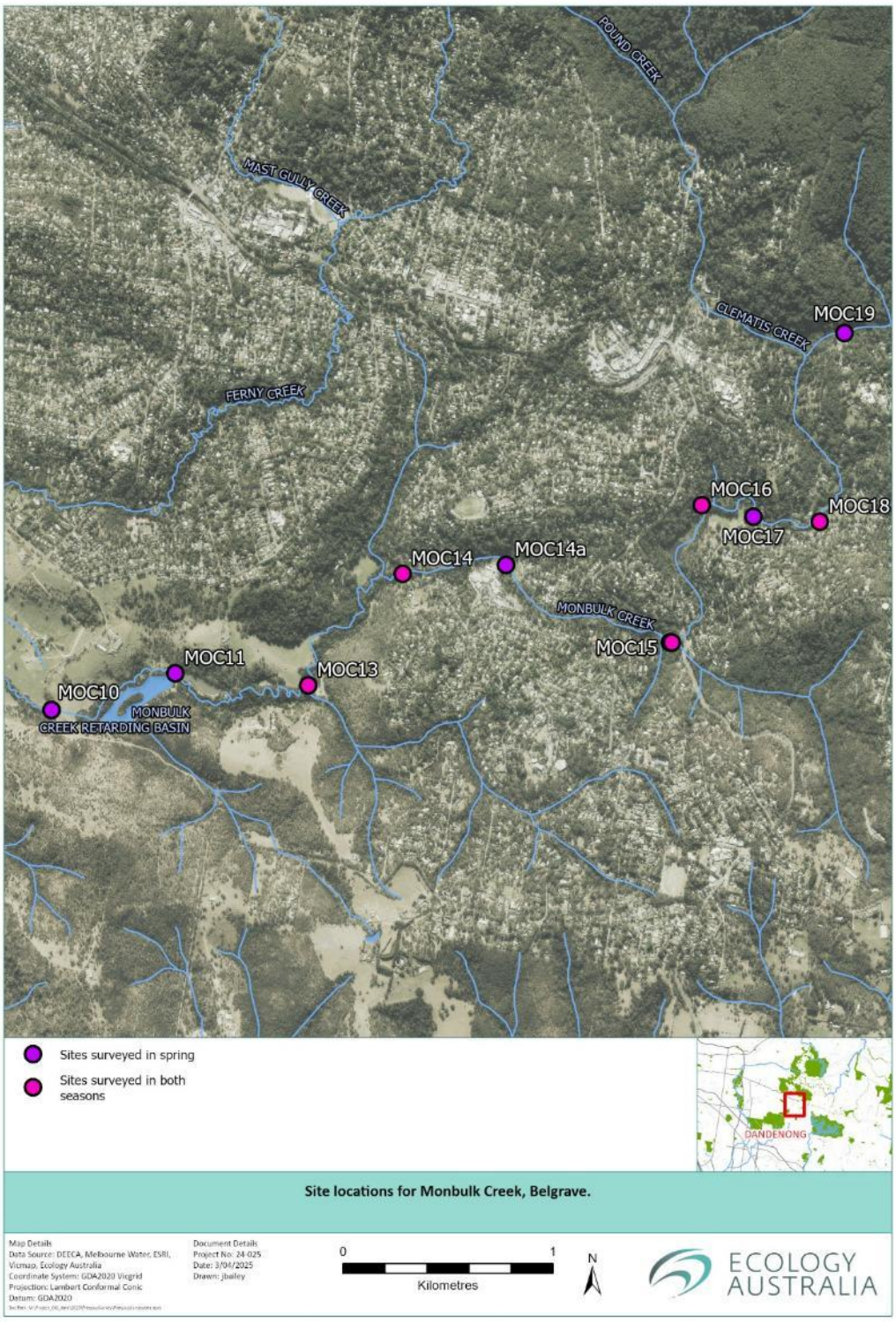

Figure 4 Site locations for Monbulk Creek, Belgrave.

A total of 25 trap nights were conducted at Monbulk Creek from autumn 2024 to summer 2025, which resulted in the capture of nine individual platypuses (Table 4). No juveniles were captured in Monbulk Creek this season, but four females and two second year males were new captures.

The CPUE for Monbulk Creek was the same as autumn 2023 (0.6) but despite the increase in trap-nights was lower in summer (0.3) than during spring the previous year (0.8) (Figure 5). Current survey results are comparable to CPUE numbers in years prior to the Millennium drought.

Table 4 Summary of 2024 survey results for Monbulk Creek, Belgrave.

Total platypus captures	Adults/subadults	Juveniles	% Juveniles
No. platypus	**9**	**0**	**0**
CPUE including juveniles	No. platypus	Trap nights	CPUE
Autumn	3	5	0.60
Summer	6	20	0.30
Total	**9**	**25**	**0.36**
CPUE excluding juveniles	No. platypus	Trap nights	CPUE
Autumn	3	5	0.60
Summer	6	20	0.30
Total	**9**	**25**	**0.36**

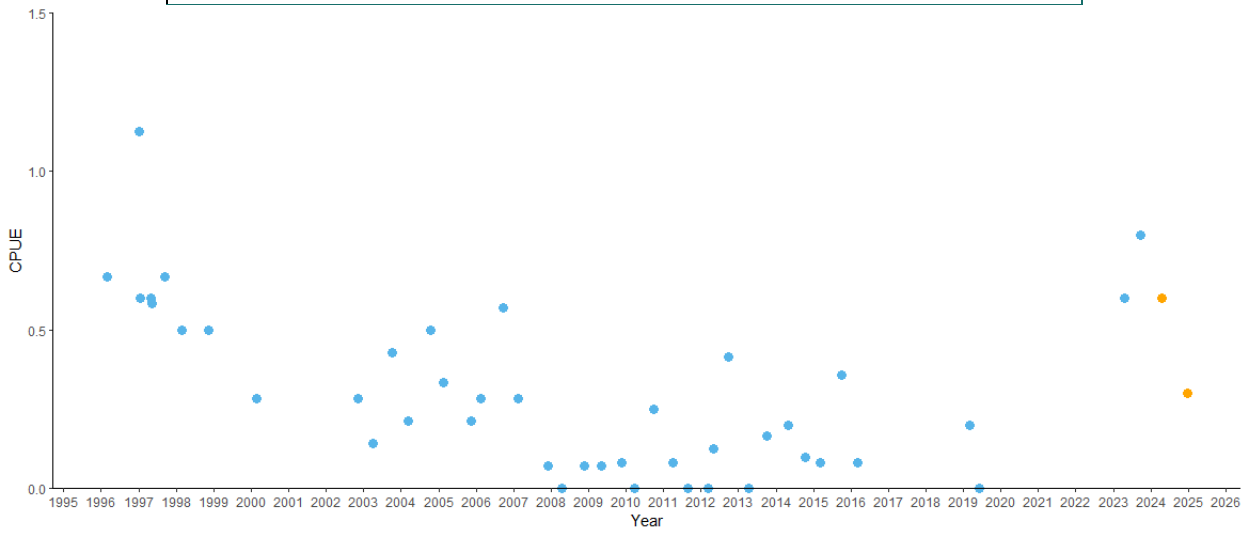

Figure 5 Historical and current platypus CPUE (including juveniles) for Monbulk Creek, Belgrave. Current (2024) surveys are in orange.

Nine other aquatic species were recorded as bycatch during the surveys: short-finned eel (11), river blackfish (4), brown trout (7), redfin (2), rakali (1), crayfish (5), roach (1), carp (2) and climbing galaxias (1).

No safety issues, litter entanglement or other health-related concerns were observed during autumn and summer surveys in Monbulk Creek.

Refer to section 6.1.1 for discussion and recommendations relating to the Belgrave platypus population.

4.2 Maribyrnong catchment

4.2.1 Sunbury

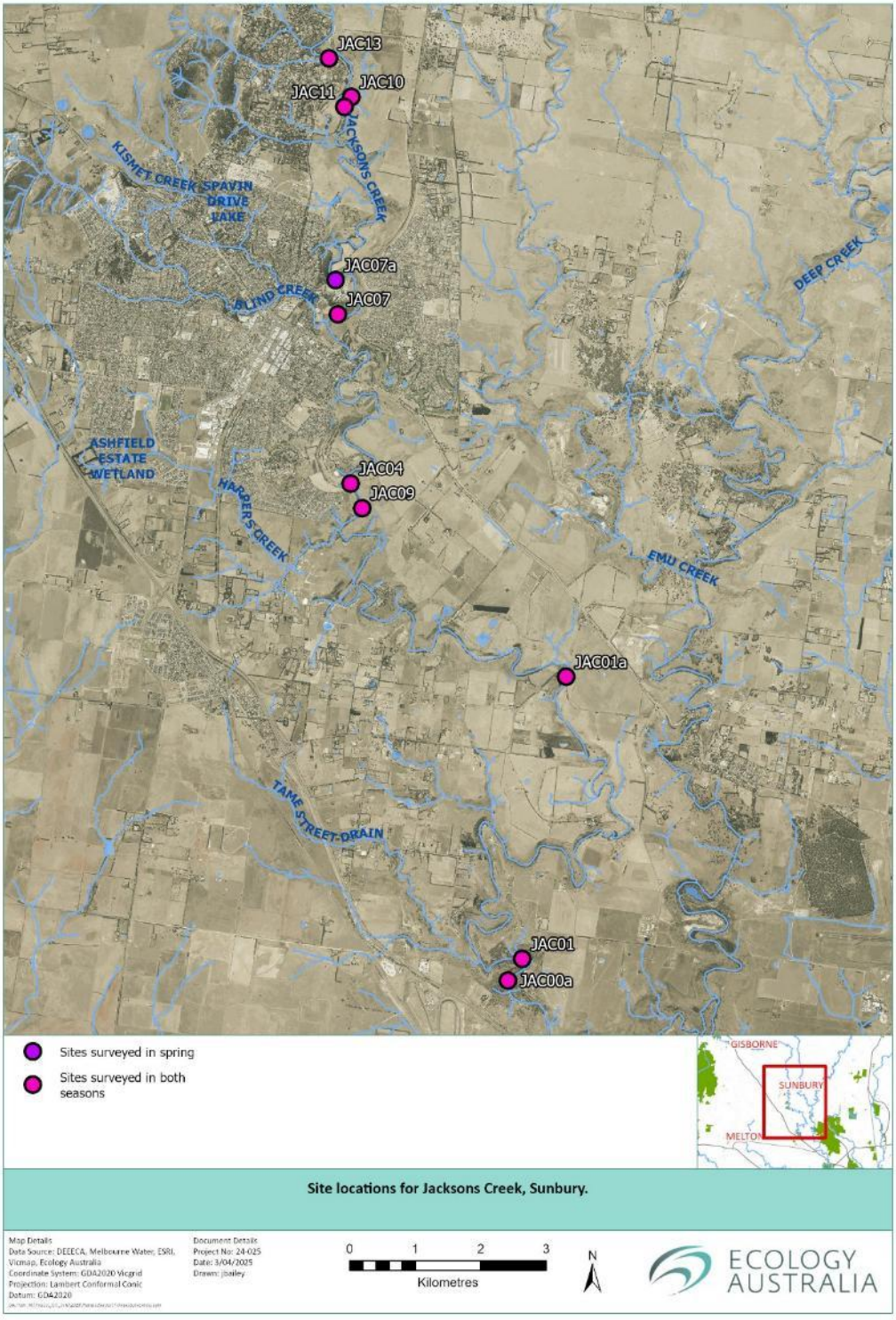

Figure 6 Site locations for Jacksons Creek, Sunbury.

A total of 19 trap nights were conducted at Jacksons Creek in 2024 resulting in the capture of 12 platypuses, 10 adults and two juveniles (Table 5).

The CPUE for Jacksons Creek showed a decrease in autumn (0.10) compared with the previous autumn (0.70), however spring 2023 and 2024 CPUE values were the same (1.10) (Figure 7).

Table 5 Summary of 2024 survey results for Jacksons Creek, Sunbury.

Total platypus captures	Adults/subadults	Juveniles	% Juveniles
No. platypus	**10**	**2**	**20**
CPUE including juveniles	No. platypus	Trap nights	CPUE
Autumn	1	9	0.11
Spring	11	10	1.10
Total	**12**	**19**	**0.63**
CPUE excluding juveniles	No. platypus	Trap nights	CPUE
Autumn	1	9	0.11
Spring	9	10	0.90
Total	**10**	**19**	**0.53**

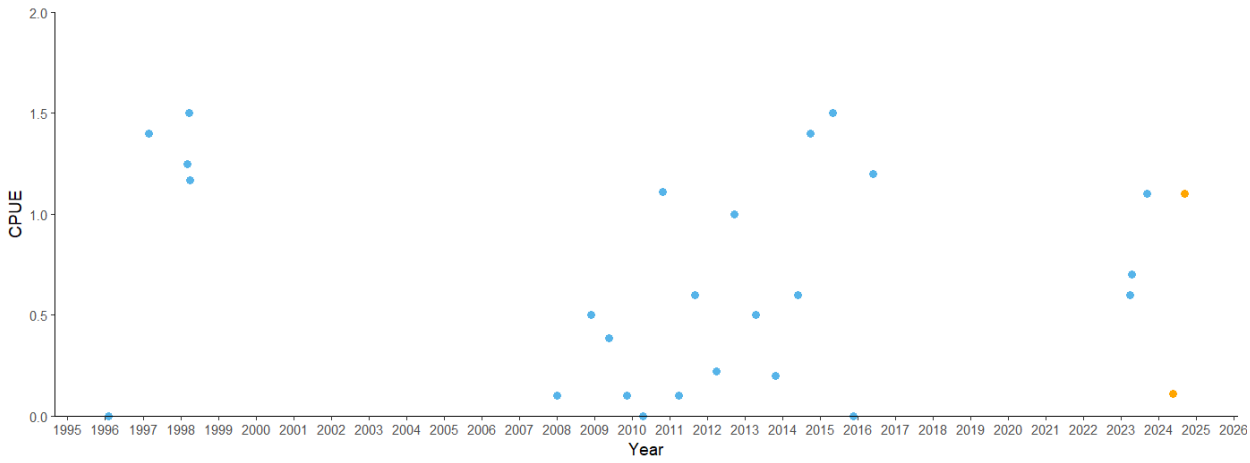

Figure 7 Historical and current platypus CPUE (including juveniles) for Jacksons Creek, Sunbury. Current (2024) surveys are in orange.

Four other aquatic species were recorded as bycatch during the surveys: short-finned eel (1), carp (4), brown trout (3) and eastern long neck turtle (1).

One site (JAC07a) was only surveyed during the spring survey due to access issues (Figure 6). No litter engagement was recorded at Jacksons Creek in 2024. One adult female was observed to have a small cut on the tail and one juvenile male had a bald patch on top of the tail.

Refer to section 6.1.2 for discussion and recommendations on the Sunbury platypus population.

4.3 Werribee catchment

4.3.1 Werribee

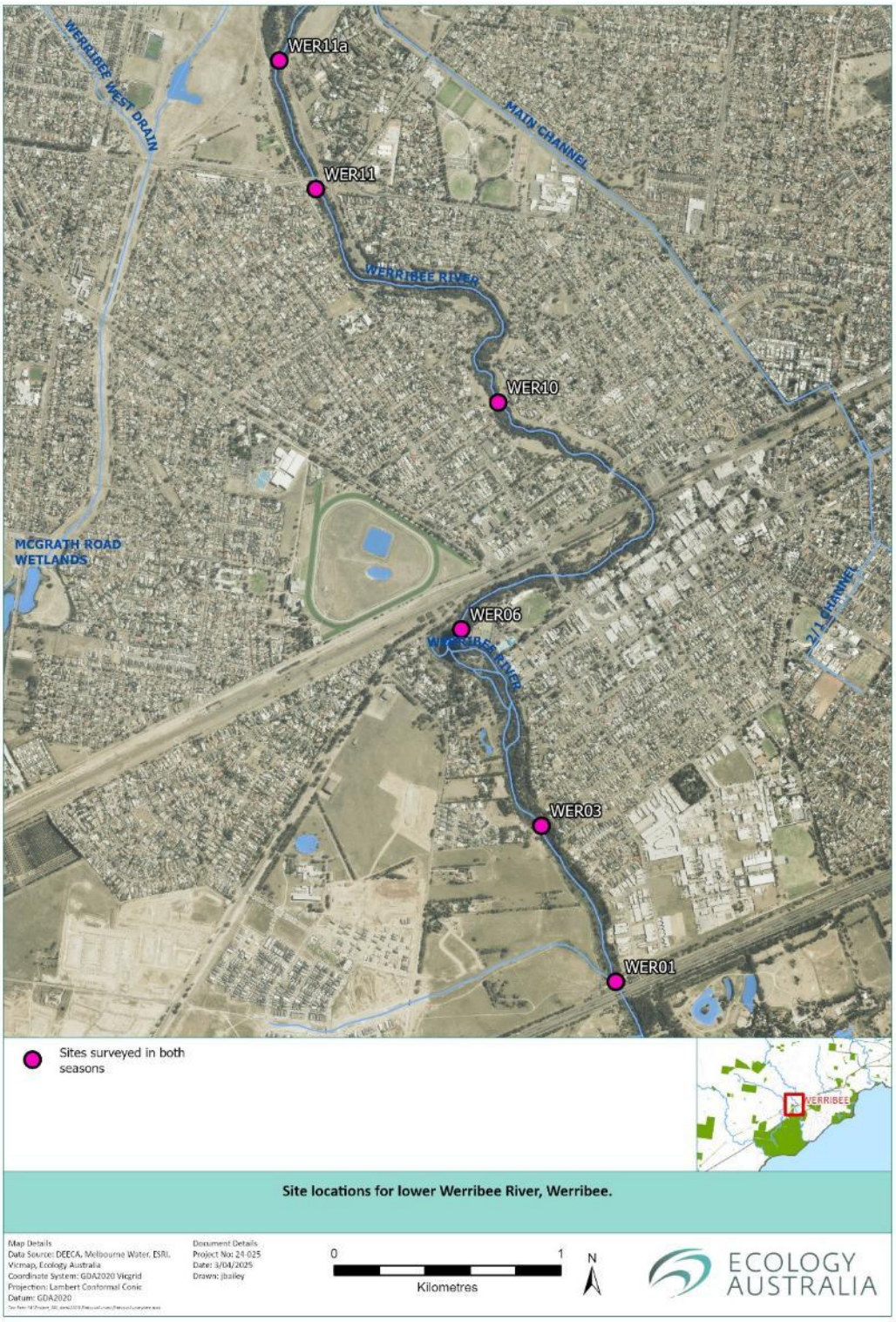

Figure 8 Site locations for Lower Werribee, Werribee.

A total of 12 trap nights were conducted at Werribee River lower. Four individual platypuses were captured in 2024 (Table 6), including one adult female, one adult male and two juvenile males. The adult male was last captured in spring 2022 and the adult female was last captured in spring 2023. In addition to the results presented below (Figure 9), a live-trapping survey was conducted by Ecology Australia and the Australian Platypus Conservancy on behalf of Werribee River Association on 11 February 2022, resulting in the capture of 1 adult male, 1 adult/subadult female and 1 juvenile male (CPUE = 0.50 including the juvenile) (Serena *et al.* 2022).

Table 6 Summary of 2024 survey results for lower Werribee River, Werribee.

Total platypus captures	Adults/subadults	Juveniles	% Juveniles
No. platypus	**2**	**2**	**50**
CPUE including juveniles	No. platypus	Trap nights	CPUE
Autumn	3	6	0.50
Spring	1	6	0.16
Total	**4**	**12**	**0.30**
CPUE excluding juveniles	No. platypus	Trap nights	CPUE
Autumn	1	6	0.16
Spring	1	6	0.16
Total	**2**	**12**	**0.16**

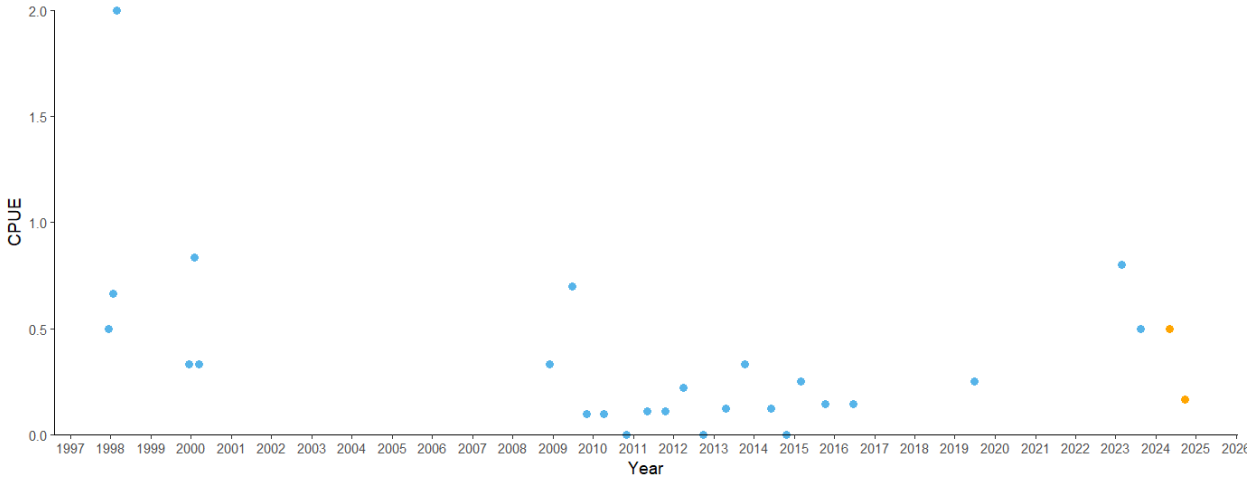

Figure 9 Historical and current platypus CPUE (including juveniles) for lower Werribee River. Current (2024) surveys are in orange.

One juvenile male captured in autumn was entangled in an elastic hair band caught over the shoulder and under a front limb. This litter was removed, and no significant cuts or injuries were observed.

Four other aquatic species were recorded as bycatch during the surveys: rakali (2), tupong (3), Australian grayling (13) and short-finned eel (1).

Refer to section 6.1.3 for discussion and recommendations on the lower Werribee River platypus population.

4.3.2 Bacchus Marsh

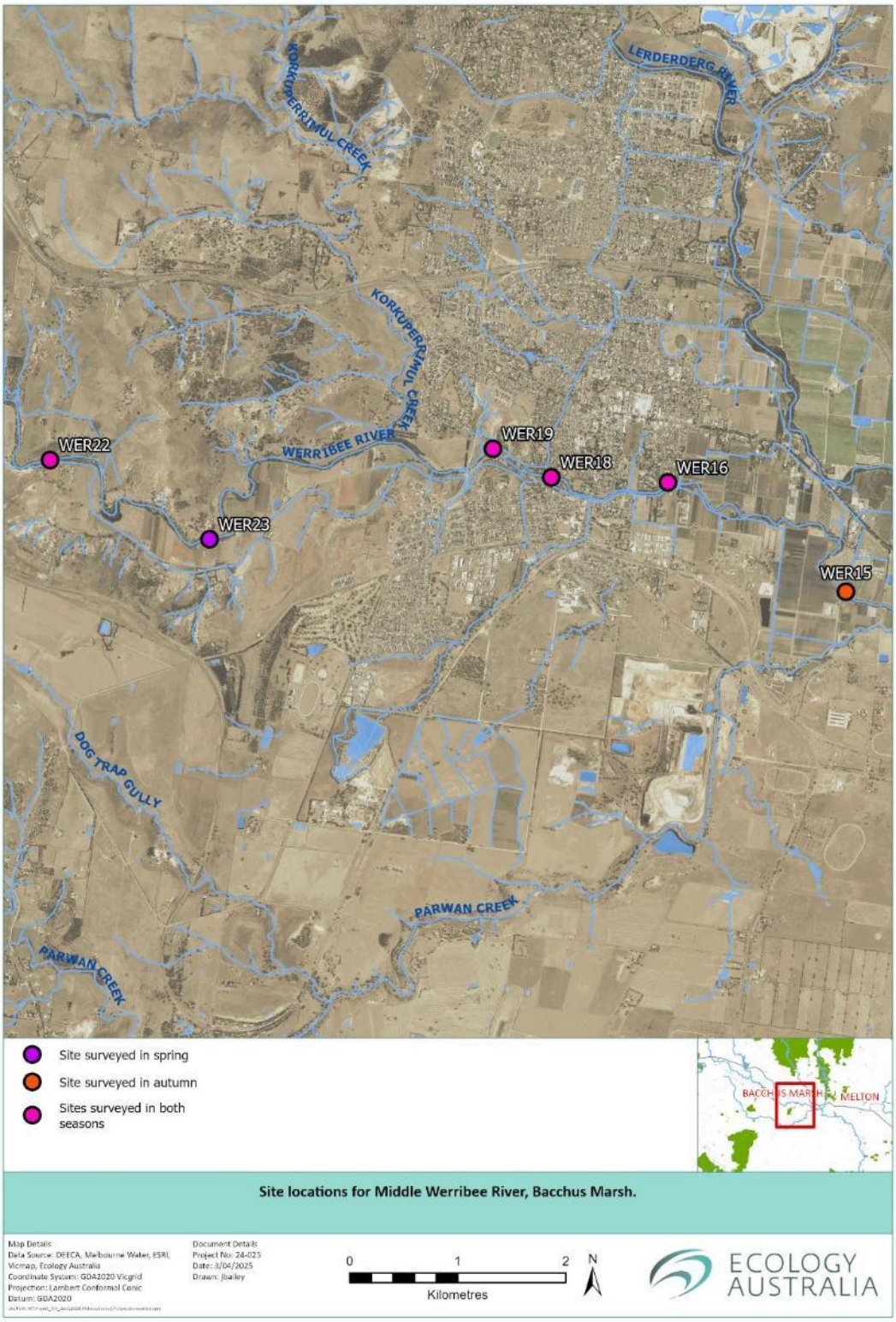

Figure 10 Site locations for middle Werribee River, Bacchus Marsh.

A total of 10 trap nights were conducted at Werribee River at Bacchus Marsh resulting in the capture of six new individual platypuses during spring 2024 (Table 7), including two adult females and four adult males. Despite no captures being recorded during autumn, the spring result was the highest CPUE recorded for Bacchus Marsh since surveying records began in 2008 (Figure 11). Surveys conducted by Ecology Australia and Australian Platypus Conservancy on behalf of Bacchus Marsh Platypus Alliance on 19 January and 3 February 2022 resulted respectively in captures of 1 adult male and 1 adult/subadult female, and 1 different adult male and 1 subadult male; CPUE on both occasions = 0.40 (Serena *et al.* 2022).

Table 7 Summary of 2024 survey results for middle Werribee River, Bacchus Marsh.

Total platypus captures	Adults/subadults	Juveniles	% Juveniles
No. platypus	**6**	**0**	**0**
CPUE including juveniles	No. platypus	Trap nights	CPUE
Autumn	0	5	0.00
Spring	6	5	1.20
Total	**6**	**10**	**0.60**
CPUE excluding juveniles	No. platypus	Trap nights	CPUE
Autumn	0	5	0.00
Spring	6	5	1.20
Total	**6**	**10**	**0.60**

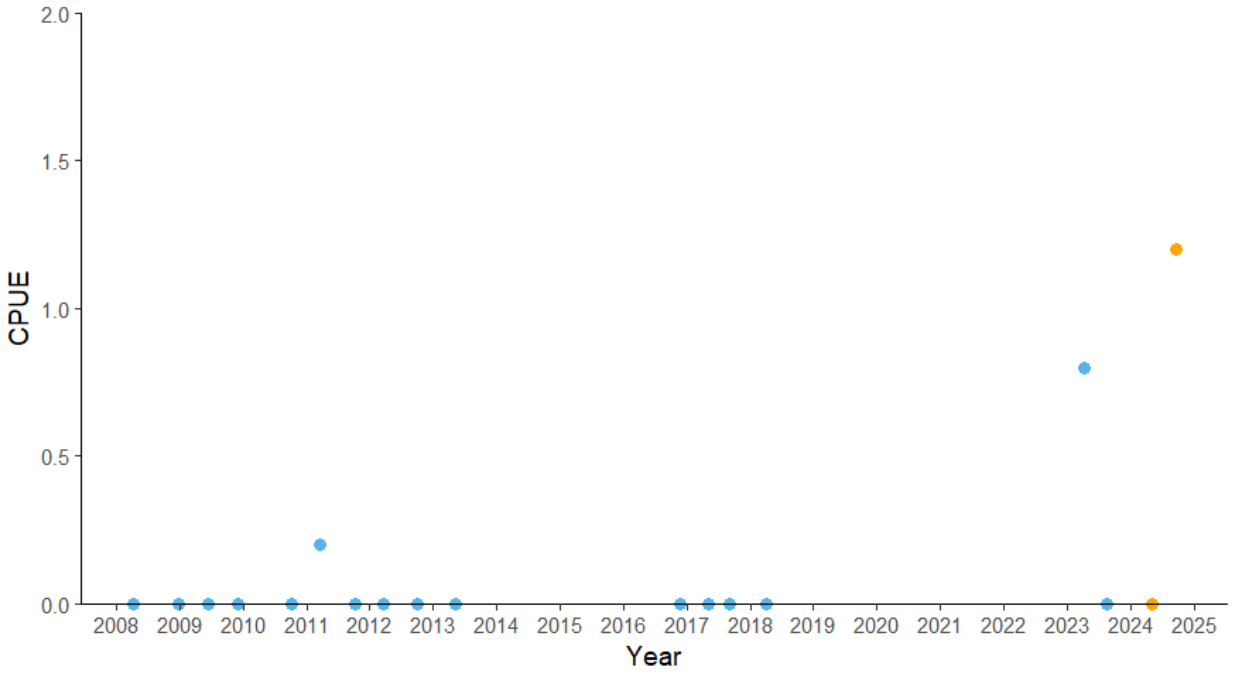

Figure 11 Historical and current platypus CPUE (including juveniles) for middle Werribee River, Bacchus Marsh. Current (2024) surveys are in orange.

No litter entanglements or other health-related issues were detected at Bacchus Marsh.

Three other aquatic species were recorded as bycatch during the surveys: redfin (3), brown trout (1) and short-finned eel (5).

Refer to section 6.1.4 for discussion and recommendations on the Bacchus Marsh platypus population.

4.4 Westernport catchment

4.4.1 Athlone

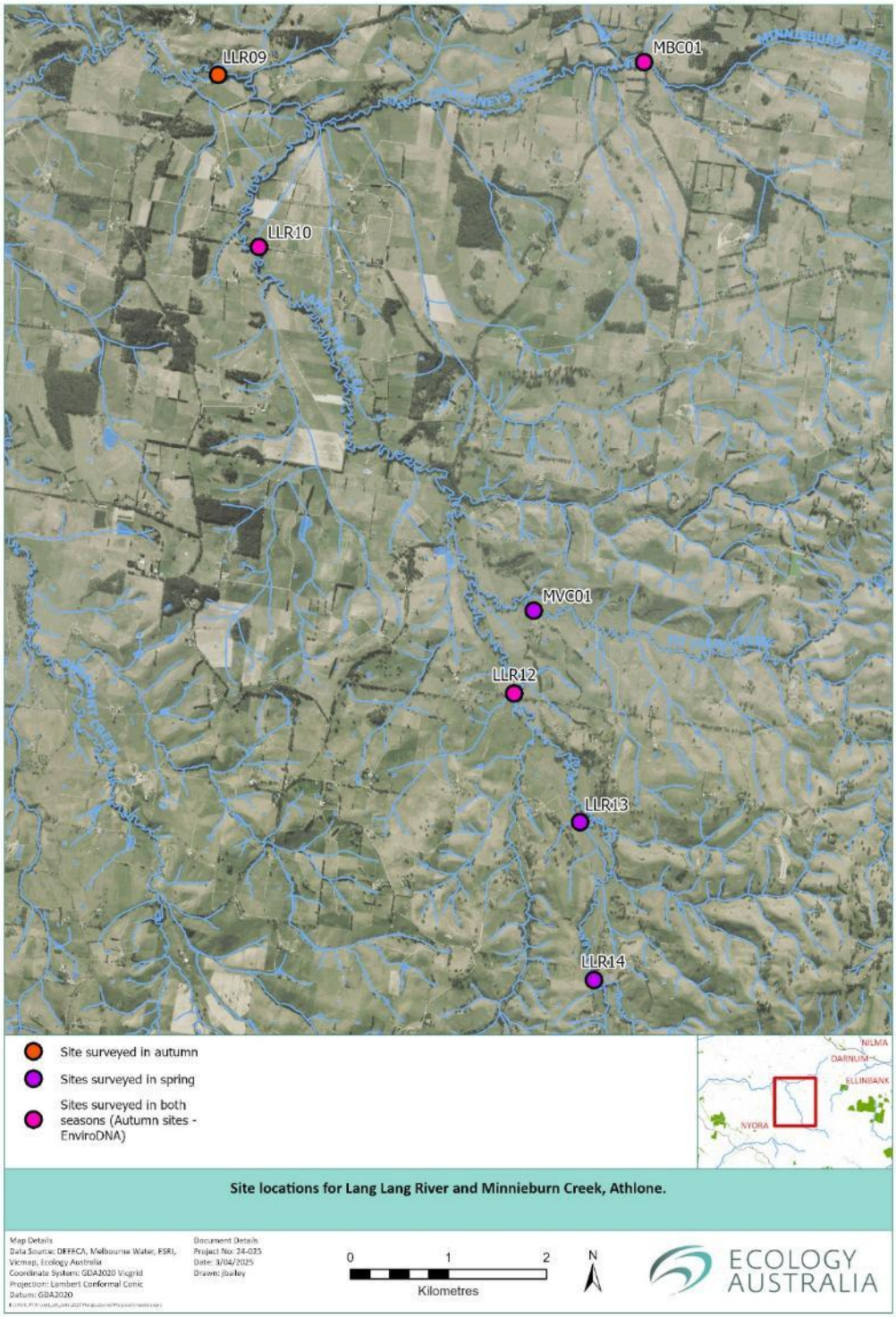

Figure 12 Site locations for Lang Lang River and Minnieburn Creek, Athlone.

A total of 10 trap nights were conducted at Lang Lang River and Minnieburn Creek in 2024: four in autumn completed by EnviroDNA (survey sites limited by dry conditions in the upper reaches) and six completed in spring by Ecology Australia. These surveys resulted in two individual platypus captures from Minnieburn Creek (Figure 12), an adult male recapture from 2023 in autumn and a new adult male in spring (Table 8).

Table 8 Summary of 2024 survey results for Lang Lang River and Minnieburn Creek, Athlone.

Total platypus captures	Adults/subadults	Juveniles	% Juveniles
No. platypus	**2**	**0**	**0**
CPUE including juveniles	No. platypus	Trap nights	CPUE
Autumn	1	4	0.25
Spring	1	6	0.17
Total	**2**	**10**	**0.20**
CPUE excluding juveniles	No. platypus	Trap nights	CPUE
Autumn	1	4	0.25
Spring	1	6	0.17
Total	**2**	**10**	**0.20**

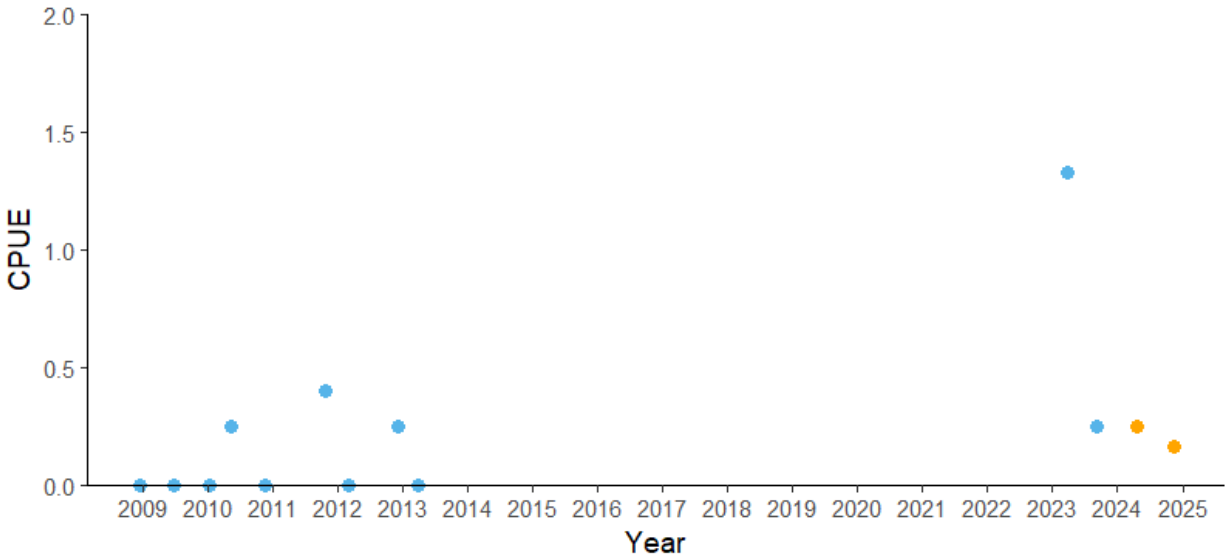

Figure 13 Historical and current CPUE (including juveniles) data available for Lang Lang River and Minnieburn Creek, Athlone. Current (2024) surveys are in orange.

Five other aquatic species were recorded as bycatch during the surveys: short-finned eel (20), pygmy perch (1), crayfish (2), goldfish (1) and climbing galaxias (8).

No litter entanglements or other platypus health related issues were observed.

Refer to section 6.1.5 for discussion and recommendations on the Athlone platypus population.

4.4.2 Bunyip

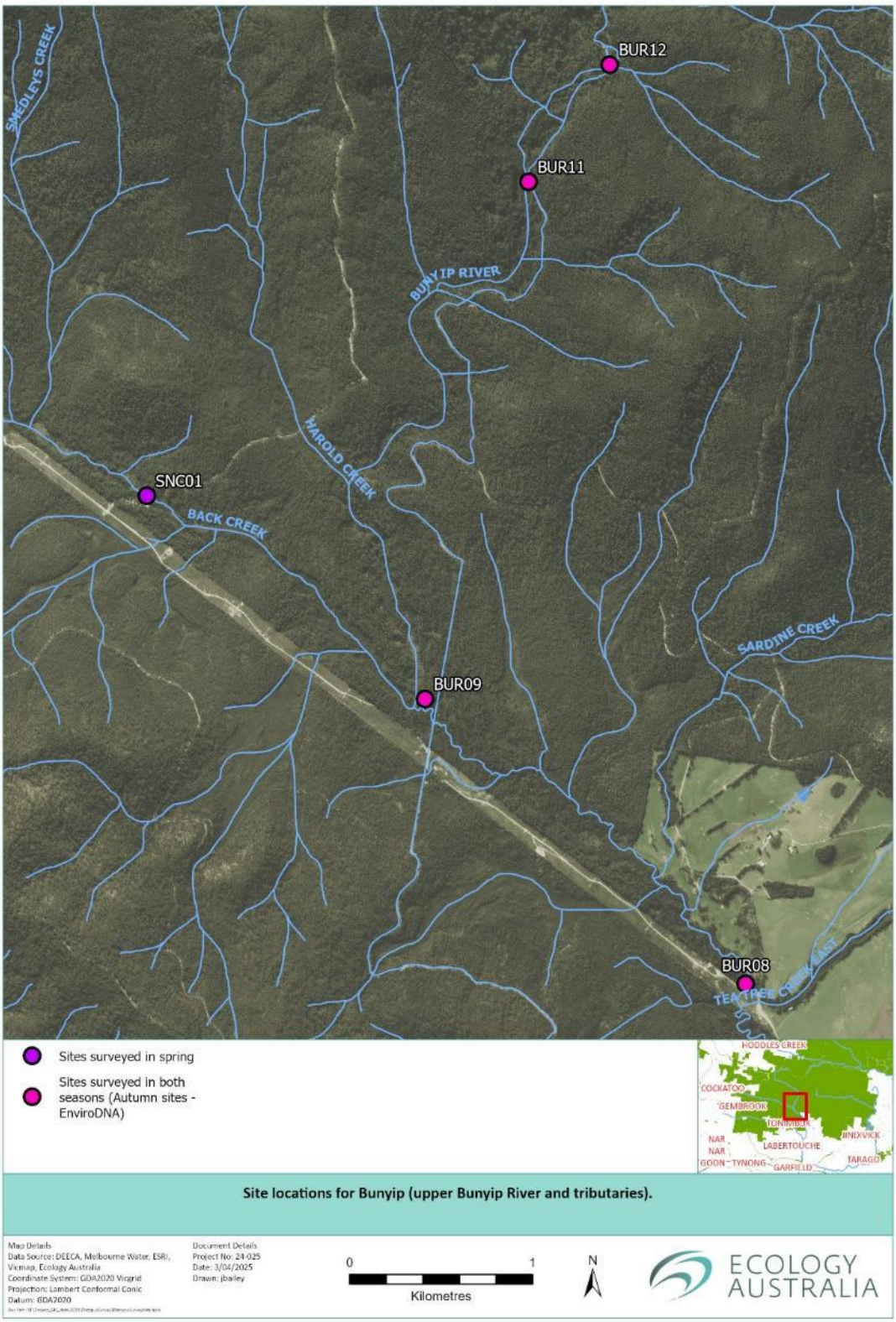

Figure 14 Site locations for Bunyip (upper river and tributaries).

A total of nine trap nights were conducted at Bunyip River and tributaries in 2024, four in autumn conducted by EnviroDNA and five conducted in spring by Ecology Australia. Seven new individual platypuses were captured, two in autumn and five in spring (Table 9). The autumn captures were both adult males and the spring captures consisted of two adult females and three adult males. CPUE results for 2024 were comparable with the highest CPUE for this location in spring 2013 and autumn 2014 (Figure 15), which were also undertaken by Ecology Australia.

Table 9 Summary of 2024 survey results for Bunyip River and tributaries.

Total platypus captures	Adults/subadults	Juveniles	% Juveniles
No. platypus	**7**	**0**	**0**
CPUE including juveniles	No. platypus	Trap nights	CPUE
Autumn	2	4	0.50
Spring	5	5	1.00
Total	**7**	**9**	**0.78**
CPUE excluding juveniles	No. platypus	Trap nights	CPUE
Autumn	2	4	0.50
Spring	5	5	1.00
Total	**7**	**9**	**0.78**

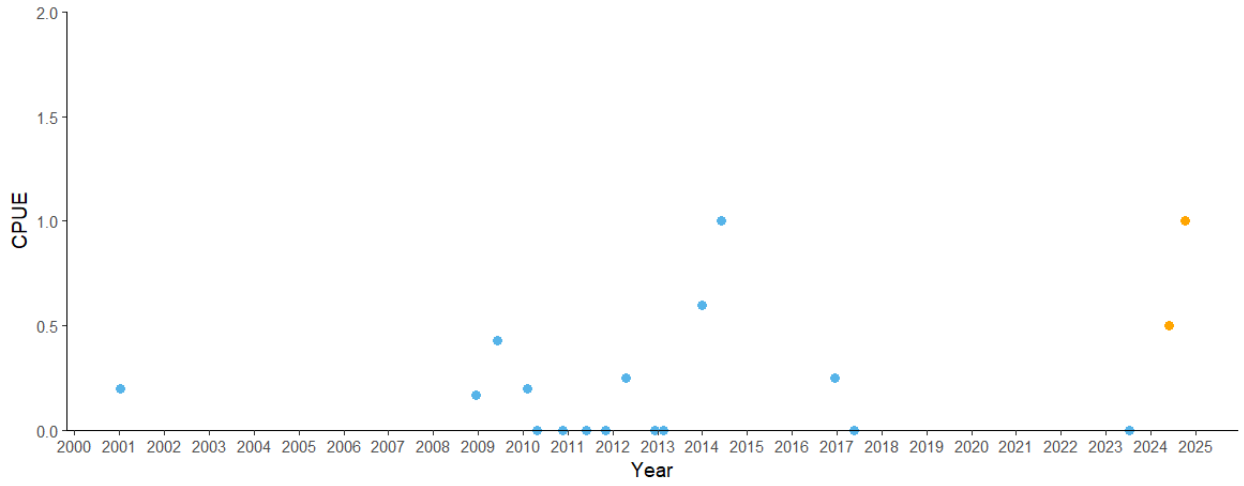

Figure 15 Historical and current CPUE (including juveniles) data available for Bunyip River and tributaries. Current (2024) surveys are in orange. Note that surveys in spring 2013 and autumn 2014 were undertaken by Ecology Australia.

No litter entanglements or other platypus health related issues were observed at Bunyip River.

Four other aquatic species were recorded as bycatch during surveys: river blackfish (4), Australian grayling (1), brown trout (4) and short-finned eel (2).

Refer to section 6.1.6 for discussion and recommendations on the Bunyip River platypus population.

4.4.3 Cardinia

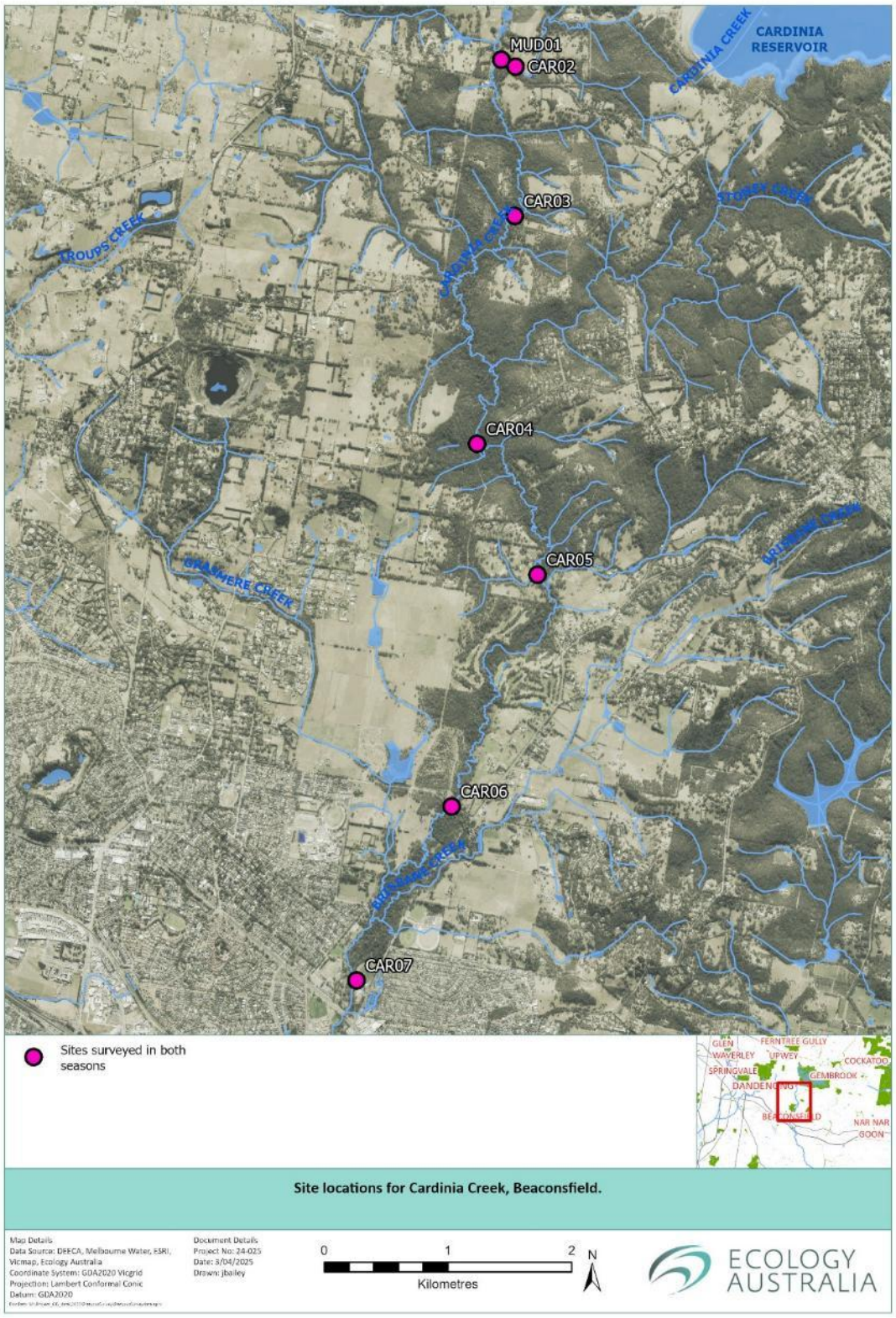

Figure 16 Site locations for Cardinia Creek, Beaconsfield.

A total of 14 trap nights were conducted at Cardina Creek, resulting in the capture of one adult male in spring (Table 10), who was first captured in spring 2023.

Table 10 Summary of 2024 survey results for Cardinia Creek, Beaconsfield.

Total platypus captures	Adults/subadults	Juveniles	% Juveniles
No. platypus	**1**	**0**	**0**
CPUE including juveniles	No. platypus	Trap nights	CPUE
Autumn	0	7	0.00
Spring	1	7	0.14
Total	**1**	**14**	**0.07**
CPUE excluding juveniles	No. platypus	Trap nights	CPUE
Autumn	0	7	0.00
Spring	1	7	0.14
Total	**1**	**14**	**0.07**

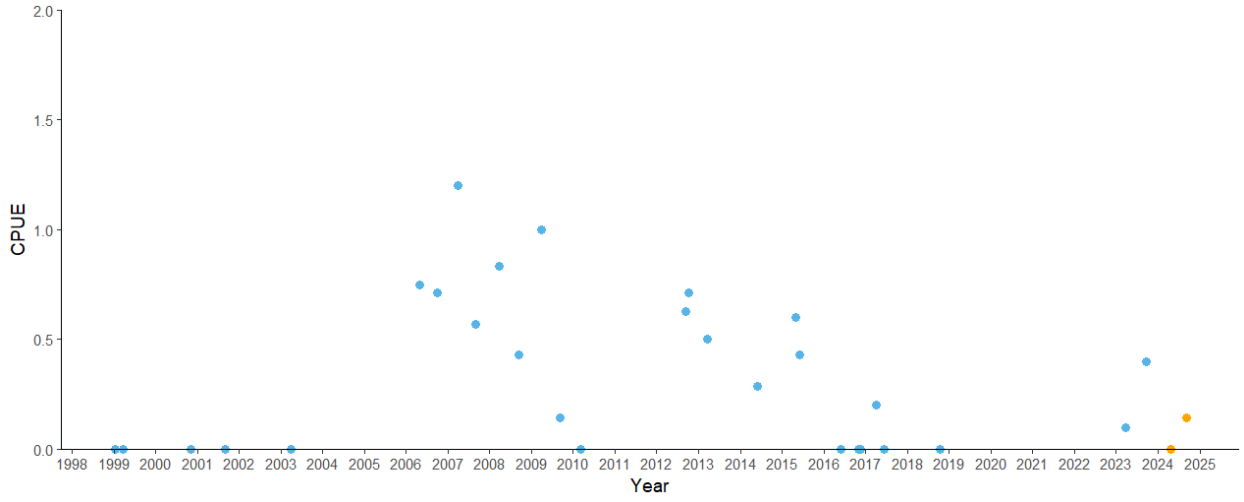

Figure 17 Historical and current CPUE (including juveniles) data available for Cardinia Creek, Beaconsfield. Current (2024) surveys are in orange.

No litter entanglements or other platypus health related issues were identified at Cardinia Creek.

Four other aquatic species were recorded as bycatch: river blackfish (4), tupong (4), crayfish (7) and short-finned eel (2).

Refer to section 6.1.7 for discussion and recommendations on the Cardinia platypus population.

4.4.4 Labertouche

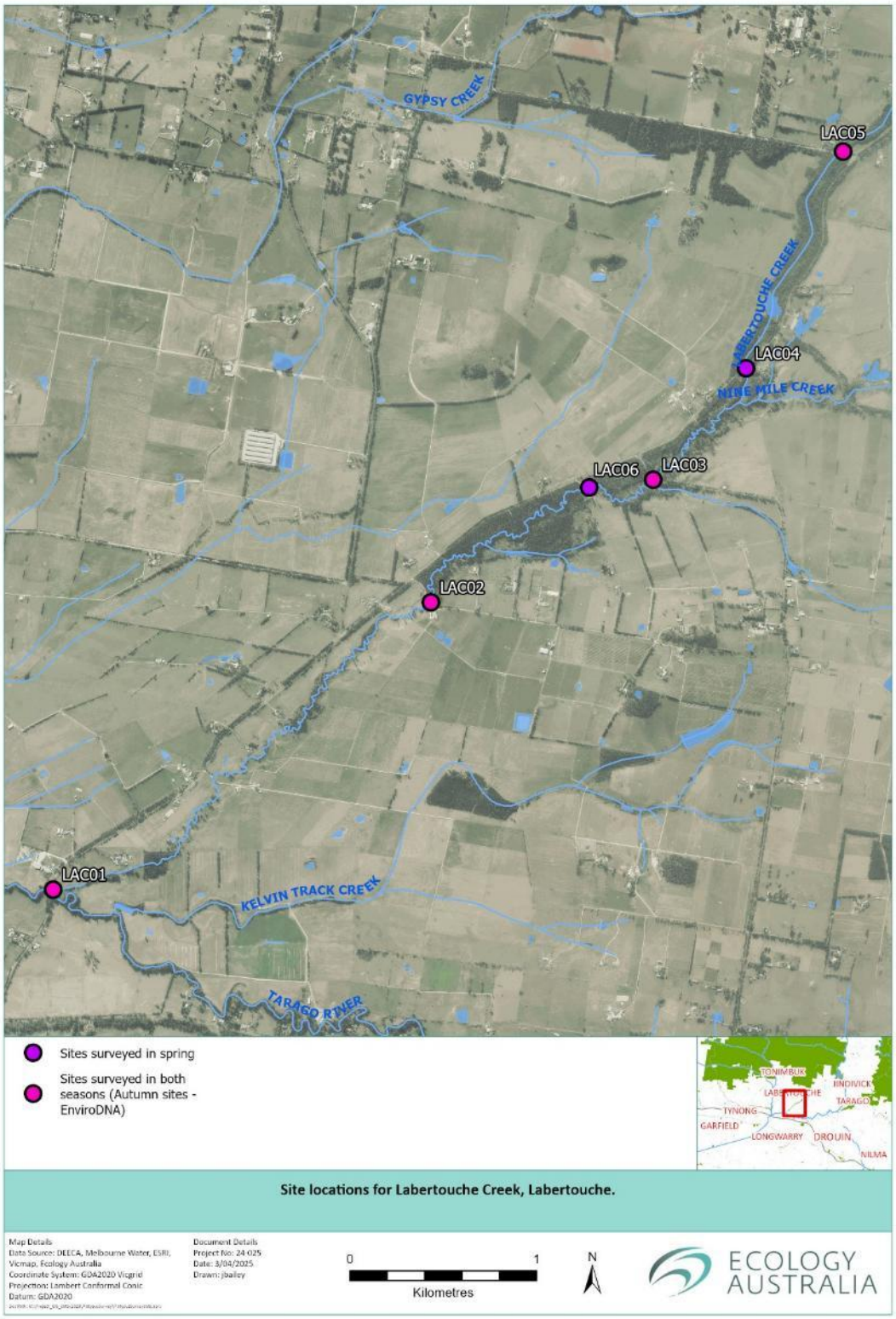

Figure 18 Site locations for Labertouche Creek, Labertouche.

Ten trap nights were conducted at Labertouche River: four in autumn by EnviroDNA and six in spring by Ecology Australia (Table 11). Ten individual platypuses were captured: seven adults/subadults (two recaptures) and three juvenile females (Table 11).

Table 11 Summary of 2024 survey results (including juveniles) for Labertouche Creek, Labertouche.

Total platypus captures	Adults/subadults	Juveniles	% Juveniles
No. platypus	**7**	**3**	**42**
CPUE including juveniles	No. platypus	Trap nights	CPUE
Autumn	3	4	0.75
Spring	7	6	1.17
Total	**10**	**10**	**1.00**
CPUE excluding juveniles	No. platypus	Trap nights	CPUE
Autumn	1	4	0.20
Spring	6	6	1.00
Total	**7**	**10**	**0.70**

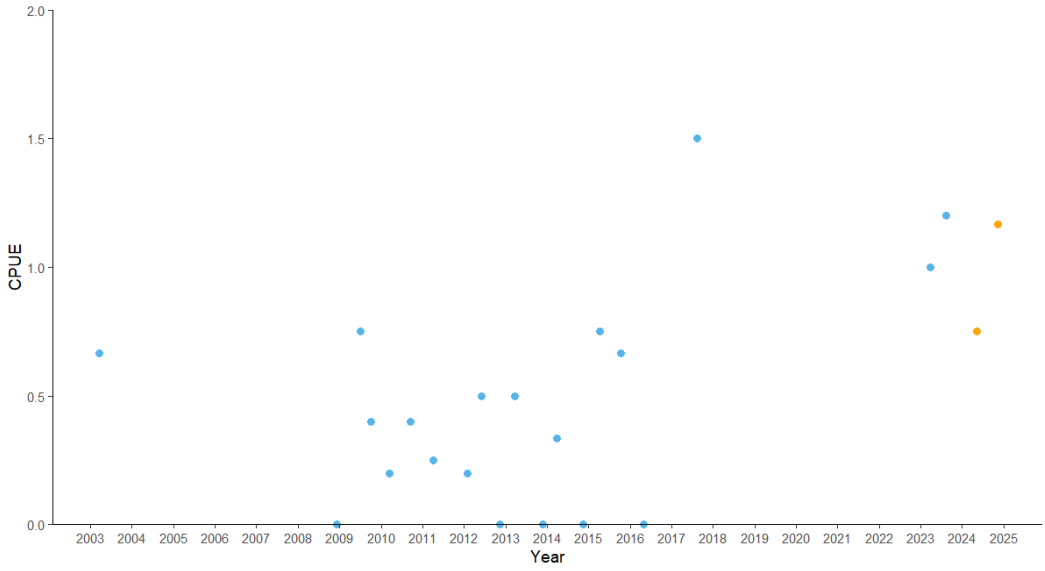

Figure 19 Historical and current CPUE (including juveniles) data available for Labertouche Creek, Labertouche. Current (2024) surveys are in orange.

No litter entanglements or other platypus health-related issues were detected.

Seven other aquatic species were caught as bycatch: short-finned eel (15), river blackfish (1), tupong (3), duck (1), redfin (4), crayfish (46) and brown trout (1).

Refer to section 6.1.8 for discussion and recommendations on the Labertouche platypus population.

4.4.5 Lower Tarago

Figure 20 Site locations for Tarago River, Lower Tarago.

A total of 11 trap nights were conducted at the lower Tarago River, five in autumn by EnviroDNA and six in spring by Ecology Australia (Table 12). A total of nine new platypuses were captured, three males and six females (Table 12). CPUE for 2024 was comparable with that recorded in the decade prior (Figure 21).

Table 12 Summary of 2024 survey results for Tarago River, Lower Tarago.

Total platypus captures	Adults/subadults	Juveniles	% Juveniles
No. platypus	**9**	**0**	**0**
CPUE including juveniles	No. platypus	Trap nights	CPUE
Autumn	4	5	0.80
Spring	5	6	0.83
Total	**9**	**11**	**0.82**
CPUE excluding juveniles	No. platypus	Trap nights	CPUE
Autumn	4	5	0.80
Spring	5	6	0.83
Total	**9**	**11**	**0.82**

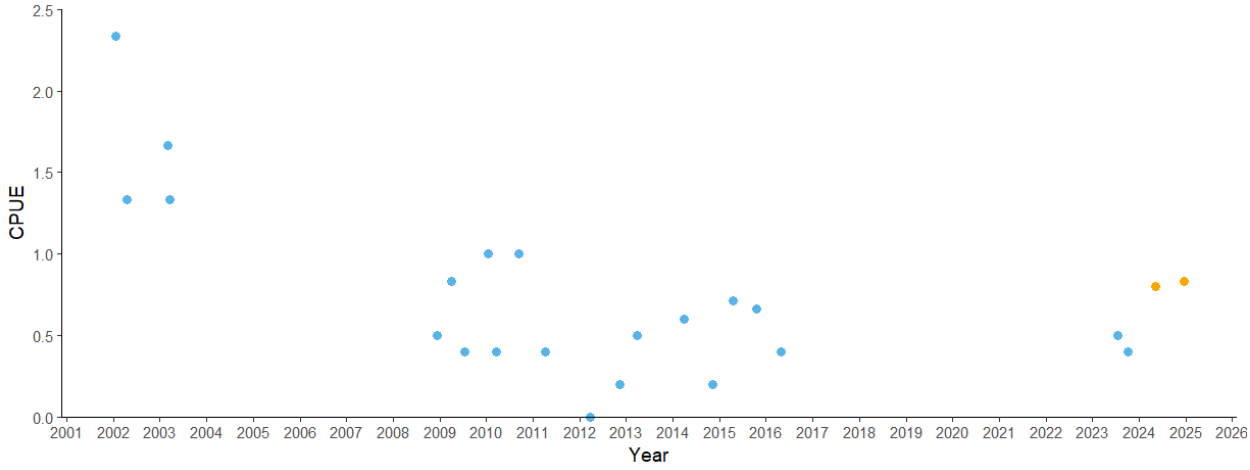

Figure 21 Historical and current CPUE (including juveniles) data available for Tarago River, Lower Tarago. Current (2024) surveys are in orange.

No litter entanglements were detected. One adult female had a small injury on the back right claw in spring.

Six other aquatic species were caught as bycatch: river blackfish (2), tupong (1), Australian grayling (6), brown trout (11), short-finned eel (10) and crayfish (3).

Refer to section 6.1.9 for discussion and recommendations on the lower Tarago River platypus population.

4.4.6 Upper Tarago

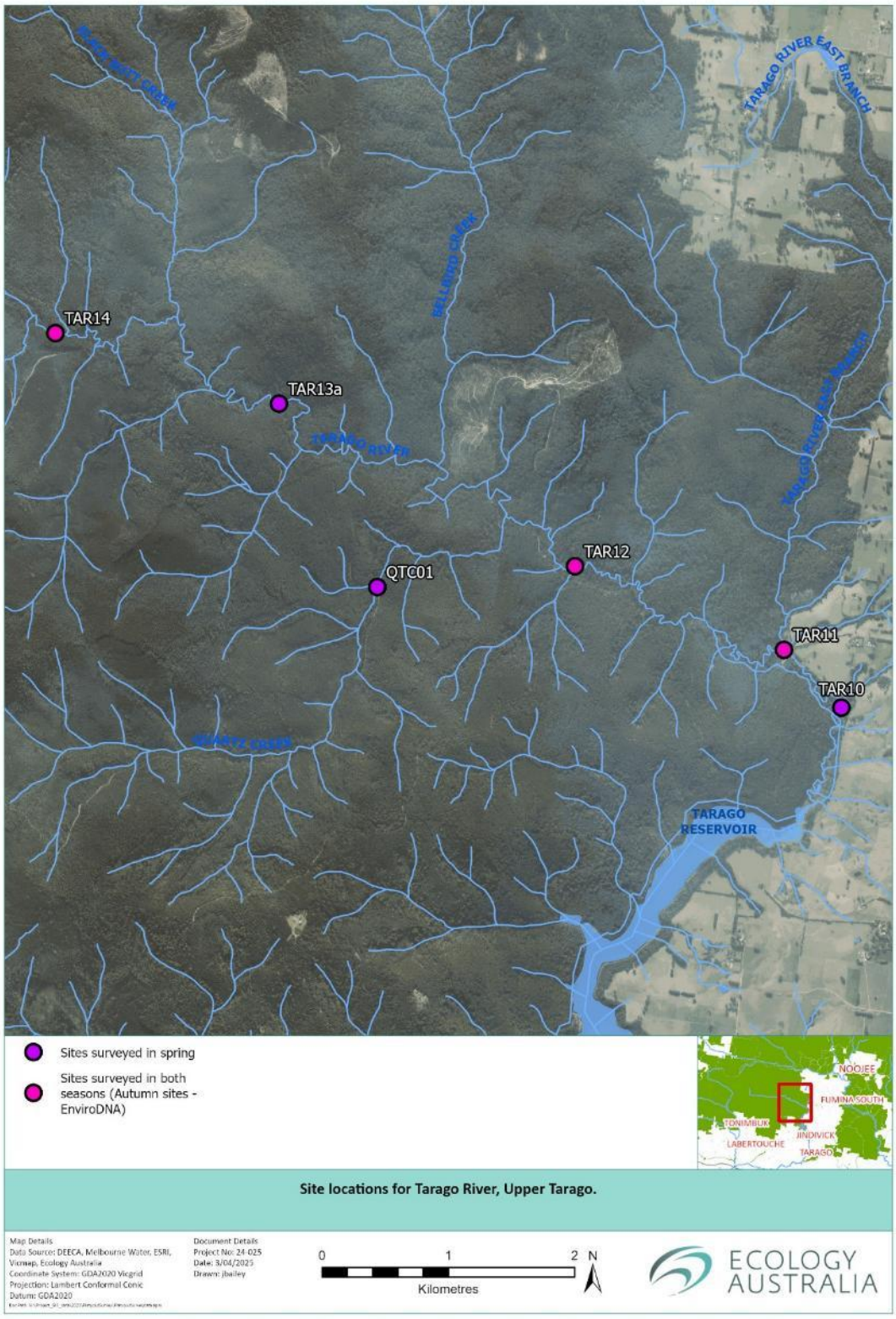

Figure 22 Site locations for Tarago River and Quartz Creek, Upper Tarago.

Nine trap nights were conducted at the upper Tarago River and Quartz Creek in 2024, three in autumn by EnviroDNA and six in spring by Ecology Australia (Table 13). Two platypuses were captured (Table 13), including a female last captured in 2018 and a new adult female.

One platypus was captured during both the autumn and spring 2024 surveys, but CPUE was higher in autumn than spring due to the lower number of trap nights in autumn (Figure 23).

Table 13 Summary of 2024 survey results for Tarago River and Quartz Creek, Upper Tarago.

Total platypus captures	Adults/subadults	Juveniles	% Juveniles
No. platypus	**2**	**0**	**0**
CPUE including juveniles	No. platypus	Trap nights	CPUE
Autumn	1	3	0.33
Spring	1	6	0.17
Total	**2**	**9**	**0.22**
CPUE excluding juveniles	No. platypus	Trap nights	CPUE
Autumn	1	3	0.33
Spring	1	6	0.17
Total	**2**	**9**	**0.22**

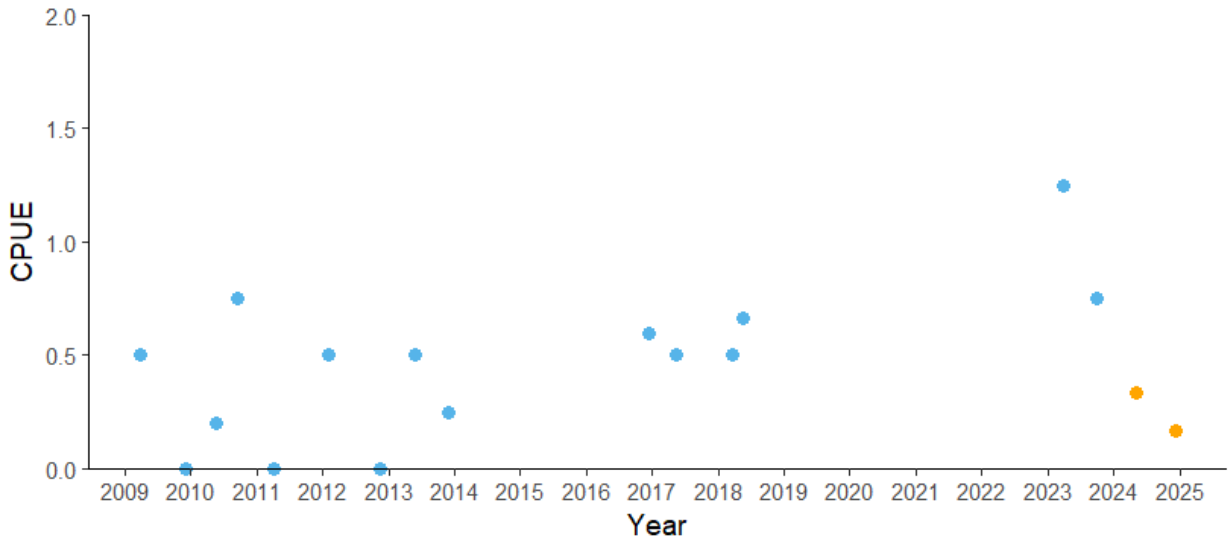

Figure 23 Historical and current CPUE (including juveniles) data available for Upper Tarago. Current (2024) surveys are in orange.

No litter entanglements or platypus health related issues were detected during surveys.

Six other aquatic species were caught as bycatch: river blackfish (17), rainbow trout (2), brown trout (9), short-finned eel (2), crayfish (7) and climbing galaxias (6).

Refer to section 6.1.10 for discussion and recommendations on the Upper Tarago platypus population.

4.5 Yarra catchment

4.5.1 Eltham

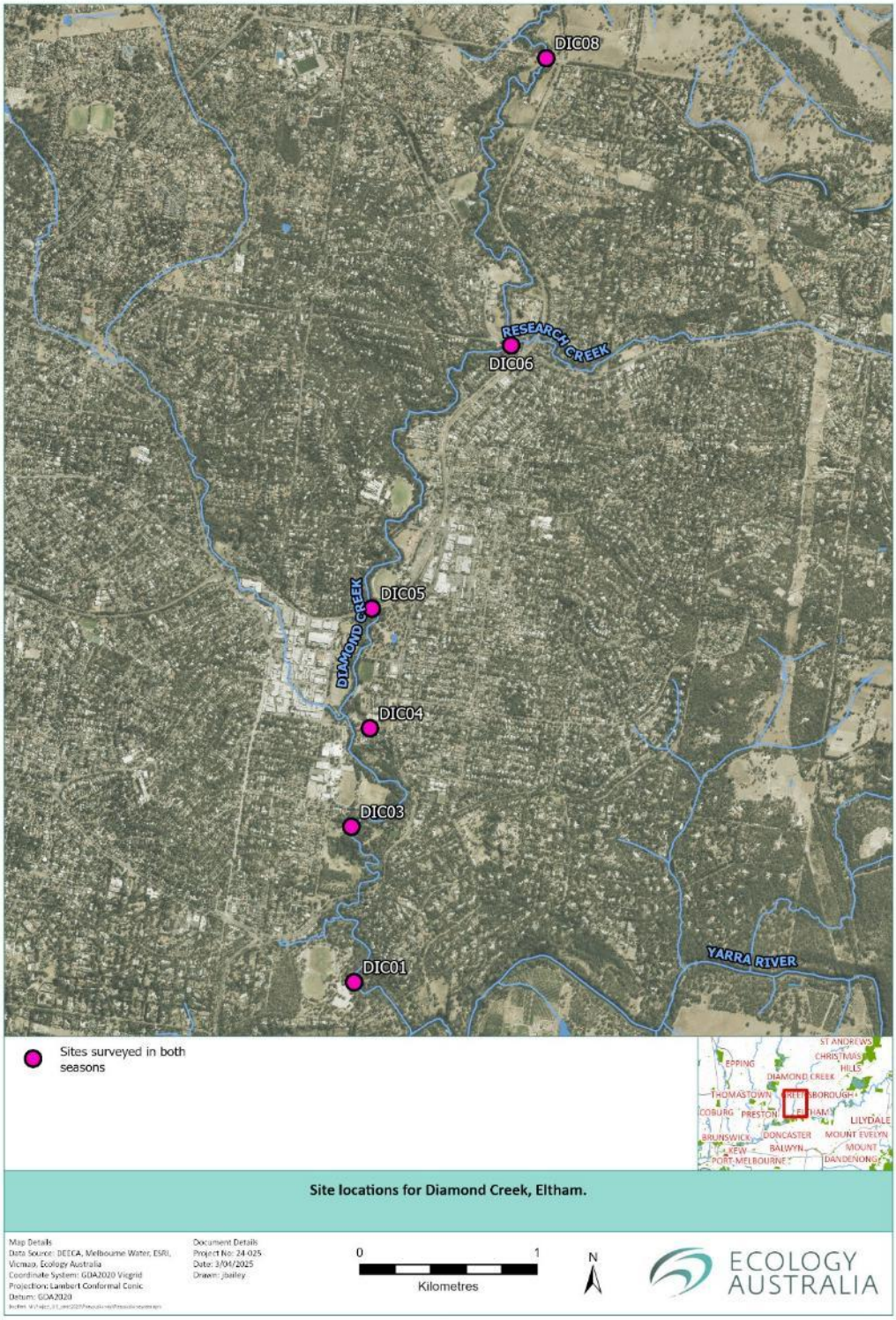

Figure 24 Site locations for Diamond Creek, Eltham.

A total of 12 trap nights were conducted at Diamond Creek resulting in the capture of seven individual platypuses during 2024 (Table 14). This included one juvenile female in autumn, and two adult females and four adult males in spring. One adult male had previously been captured in autumn of 2023, and one adult female was last captured in spring 2023, with the other adults being new captures.

CPUE for autumn (0.17) and spring 2024 (0.58) were both within the historical range for Eltham (Figure 25).

Table 14 Summary of 2024 survey results for Diamond Creek, Eltham.

Total platypus captures	Adults/subadults	Juveniles	% Juveniles
No. platypus	**7**	**1**	**0.14**
CPUE including juveniles	No. platypus	Trap nights	CPUE
Autumn	1	6	0.17
Spring	6	6	1.00
Total	**7**	**12**	**0.58**
CPUE excluding juveniles	No. platypus	Trap nights	CPUE
Autumn	0	6	0.00
Spring	6	6	1.00
Total	**6**	**12**	**0.50**

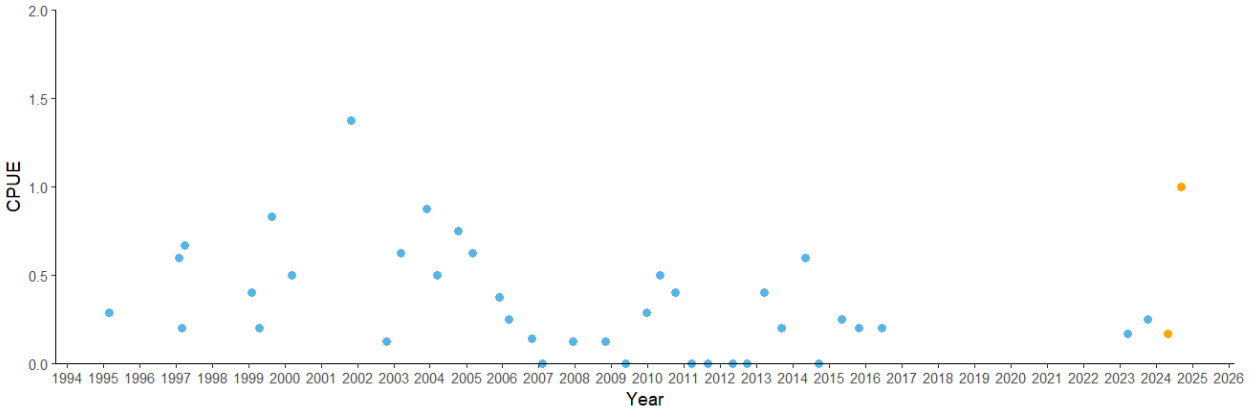

Figure 25 Historical and current CPUE (including juveniles) data available for Diamond Creek, Eltham. Current (2024) surveys are in orange.

One adult female captured in spring had an opaque white ring measuring approximately 200 mm long (when cut) entangled around the upper body. No other litter entanglements or platypus health related concerns were recorded. Diamond Creek has historically been associated with a high frequency of platypus litter entanglement (Serena *et al.* 1998), and abundant rubbish was observed in the waterway while conducting surveys.

Five other aquatic species were recorded as bycatch: river blackfish (4), short-finned eel (4), redfin (1), carp (1) and trout (1).

Refer to section **Error! Reference source not found.** for discussion and recommendations on the Eltham platypus population.

4.5.2 McMahons

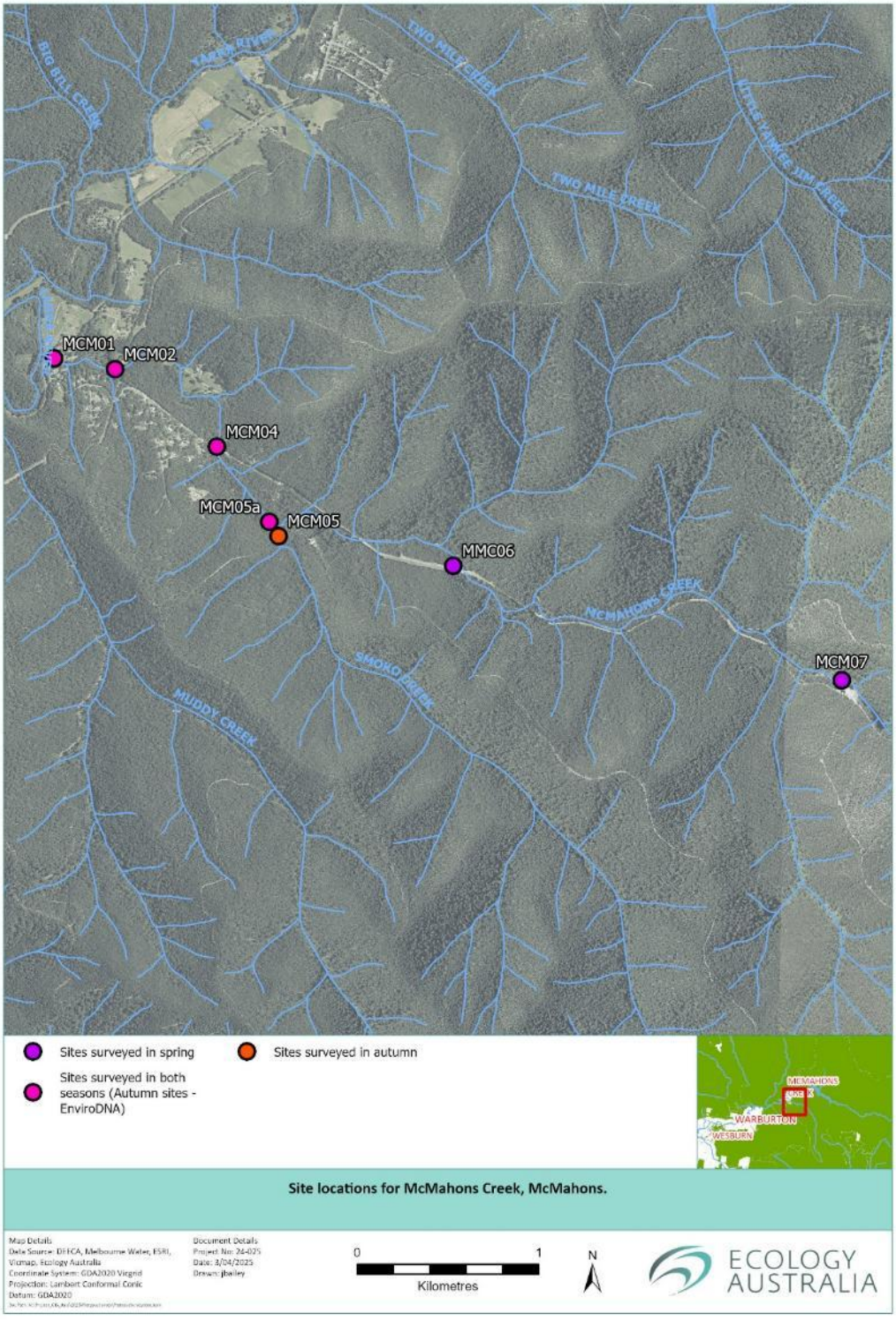

Figure 26 Site locations for McMahons Creek, McMahons.

Eleven trap nights were completed at McMahons Creek in 2024, five in autumn by EnviroDNA and six in spring by Ecology Australia (Table 15). Five individual platypuses were captured, including two new captures. CPUE for 2024 is comparable with the historical record (Figure 27).

Table 15 Summary of 2024 survey results for McMahons Creek, McMahons.

Total platypus captures	Adults/subadults	Juveniles	% Juveniles
No. platypus	**4**	**0**	**0**
CPUE including juveniles	No. platypus	Trap nights	CPUE
Autumn	1	5	0.20
Spring	4	6	0.67
Total	**5**	**11**	**0.45**
CPUE excluding juveniles	No. platypus	Trap nights	CPUE
Autumn	1	5	0.20
Spring	4	6	0.67
Total	**5**	**11**	**0.45**

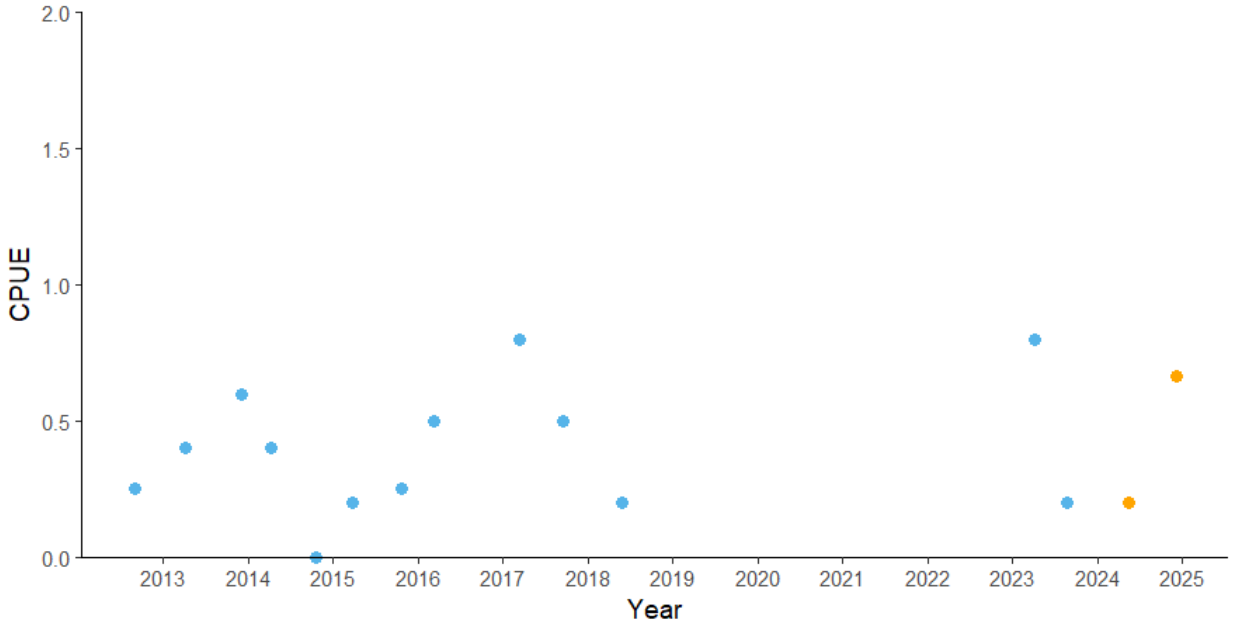

Figure 27 Historical and current CPUE (including juveniles) data available for McMahons Creek, McMahons. Current (2024) surveys are in orange.

No litter entanglements or platypus health related issues were detected.

Four other aquatic species were recorded as bycatch: river blackfish (10), brown trout (1), crayfish (2) and short-finned eel (1).

Refer to section 6.1.12 for discussion and recommendations on the McMahons Creek platypus population.

4.5.3 Mullum Mullum

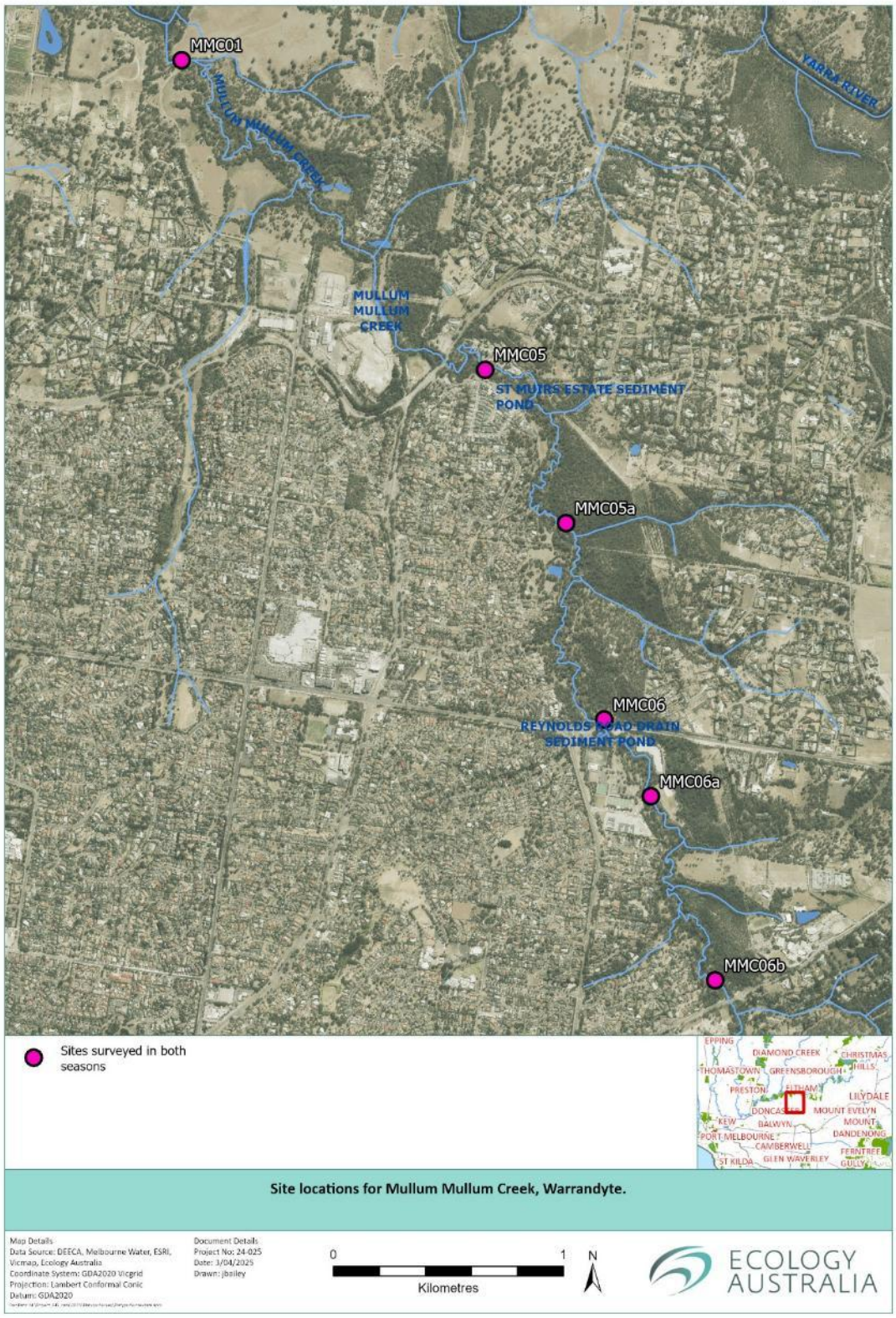

Figure 28 Site locations for Mullum Mullum Creek, Warrandyte.

A total of 12 trap nights were conducted at Mullum Mullum Creek resulting in the capture of 11 platypuses during 2024 (Table 16). One adult male, one adult female and a juvenile female were captured in autumn. Two adult males, five adult females and one juvenile male were caught in spring. Five of the platypuses had previously been marked, including two females recorded in both autumn and spring 2024. CPUE results for 2024 fall within the historical range of results for this location (Figure 29).

Table 16 Summary of 2024 survey results for Mullum Mullum Creek, Warrandyte.

Total platypus captures	Adults/subadults	Juveniles	% Juveniles
No. platypus	**9**	**2**	**22.22**
CPUE including juveniles	No. platypus	Trap nights	CPUE
Autumn	3	6	0.50
Spring	8	6	1.33
Total	**11**	**12**	**0.92**
CPUE excluding juveniles	No. platypus	Trap nights	CPUE
Autumn	2	6	0.33
Spring	7	6	1.17
Total	**9**	**12**	**0.75**

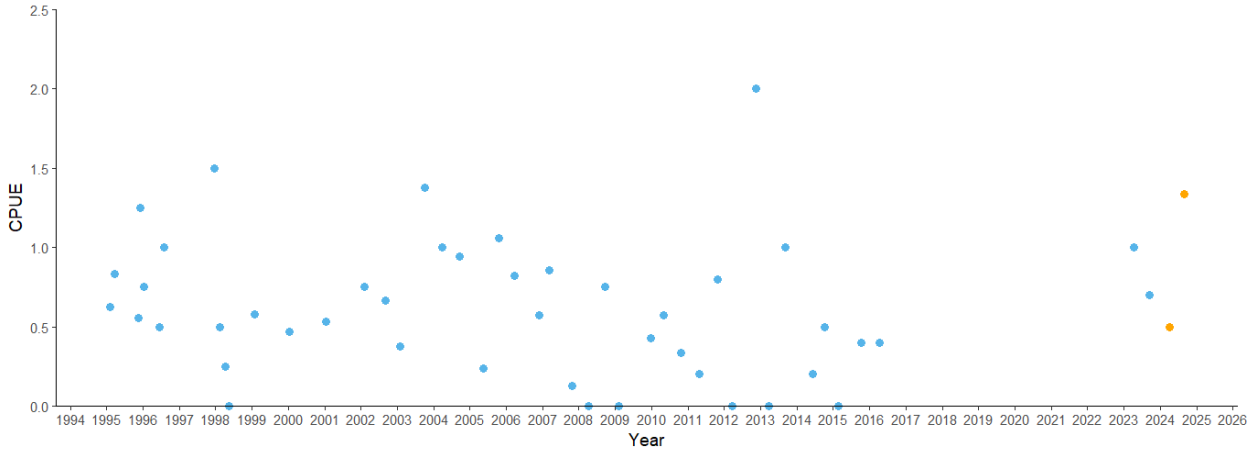

Figure 29 Historical and current CPUE (including juveniles) data available for Mullum Mullum Creek, Warrandyte. Current (2024) surveys are in orange.

No litter entanglements were observed. One adult female took over two hours to dry (possibly a sign of pre-existing stress or ill health: Booth and Connolly 2008); it was confirmed that her fur was capable of drying before she was returned to the water.

Three other aquatic species were recorded as bycatch: weather loach (3), short-finned eel (7) and redfin (2).

Refer to section 6.1.13 for discussion and recommendations on the Mullum Mullum Creek platypus population.

4.5.4 Lilydale

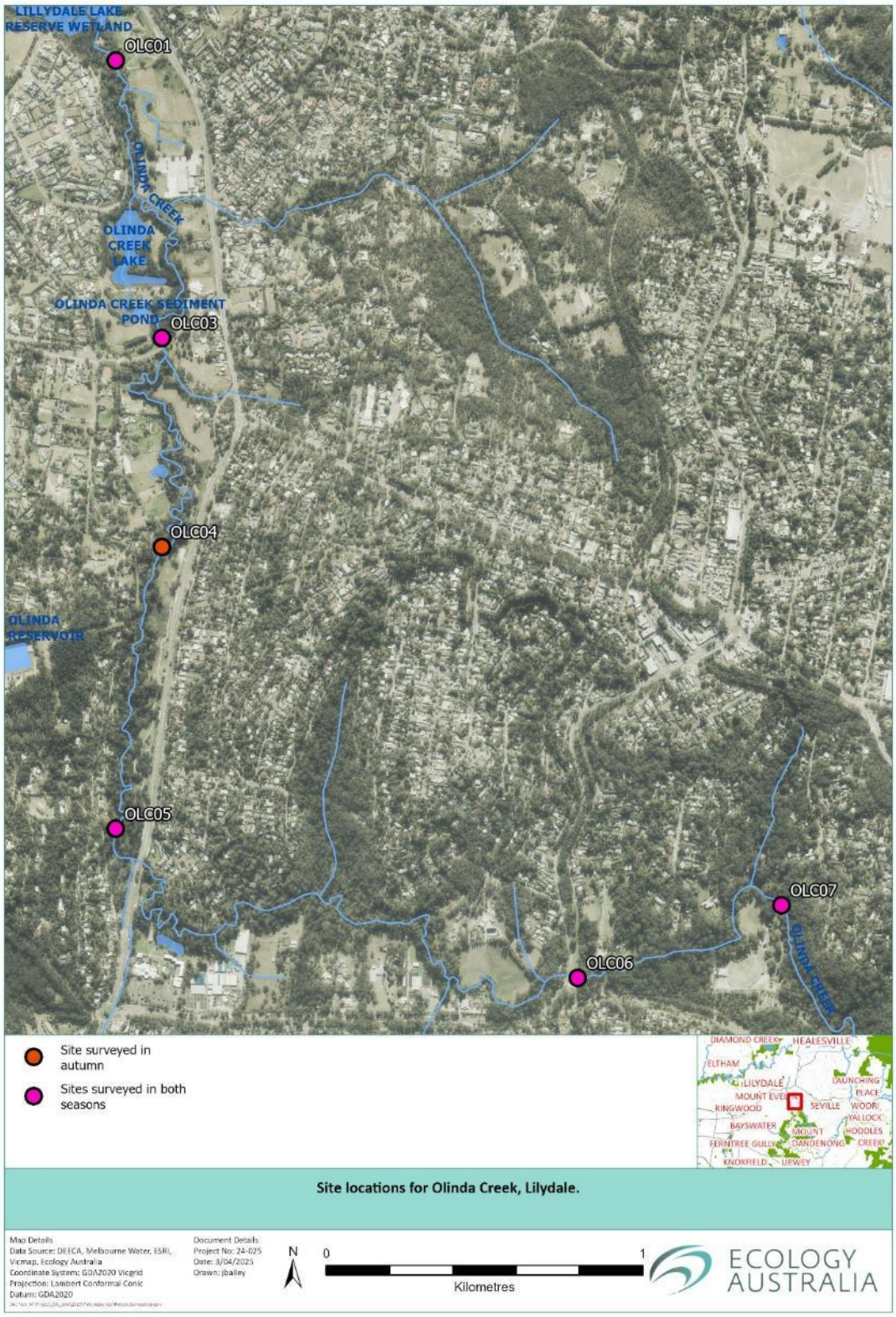

Figure 30 Site locations for Olinda Creek, Lilydale.

A total of 11 trap nights were conducted at Olinda Creek in 2024 resulting in 15 captured individuals (Table 17). Only five sites were surveyed in spring 2024 due to site OLC04 being too deep to set fyke nets properly (Figure 30). One adult female, two adult males and one juvenile female were recorded in autumn, with nine adult males, one adult female and one juvenile male recorded in spring. All individuals caught in autumn were previously unmarked. An adult male and adult female caught in spring were recaptures.

CPUE for autumn 2024 (0.67) is comparable to historical results, while CPUE recorded for spring 2024 (1.36) is the highest on record (Figure 31).

Table 17 Summary of 2024 survey results for Olinda Creek, Lilydale.

Total platypus captures	Adults/subadults	Juveniles	% Juveniles
No. platypus	**13**	**2**	**15.38**
CPUE including juveniles	No. platypus	Trap nights	CPUE
Autumn	4	6	0.67
Spring	11	5	2.20
Total	**15**	**11**	**1.36**
CPUE excluding juveniles	No. platypus	Trap nights	CPUE
Autumn	3	6	0.50
Spring	10	5	2.00
Total	**13**	**11**	**1.18**

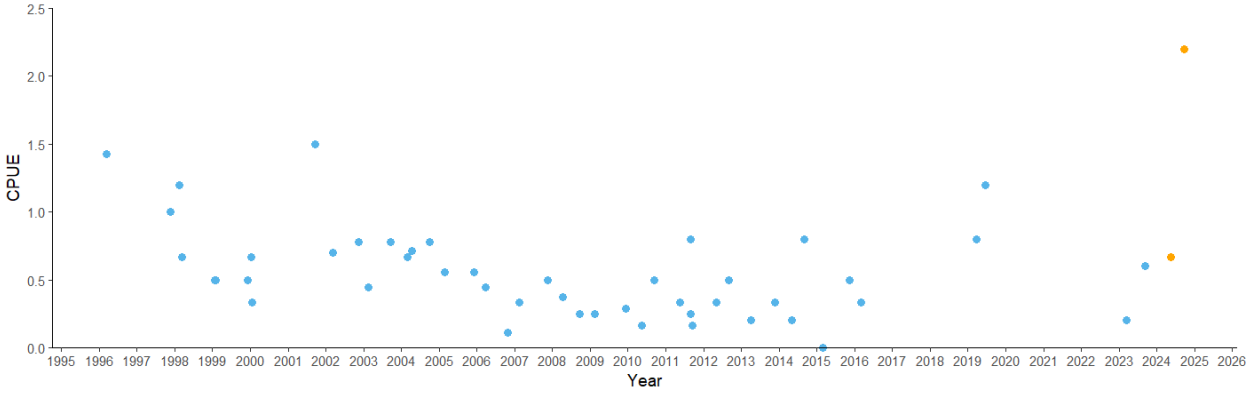

Figure 31 Historical and current CPUE (including juveniles) data available for Olinda Creek, Lilydale. Current (2024) surveys are in orange.

No litter entanglements were detected. One adult male had slight bleeding around the collar of one spur.

Eight other aquatic species were recorded as bycatch: short-finned eel (2), redfin (3), brown trout (1), black duck (1), crayfish (2), roach (1), river blackfish (3) and rainbow trout (1).

Refer to section 6.1.14 for discussion and recommendations on the Lilydale platypus population.

4.5.5 Warburton

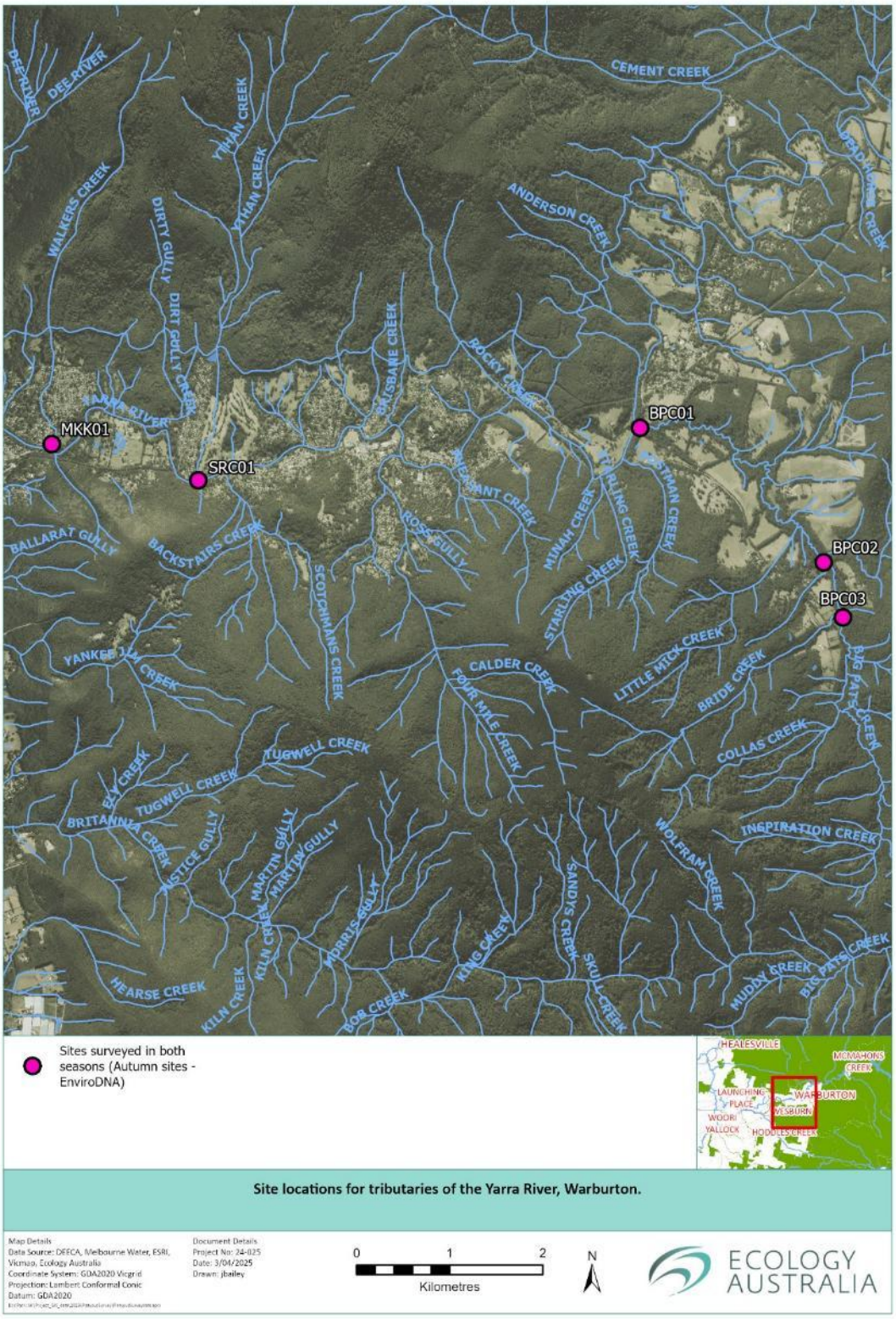

Figure 32 Site locations for tributaries of the Yarra River, Warburton.

A total of 10 trap nights were conducted in tributaries of the Yarra River, Warburton in 2024, with autumn surveys completed by EnviroDNA and spring surveys completed by Ecology Australia. Eight new individual platypuses were captured, including one juvenile (Table 18).

CPUE values for autumn and spring 2024 were comparable with historical values (Figure 33).

Table 18 Summary of 2024 survey results for tributaries of the Yarra River, Warburton.

Total platypus captures	Adults/subadults	Juveniles	% Juveniles
No. platypus	**7**	**1**	**14.29**
CPUE including juveniles	No. platypus	Trap nights	CPUE
Autumn	2	5	0.40
Spring	6	5	1.20
Total	**8**	**10**	**0.80**
CPUE excluding juveniles	No. platypus	Trap nights	CPUE
Autumn	2	5	0.40
Spring	5	5	1.00
Total	**7**	**10**	**0.70**

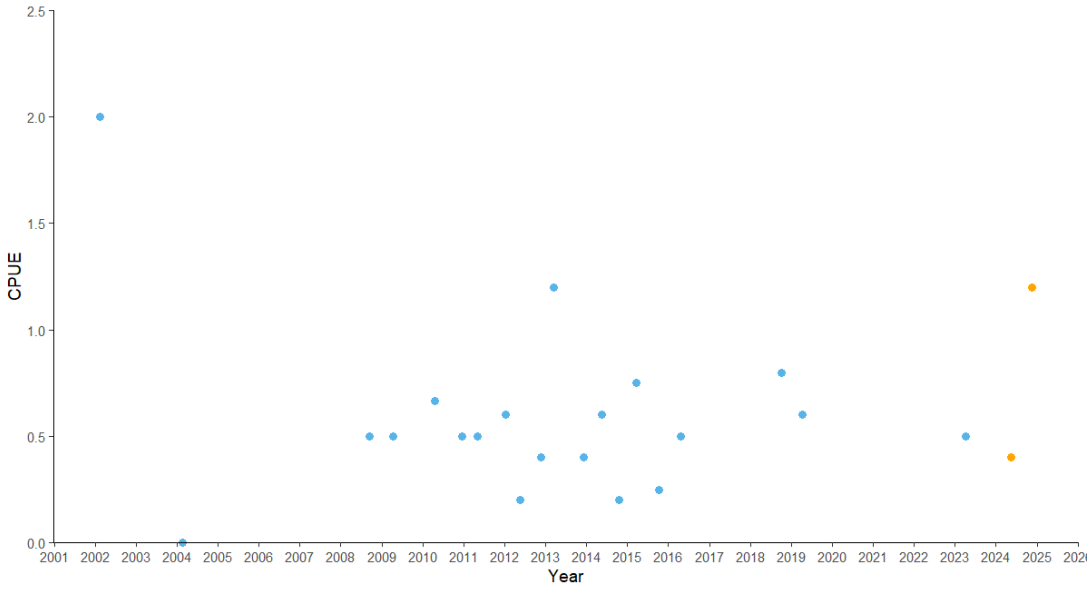

Figure 33 Historical and current CPUE (including juveniles) data available for tributaries of the Yarra River, Warburton. Current (2024) surveys are in orange.

No litter entanglements were recorded in 2024. One subadult male in spring had minor scarring under and loss of hair on top of his tail.

Three other aquatic species were caught as bycatch: crayfish (2), river blackfish (4) and brown trout (4).

Refer to section 6.1.15 for discussion and recommendations on the Warburton platypus population.

4.5.6 Chum Creek

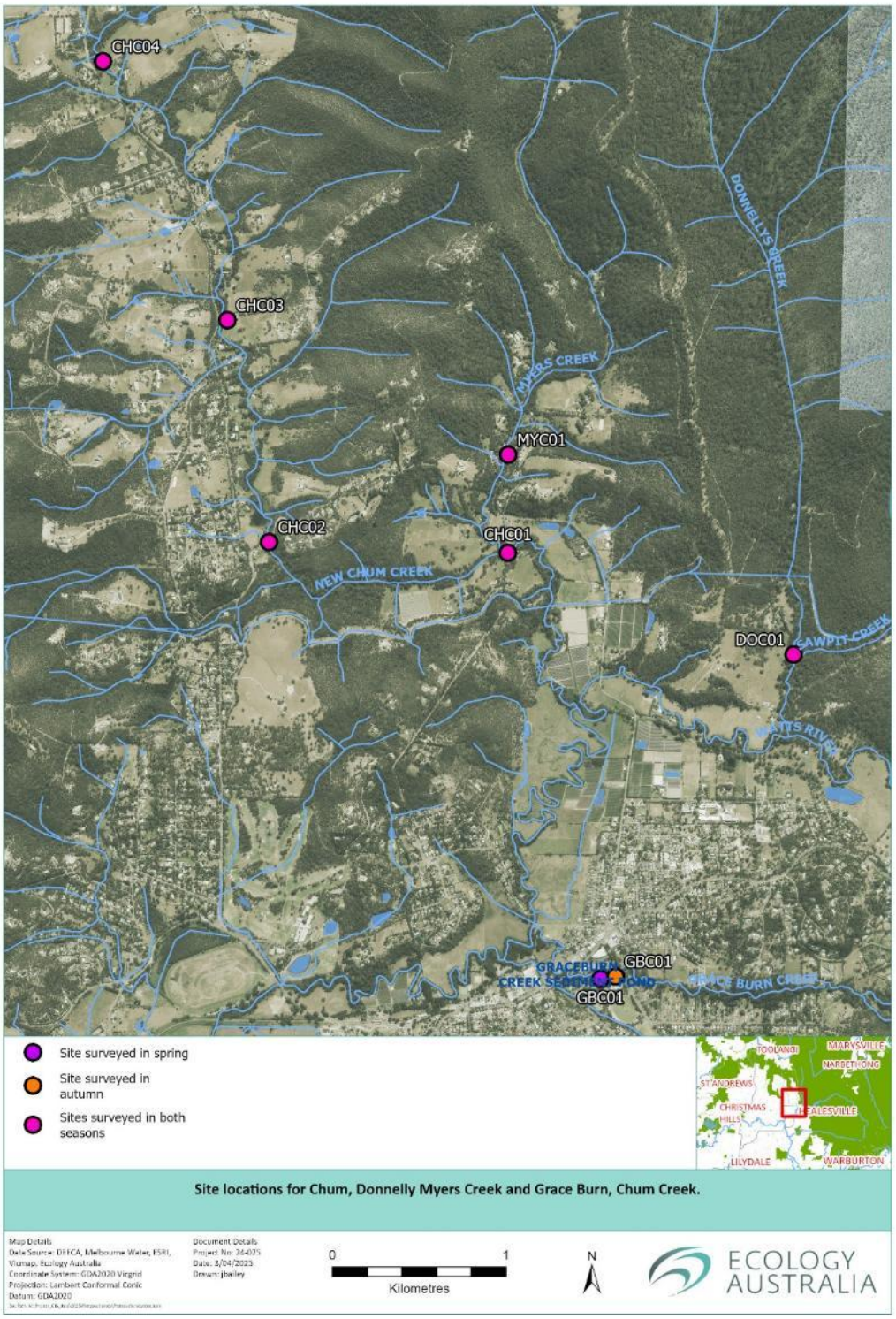

Figure 34 Site locations for Chum, Donnelly and Myers Creeks and Grace Burn, Healesville.

A total of 14 trap nights were conducted at Chum, Myers and Donnellys Creeks and Grace Burn, resulting in the capture of 13 individual platypus during 2024 (Table 19). The Grace Burn site was moved downstream in spring to avoid suboptimal conditions (flows and depth) when net setting (Figure 34). One new adult male was caught in autumn, and four adult males, seven adult females and one juvenile female were caught in spring. All spring captures were new individuals except for two adult males, one of which was first captured in spring 2023.

The CPUE for autumn (0.14) is one of the lowest results for Chum Creek since monitoring began in 2010 (Figure 35). However, CPUE for spring (1.17) is the highest that has been recorded for the system (Figure 35).

Table 19 Summary of 2024 survey results for Chum, Myers and Donnellys Creek and Grace Burn, Healesville.

Total platypus captures	Adults/subadults	Juveniles	% Juveniles
No. platypus	**12**	**1**	**8.33**
CPUE including juveniles	No. platypus	Trap nights	CPUE
Autumn	1	7	0.14
Spring	12	7	1.71
Total	**13**	**14**	**0.93**
CPUE excluding juveniles	No. platypus	Trap nights	CPUE
Autumn	1	7	0.14
Spring	11	7	1.57
Total	**12**	**14**	**0.86**

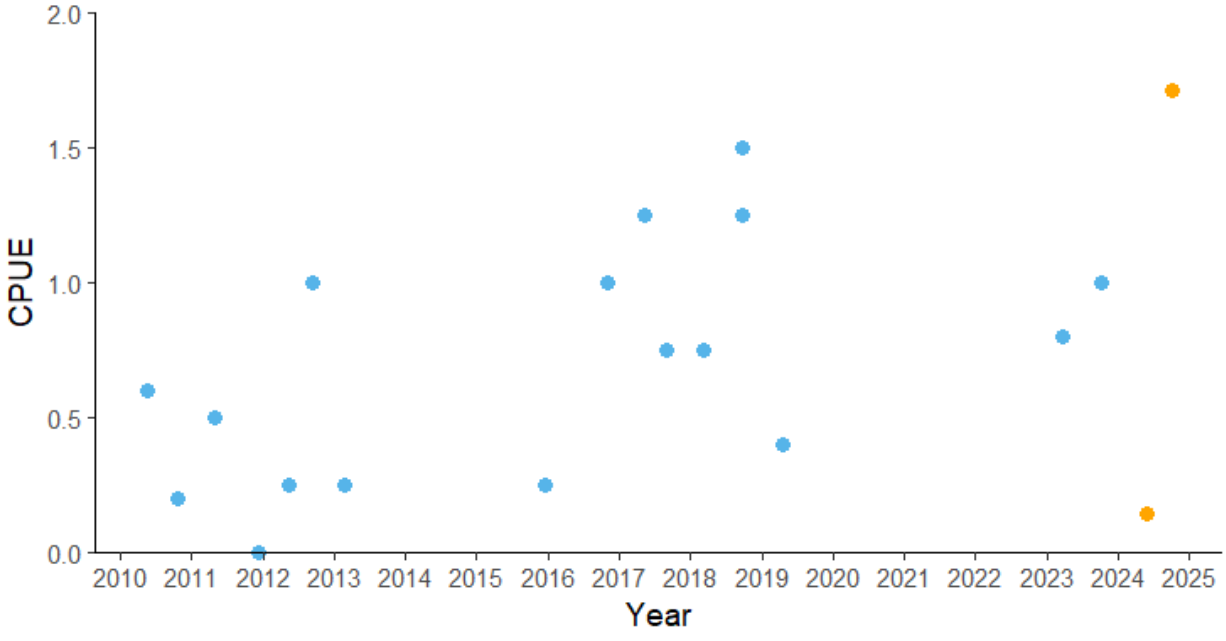

Figure 35 Historical and current CPUE (including juveniles) data available for Chum, Myers, Donnellys and Grace Burn Creeks, Healesville. Current (2024) surveys are in orange.

No litter entanglements were detected during the surveys. During spring one adult male was in a net with another larger male. The small male had lost the insulated air layer normally associated with

platypus pelage and was cold, taking over an hour to dry. Once fully dry with its air layer re-established, the individual was released and swam away normally.

Three other aquatic species were recorded as bycatch: river blackfish (7), brown trout (4) and crayfish (1).

Refer to section 6.1.16 for discussion and recommendations on the Chum Creek platypus population.

4.5.7 Woori Yallock

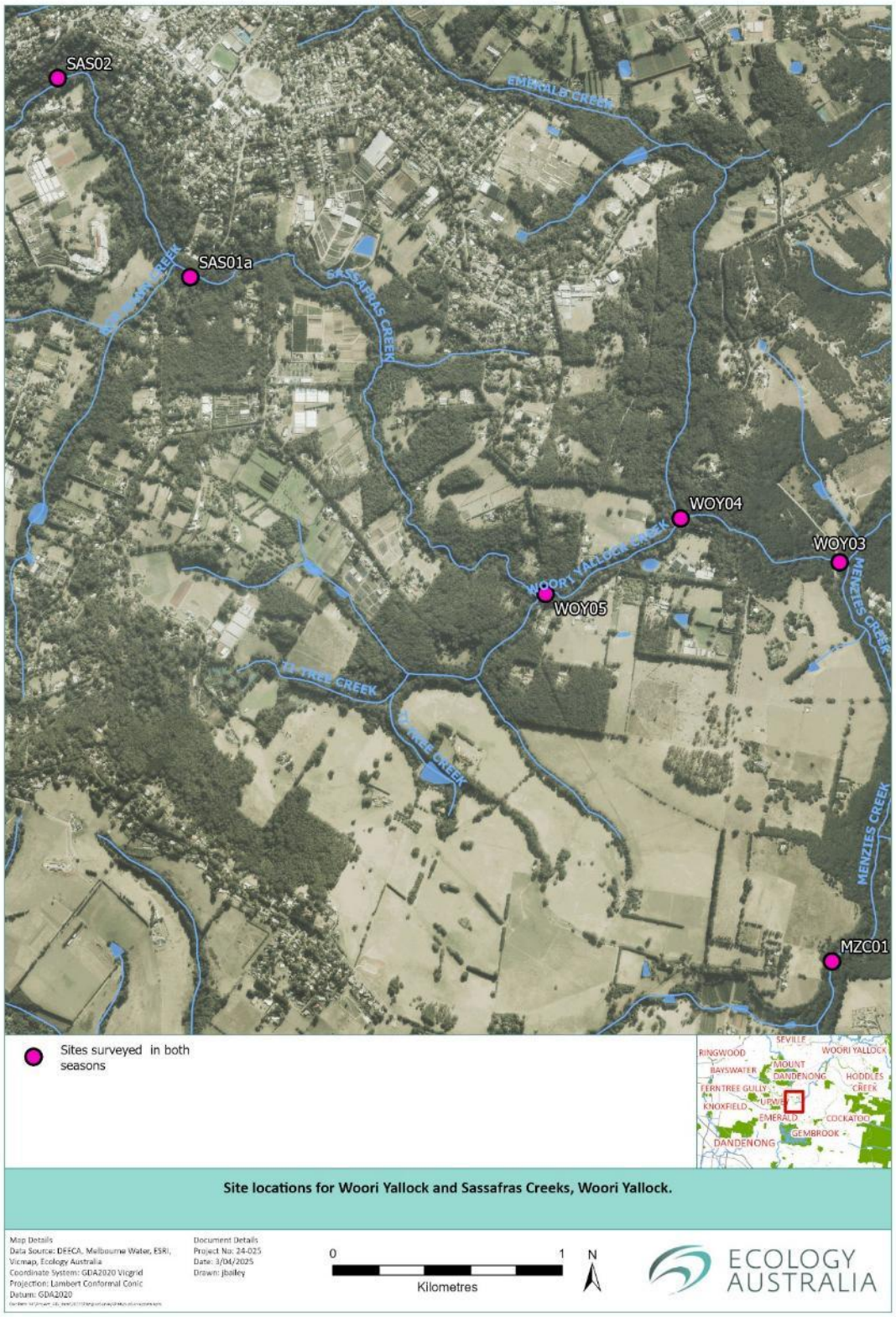

Figure 36 Site locations for Woori Yallock and Sassafras Creeks, Woori Yallock.

A total of 12 trap nights were conducted at Woori Yallock Creek during 2024, resulting in the capture of 12 individual platypuses (Table 20). In autumn three adult females and three adult males were caught, including one adult female previously captured in autumn 2023 and one adult male previously captured in spring 2023. In spring two adult males and four adult females were caught. Three individuals were recaptures, with two adult females first caught in spring 2023 and an adult male first caught in autumn 2024. Overall CPUE for 2024 (1.00) was higher than in 2023 (0.39) (Figure 37).

Table 20 Summary of 2024 survey results for Woori Yallock and Sassafras Creeks, Woori Yallock.

Total platypus captures	Adults/subadults	Juveniles	% Juveniles
No. platypus	**12**	**0**	**0**
CPUE including juveniles	No. platypus	Trap nights	CPUE
Autumn	6	6	1.00
Spring	6	6	1.00
Total	**12**	**12**	**1.00**
CPUE excluding juveniles	No. platypus	Trap nights	CPUE
Autumn	6	6	1.00
Spring	6	6	1.00
Total	**12**	**12**	**1.00**

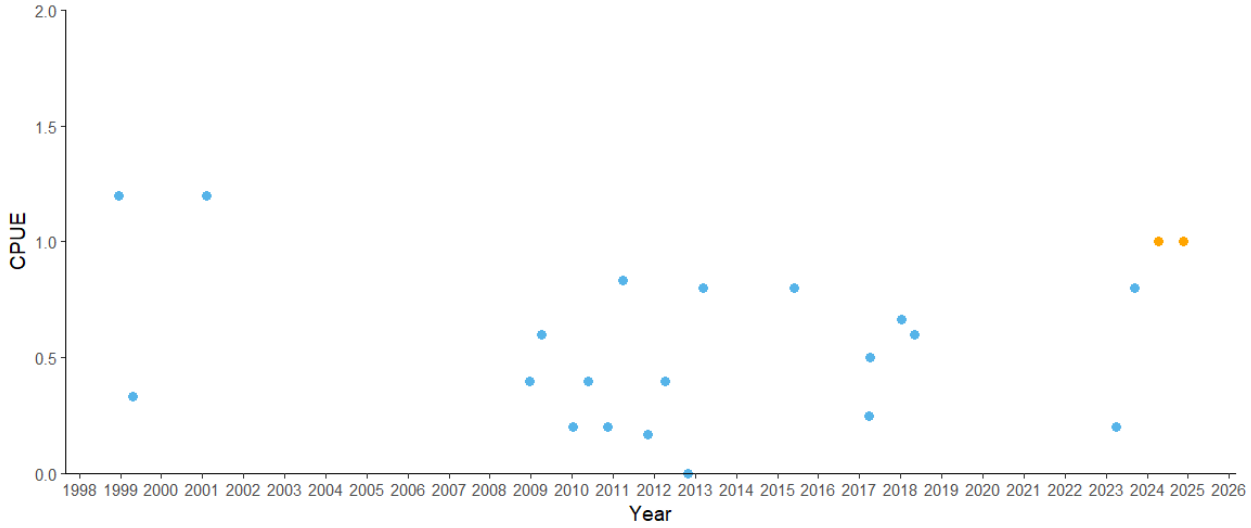

Figure 37 Historical and current CPUE (including juveniles) data available for Woori Yallock and Sassafras Creeks, Woori Yallock. Current (2024) surveys are in orange.

One adult male had a single strand of fishing line tightly caught around the neck in autumn, which was able to be removed. There was no fishhook present and no broken skin or puncture present. No other platypus health related issues were observed.

Four other aquatic species were detected as bycatch: short-finned eel (2), crayfish (5), river blackfish (7) and brown trout (2).

Refer to section 6.1.17 for discussion and recommendations on the Woori Yallock platypus population.

5 Discussion

Live-trapping for autumn 2024 represents a mixture of results from Ecology Australia and EnviroDNA. Recent analysis of historical platypus capture rates has found a significant difference in catch rates between organisations setting nets (specifically, APC and Ecology Australia/EnviroDNA) (D. Gwinn, in publication). Given that Ecology Australia staff have been directly trained by APC ecologists or recipients of APC training, it is likely that their survey results will closely align with APC. However, it is also plausible that there will be some differences in capture rates between APC and Ecology Australia, as APC consists of the same two ecologists across all surveys, while Ecology Australia has a larger team of staff that conduct platypus surveys, which will inherently lead to differences between the staff involved in each survey. The effect of practitioner on results should be considered as a variable when reviewing any historical data.

Catch rates during spring were much greater than autumn, as has previously been reported (Serena and Williams 2012; Griffiths *et al.* 2020; Preston *et al.* 2024). This spring's results included record capture rates for Bacchus Marsh (6 individuals, CPUE 1.20), Lilydale (11 individuals, CPUE 2.20) and Chum Creek (12 individuals, CPUE 1.71) populations, with Bunyip recording the equal highest capture rate ever (5 individuals, CPUE 1.00) and Eltham recording the second highest capture ever (6 individuals, CPUE 1.00). Most platypus populations had CPUEs comparable with last year, with only Upper Tarago dropping from a record high overall CPUE of 0.86 in 2023 to a CPUE of 0.22 (which is comparable with historical results). The Cardinia population continues to demonstrate a low CPUE, with only 1 individual platypus captured in 2024 for a resultant CPUE of 0.07, down from 0.29 in 2023 (4 animals) and autumn 2021 (2 animals during an EA pro bono survey), but still above the 2016–2018 period where only one capture was detected from 6 surveys. Interpretation of historical trends based on raw data must be cautious, as trends in catch rates may be the result of factors other than actual trends in platypus population (i.e. practitioner effects, flow, slope, effective imperviousness and day of year are all significant factors (D. Gwinn, in publication)). We have therefore not presented an in-depth analysis or discussion of trends in platypus CPUE here, as we believe detailed statistical analysis and modelling will be required for the data to meaningfully reflect actual trends in platypus populations at each location.

One potential factor influencing platypus capture rates that has still not been adequately resolved is the rate of net avoidance. Infra-red cameras have captured net avoidance by up to half of platypus encountering nets in the Steavenson River system and a third of platypus encountering nets in Monbulk Creek (Serena *et al.* 2024b). These systems represent both novel and well-studied populations respectively, suggesting that net avoidance may be a combination of innate caution, as well as learned behaviour. Infra-red cameras were deployed during 2024 surveys by Dana Dekkers (PhD student at The University of Melbourne) on fyke nets at a number of locations, as well as on fyke nets and locations between nets at Woori Yallock, McMahons and Upper Tarago by Ecology Australia. Future analysis of this data will help to quantify the rate of net avoidance, which will aide in determining more accurate population sizes.

The proportion of juveniles captured during autumn (19%) was slightly higher than last year (16%), falling within the lower range of historical values recorded since 1995 (Griffiths *et al.* 2018). This metric could be a valuable indicator of reproductive success at each platypus location, but the data collected

over the period of the MWUPP has been inconsistent in location and timing of sampling, limiting the opportunity to make valid direct comparisons over time. Juvenile emergence typically starts in February in Victoria (Serena and Williams 2012), with peak capture rates in July (postulated to be due to increased foraging activity to support metabolic activity during cold weather), which is typically avoided for platypus surveys to reduce the risk of platypus hypothermia. March and April represent the otherwise highest rates of juvenile capture, and are considered to be the best representation of the recent breeding season prior to juvenile dispersal from their natal site (Serena and Williams 2012). The timing of dispersal from the population varies and can be quite early into the season, with reports of a juvenile from Coranderrk Creek dispersing into the Yarra by mid-March in 2025 (J. Thomas, pers. comm.). Therefore, spatial and temporal consistency in autumn surveying is required for valid comparisons of this metric over time.

Consideration should also be given to the timing of spring surveys, as the proportion of males and females captured varies considerably over time. Female capture rates have been found to be lowest during October, which aligns with the mid-spring nesting period (Serena and Williams 2012). Surveying in October was intentionally minimised this year, with only two surveys conducted early in the month, Chum Creek (2/10/2024) and Bunyip (10/10/2024). Surveying earlier (that is, July to September) typically results in higher male platypus catch rates (Serena and Williams 2012), but the higher rates are considered to represent higher movements of males from a broader area during the breeding season, and are less likely to be representative of resident individuals. Additionally, the timing needs to be conducive with water and ambient temperatures that will not pose a high risk of hypothermia to platypus trapped in nets during the survey. Given this leaves a relatively small window (September) to survey prior to female nesting, it may be advantageous to delay surveying until November when breeding activity has ceased and captures are more likely to represent resident animals. Female capture rates are generally high from November to January (with capture rates of males comparable) (Serena and Williams 2012), and given that female platypus are used as the basis for Melbourne Waters Habitat Suitability Modelling, it would be prudent to survey during periods of optimal capture success. It must be noted that sampling during this period would also need to be conducted during suitable temperatures, to avoid platypus hyperthermia, and that females captured in early to mid-November would need to be returned to the water promptly to ensure that any lactating females can return promptly to their nesting burrows.

6 Recommendations

When sufficient data has been collected, further tests to quantify differences between practitioners should be conducted. Discussion of any factors that contribute to these differences and regular training, rotation of team pairs, or audits of net setting to ensure consistency among staff should form part of any monitoring program going forward. A correction factor based on the organisation conducting surveys may need to be applied to data for comparative analysis of population catch rates across time.

Autumn surveys targeting juveniles should be concentrated from mid-February (pending suitable temperatures) to April, which yield the highest catch rates for juveniles. October should be avoided for spring surveys, with consideration given to conducting all spring surveys from November to January (particularly in habitats supporting substantial numbers of females), since this should yield the best capture rate of females and is likely to be the period where captures are most representative of resident animals. Alternatively, September might be best reserved for populations predicted to occur at low to very low density (which are also more likely to comprise suboptimal habitat and be male-biased). In practice, this would be contingent on the timing of project initiation as well as the total number of surveys to be conducted.

Consider funding further deployment and analysis of remote cameras to monitor platypus behaviour instream and when encountering fyke nets. Once adequately developed, artificial intelligence is anticipated to aide in rapidly analysing images, which is currently a time-consuming process. Cameras may assist in estimating what proportion of platypus evade capture from nets, and this can be used to estimate population sizes with greater accuracy. Information from cameras may also help to inform improvements in fyke net design, setting methods and checking frequency.

Organise a workshop in the near future to explore options for utilising camera technology to (1) serve as a cost-effective platypus monitoring tool in its own right in the Greater Melbourne region, and (2) provide additional information to help inform and test outputs from platypus habitat suitability modelling across the region, for example by providing detailed quantitative information on the distribution of platypus activity in different waterways or waterway segments under varying flow conditions.

Once technology is sufficiently developed, GPS tracking of platypus should be considered to better understand juvenile dispersal (i.e. timing, flow triggers, distances), plus the usage of tributaries and mainstem waterways under varying flow conditions (e.g. Yarra River, Watts River). It is anticipated that this technology will become more widely available over the next few years as the result of a current PhD project.

Continue and consider expansion of platypus surveys in upper Yarra River tributaries to monitor the existing population status and assess the viable carrying capacity in the mainstem. Use the results of this monitoring to compare with the updated HSM and feed into any further updates of the HSM. Environmental entitlements will aide in maintaining platypus populations in the mainstem of the Yarra River, but reduced streamflow in tributaries may contribute to declines in these smaller waterways and could ultimately lead to a reduction in the overall size and genetic diversity of the upper Yarra River metapopulation. Water harvesting off tributaries such as Cement Creek should be avoided in order to maintain adequate streamflow conditions for platypus under climate change (Sandercock 2020).

Melbourne Water should consider platypus in any barrier removal works to improve connectivity across broader areas.

Continue and expand community education campaigns regarding litter. Platypus are an excellent flagship species to describe the impacts of litter on waterways.

6.1 Location specific discussion and recommendations

6.1.1 Belgrave

The survey results from 2024 indicate that successful recruitment is taking place in Monbulk Creek, which is an encouraging sign as this population is small and isolated.

The survey that would typically be conducted in spring was delayed until summer, to align with the period of breeding platypus lactation. The survey effort for this summer period was increased from 5 sites to 10 sites surveyed twice. This was to identify any breeding females and locate nesting burrows via the attachment of radio-transmitters, through a collaboration with the University of Melbourne (as part of the smart tanks network project). One female was confirmed as lactating. Radio-transmitters were attached to all six platypuses captured during this period and their movements within Monbulk Creek tracked. One of the adult males captured in the January 2025 survey was caught downstream of Monbulk Creek retarding basin (site MOC10) (Figure 4), with radio-tracking confirming his movements through the Glenfern Rd section of Monbulk Creek. Full findings of this work will be presented by the University of Melbourne.

The Belgrave population is the last remaining within the Dandenong catchment, and the recommendations are based on conserving this small and isolated population:

- Continue to implement the Monbulk Creek Platypus Management Plan (Griffiths and Weeks 2018) and the Melbourne Water Environmental Water Action Plan for Monbulk Creek, both of which align with goals of the current Smart Tanks Network ARC-linkage project.
- Engage with Southern Rural Water to implement bans and restrictions on water extraction from the section of Monbulk Creek below Birdsland Reserve, when flow falls below the minimum baseflow.
- Continue to work with landholders on Monbulk Creek below Birdsland Reserve to improve habitat for platypus (e.g. stock exclusion, improve riparian habitat).

6.1.2 Sunbury

The capture of numerous new platypuses (three females, four adult males and two juvenile males) indicates that successful recruitment has been taking place in Jacksons Creek. Overall CPUE for 2024 falls within the range of what has previously been recorded for Jacksons Creek.

Jacksons Creek typically has the largest (by weight) platypuses within the Melbourne Water region, and the heaviest platypus recorded this year was a male weighing 2882 g from Jacksons Creek.

The Jacksons Creek catchment continues to experience extensive urbanisation, and many of the recommendations are related to mitigating the impact of this:

- Continued implementation of Water Sensitive Urban Design (WSUD) throughout the catchment to minimise the impacts of stormwater in Jacksons Creek.
- Continued investigation and implementation of alternative sources of water to supply baseflow to Jacksons Creek to support the platypus population.
- Engage with landholders and community groups to improve riparian vegetation.
- Exclude stock from accessing the creek.

- Continue to monitor the Jacksons Creek platypus population as development increases in the catchment.
- Consider inclusion of Emu Creek in live-trapping surveys, where Ecology Australia have previously captured platypus (as bycatch during fish surveys) and a high level of development is occurring.

6.1.3 Lower Werribee

The capture of two juvenile males within the Werribee River indicates recruitment within the system. This is a positive result, as the lower Werribee River experiences flash flooding, and spring/summer storms have the potential to inundate nesting burrows, leading to failed breeding attempts (e.g. no juveniles were recorded during 2023 surveys, following on from flooding during spring 2022) (Preston *et al.* 2024).

The lower Werribee River experiences a number of challenges to maintaining the platypus population, including urbanisation, lack of suitable flow regime and barriers to movement. Recommendations below reflect the breadth of these issues:

- Flow management needs to consider platypus: ensure adequate baseflow through implementation of environmental water delivery (commitments under the Central and Gippsland Region Sustainable Water Strategy are delivered), implement stormwater harvesting to reduce the impact of flash flooding, and review water transfers from Melton Reservoir to the lower diversion weir to reduce extreme flow variability.
- Ensure fishway at the lower Werribee diversion weir supports platypus movement.
- Continue working with community groups such as the Werribee River Keeper to implement community education campaigns about litter and fishing practices.
- Improve and maintain the riparian zone.

6.1.4 Bacchus Marsh

Spring survey results were the highest on record for Bacchus Marsh, and none of the six platypus had previously been captured, which is an encouraging sign for this population. Bacchus Marsh continues to experience significant urbanisation and extraction pressure on flows, which form the basis for the following recommendations:

- Education and enforcement of building site regulations to prevent runoff flowing into stormwater systems and increasing turbidity in Werribee River.
- Implementation of EPA urban stormwater guidance for development in urban areas to reduce stormwater inputs and mitigate flows during high flow events.
- Investigate potential to release environmental entitlement from Pykes Creek Reservoir to maintain flows during drier periods.
- Further surveys to improve understanding of the platypus population demographics and whether regular usage of the lower Lerderderg River occurs. Implementation of bans and restrictions on water extraction on Lederderg River to expand potential available habitat of platypus.

6.1.5 Athlone

The overall low CPUE (0.20) is typical for this system (Figure 13), although consistent captures over the 2023 and 2024 surveys is encouraging.

Ecology Australia staff have sighted platypus further downstream in the Lang Lang River, and this system experiences flow stress, which informs the following recommendations:

- Consider moving survey site locations, currently located in areas considered to be poor habitat (including very low flows) for platypus. Platypus were regularly sighted lower down in the system (Heads Road Weir to Heath Hill area) during fishway investigations undertaken by Ecology Australia in late 2024.
- Closely monitor water levels within the Lang Lang River, groundwater extraction is high in this system and has an impact of flows. Without environmental entitlement, water in this system needs to be managed through the implementation of rosters, bans and restrictions to ensure adequate baseflow for platypus.
- Work with landowners to exclude stock from the river, improve condition of the riparian zone and reduce runoff of nutrients and sediments.

6.1.6 Bunyip

The Bunyip population was subject to bushfires in 2019, but subsequent eDNA sampling found widespread positive results (Bloink 2020). The 2024 CPUE results are among the highest on record, which is encouraging for this location.

This catchment is largely forested in the Bunyip State Park. Recommendations are:

- This area is subject to bushfire, consider developing contingency plans to monitor platypus and potentially treat injured platypus in post-bushfire situations.
- Investigate and action ways to increase instream complexity, prioritising sections of the waterway dominated by sand.
- Ensure flow regimes continue and the system maintains a constant flow year-round.

6.1.7 Cardinia

The Cardinia Creek population is a small, isolated population that was re-established via translocation by APC between 2004 and 2007. Overall CPUE for Cardina Creek has been low over the past two years, compared with the peak CPUE results post-reintroduction (Figure 17). Not included in the historical results is a pro-bono survey that Ecology Australia undertook on Cardinia Creek in autumn 2021, however this only captured 2 platypuses (CPUE 0.29) and is therefore consistent with the most recent survey results. There is a general downwards trend in the CPUE over the long-term, and no juveniles have been captured in 2021, 2023 or 2024.

The catchment in this region is increasing in urbanisation and is isolated from other platypus populations. Recommendations for addressing these issues are:

- Conduct autumn surveys during optimal period for juvenile detection (i.e. March).

- Implementation of WSUD and other actions to achieve the HWS target of maintaining DCI below 3% above Cardinia Road.
- Enhance habitat quality downstream to at least Chasmore Rd, Officer South, to facilitate dispersal and population expansion for a viable self-sustaining population. Enhance riparian vegetation around refuge pools.
- Consider the Cardinia Creek platypus population in any future translocation planning to improve population size, structure and genetic diversity.
- Ensure baseflows from Cardinia Reservoir are maintained, consider delivery of a broader range of the flow regime (i.e. freshes) if environmental entitlements can be delivered from Cardinia.
- Consider revision of some sites (e.g. replace the upper Muddy Creek site with a site lower in the system).
- Implementation of community litter education campaigns and measures to prevent litter entering the waterways in this area.

6.1.8 Labertouche

CPUE results for 2024 are comparable with the most recent surveys (Figure 19) and indicate that there may have been some recruitment into the population to recover from the five platypus deaths from an opera house net in 2017.

Labertouche remains largely agricultural, and the recommendations for platypus relate to improvements in habitat:

- Improve the riparian zone to prevent erosion and sediment runoff, including invasive weed removal.
- Work with landowners to improve riparian zones, exclude stock and reduce sediment and nutrient runoff.
- Investigate and action ways to increase instream complexity, prioritising sections of the waterway dominated by sand.

6.1.9 Lower Tarago

CPUE for Lower Tarago is comparable with results from surveys conducted from 2008–2016, but lower than surveys conducted during the early 2000's. This may represent a real change in the population, but a change in the ecologists conducting the surveys from APC to EnviroDNA/cesar may also be a contributing factor.

The Lower Tarago catchment remains largely agricultural and is subject to a regulated flow regime from the Tarago Reservoir. Recommendations for Lower Tarago are:

- Continue to restore the riparian zone with removal of invasive weeds, revegetation with native species and exclusion of stock. Work with landowners to help ensure restoration can occur along the whole system.

- Ensure the recommended flow regime continues to be maintained from Tarago Reservoir.

6.1.10 Upper Tarago

Results from 2023 were the highest on record, but 2024 CPUE decreased (0.22) to it's lowest level since 2013 (CPUE 0.13) (Figure 23). However, this year's results are still well within the range of historical records and illustrate the variability of live-trapping results over time.

This catchment is largely forested in the Bunyip State Park and upstream of the Tarago Reservoir. Recommendations are:

- Improve instream substrate in downstream section of the system close to the reservoir where the riverbed is dominated by sand.
- This area is subject to bushfire, consider developing contingency plans to monitor platypus and potentially treat injured platypus in post-bushfire situations.

6.1.11 Eltham

Spring 2024 CPUE (0.58) is the highest recorded in the system since 2001 (Figure 25). Four new platypuses and a juvenile capture during 2024 are promising results for Diamond Creek, indicating recruitment in this population.

Diamond Creek is highly urbanised and experiences extraction pressure upstream, together with high flashiness, erosion and litter issues downstream. Recommendations to mitigate these issues are:

- Protect baseflow in Diamond Creek via continued implementation of Local Management Rules, and update and implementation of the Drought Response Plan as required.
- Implementation of community litter education campaigns and measures to prevent litter entering the waterways in this area.
- Riparian restoration along Diamond Creek to improve habitat conditions for platypus.
- Reduce stormwater inputs to the creek through implementation of integrated water management solutions.

6.1.12 McMahons

Results from 2024 are consistent with the historical CPUE from this location. McMahons Creek is within the upper Yarra, an area considered to be stronghold for platypus, subject to maintenance of appropriate habitat and flow conditions (particularly under climate change).

Recommendations for this location are:

- Continue to maintain health of the riparian zone.
- Ensure current conditions and flow regimes are maintained, via the implementation of strict planning provisions and management of water extraction.

6.1.13 Mullum Mullum

Mullum Mullum tends to be a surrogate location for the lower Yarra River (which is not possible to sample using fyke nets), as platypus have been recorded moving between the two locations (Serena *et al.* 1998). The Mullum Mullum Creek itself differs from the Yarra River in many regards, particularly in terms of flow regime. While the Yarra River has an environmental entitlement, the Mullum Mullum Creek is unregulated and highly urbanised, subject to periods of very low flow as well as flashiness during storm events. The recommendations for this location are specific to the issues within the Mullum Mullum Creek:

- Update and implement the Drought Response Plan as required to protect flows.
- Investigate opportunities for stormwater harvesting that may be utilised to supplement baseflows under dry conditions and minimise the impact of flash flooding.
- Riparian restoration along the Mullum Mullum Creek corridor to improve habitat conditions for platypus.

6.1.14 Lilydale

Spring CPUE (1.36) is the highest recorded in Olinda Creek since monitoring began in 1996 (Figure 31). These results indicate successful recruitment and are an encouraging sign given that this population is small, isolated and genetically distinct.

The Olinda Creek population is isolated, with gradually increasing urbanisation in the catchment. Recommendations to maintain this population include:

- Investigate usage of Lilydale Lake by platypus and if it is a barrier for platypus dispersal. Consider improvements to Olinda Creek downstream of the lake to increase connectivity of this population with the broader Yarra catchment.
- Preserve flows in Olinda Creek through the maintenance of passing flows from Silvan Reservoir (2 ML/d), implementation of the Stream Flow Management Plan (SFMP) and Drought Response Plan.
- Maintain and enhance riparian vegetation.
- Manage stormwater from urbanised areas of the catchment to reduce inundation of burrows.

6.1.15 Warburton

The spring CPUE result was the highest for over a decade (Figure 33). Warburton consists of tributaries within the upper Yarra River, considered to be a stronghold for platypus, but subject to changing flow conditions under climate change (Chee *et al.* 2023).

Recommendations for this location are:

- Maintain current conditions and flow regimes through environmental entitlement and implementation of rosters, bans and restrictions in unregulated waterways.
- Maintain condition of riparian zone of tributaries and Yarra River.
- Prioritise ongoing population monitoring in upper Yarra tributaries to gather further data for the HSM.

6.1.16 Chum Creek

The highest CPUE result on record from spring 2024 (including numerous new platypuses and a juvenile) is promising for the system and indicates that successful recruitment is occurring.

This population includes a mix of regulated and unregulated waterways, with varying levels of agriculture and urbanisation in the catchment. Watts River has not been surveyed, but it is expected that a proportion of platypus from tributaries would also utilise Watts River. Watts River would be difficult to survey due to its width, so continuing with surveys on surrounding tributaries is recommended. Recommendations for the Chum Creek population are:

- Optimise flows from Maroondah Reservoir to Watts River, as per action 4–11 in the Central and Gippsland Regional Sustainable Water Strategy.
- Maintain and improve condition of riparian zone along all waterways in the area.
- Continue with inclusion of Grace Burn and Donnellys Creek sites in surveys.
- Investigate weir removal or fish and platypus passage remediation options at Lake Yumbunga on Chum Creek.

6.1.17 Woori Yallock

CPUE for 2024 (1.00 in both autumn and spring) was the highest recorded since 2001 (Figure 37), which is a good sign for this population.

The Woori Yallock catchment is unregulated and a mixture of agricultural and moderately urbanised areas. Recommendations for Woori Yallock are:

- Continue to protect flows in Woori Yallock Creek through implementation of rosters, bans and restrictions on water extraction, via the Stream Flow Management Plan and Drought Response Plan.
- Repair riparian zone with revegetation of native species to help improve habitat quality.
- Work with landholders to ensure exclusion of stock from creek with fencing.
- Implement education in the area on litter with a focus on recreational fishing.

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Appendix 1 Platypus captures 2024

Waterway	Site Code	Latitude	Longitude	Direction of travel	Date	Time	Microchip number	Sex	Age	TVI	Weight
Diamond Creek	DIC04	-37.7224122	145.1441449	upstream	1/05/2024	23:25:00	989.001044390274	female	juvenile	2	740
Grace Burn	GBC01	-37.65265499	145.5228143	upstream	29/05/2024	21:15:00	989.001041931822	male	adult	2	1312
Jacksons Creek	JAC07	-37.57523041	144.7391534	downstream	22/05/2024	4:17:00	989.001041931858	female	adult	3	1266
Mullum Mullum Creek	MMC01	-37.7392239	145.1632025	upstream	4/04/2024	21:57:00	989.001041931841	male	adult	3	1653
Mullum Mullum Creek	MMC01	-37.7392239	145.1632025	upstream	5/04/2024	2:57:00	989.001041931865	female	juvenile	3	699
Mullum Mullum Creek	MMC06b	-37.7752433	145.1895556	upstream	5/04/2024	1:52:00	989.001041931584	female	adult	4	1255
Monbulk Creek	MOC13	-37.92330052	145.3361428	upstream	15/04/2024	20:07:00	985.121004105032	male	adult	3	2091
Monbulk Creek	MOC16	-37.91570299	145.3575723	downstream	15/04/2024	20:42:00	989.001041931835	male	2nd year	2	1740
Monbulk Creek	MOC16	-37.91570299	145.3575723	downstream	15/04/2024	20:42:00	982.000405791705	female	adult	3	1232
Olinda Creek	OLC01	-37.76983119	145.3595859	upstream	15/05/2024	20:52:00	989.001041931838	male	adult	3	1325
Olinda Creek	OLC05	-37.79171917	145.3597103	upstream	15/05/2024	2:30:00	989.001041931856	female	juvenile	3	845
Olinda Creek	OLC05	-37.79171917	145.3597103	upstream	15/05/2024	2:30:00	989.001041931863	male	adult	3	1701
Olinda Creek	OLC06	-37.79590527	145.3763281	upstream	15/05/2024	20:04:00	989.001041931875	female	adult	3	1000
Sassafras Creek	SAS01a	-37.88317771	145.4076038	downstream	16/04/2024	1:58:00	982.000405795396	female	adult	3	781
Werribee River	WER01	-37.91952179	144.6572877	upstream	3/05/2024	2:20:00	989.001042727850	female	adult	2	1096
Werribee River	WER06	-37.9054632	144.6496105	upstream	2/05/2024	20:29:00	989.001044390289	male	juvenile	3	1012
Werribee River	WER06	-37.9054632	144.6496105	upstream	2/05/2024	20:30:00	989.001044390350	male	juvenile	3	895
Woori Yallock Creek	WOY03	-37.89425398	145.4398843	upstream	16/04/2024	7:59:00	989.001044390285	female	adult	3	765
Woori Yallock Creek	WOY03	-37.89425398	145.4398843	downstream	16/04/2024	5:48:00	989.001041931655	male	3rd year	4	1299
Woori Yallock Creek	WOY04	-37.8926468	145.4319856	upstream	15/04/2024	23:22:00	989.001044390316	male	3rd year	3	1562
Woori Yallock Creek	WOY04	-37.8926468	145.4319856	upstream	16/04/2024	1:41:00	989.001044390307	male	2nd year	4	1409
Woori Yallock Creek	WOY04	-37.8926468	145.4319856	upstream	15/04/2024	21:14:00	989.001041931592	female	adult	4	784
Big Pats Creek	BPC03	-37.769	145.756	Downstream	14/05/2024	23:55:00	956.000016652010	Male	Adult	2	1400
Bunyip River	BUR11	-37.943	145.742	Downstream	27/05/2024	21:00:00	956.000016654419	Male	Adult	2	1650
Bunyip River	BUR08	-37.983	145.756	Upstream	27/05/2024	6:50:00	956.000012879018	Male	Adult	3	1600
Labertouche Creek	LAC01	-38.075	145.788	Downstream	8/05/2024	7:15:00	956.000013291599	Female	Juvenile	3	575
Labertouche Creek	LAC02	-38.061	145.811	Upstream	8/05/2024	6:50:00	956.000013307481	Female	Juvenile	2	750
Labertouche Creek	LAC01	-38.075	145.788	Upstream	24/05/2024	22:20:00	956.000012877347	Female	Adult	3	900
McKenzie King Ck	MKK01	-37.752	145.658	Upstream	14/05/2024	20:45:00	956.000016653291	Female	Adult	3	800
McMahons Creek	MCM05	-37.71	145.845	Downstream	13/05/2024	20:25:00	956.000016650288	Female	Adult	2	650
Minnieburn Creek	MBC01	-38.233	145.836	Upstream	23/04/2024	5:30:00	956.000013293933/956.000013319891	Male	Adult	2	1875
Tarago River	TAR04	-38.087	145.83	Upstream	8/05/2024	5:30:00	956.000016651465	Female	Adult	4	1150
Tarago River	TAR05	-38.087	145.83	Upstream	8/05/2024	5:30:00	956.000016648745	Male	Adult	2	1625
Tarago River	TAR06	-38.087	145.83	Upstream	8/05/2024	5:30:00	956.000016651927	Female	Adult	3	750
Tarago River	TAR04	-38.087	145.83	Downstream	8/05/2024	19:30:00	956.000016652601	Male	Adult	3	1275
Tarago River	TAR12	-37.956	145.915	Upstream	7/05/2024	1:10:00	982.000405800714	Female	Adult	3	850
Big Pats Creek	BPC01	-37.75048729	145.7305743	downstream	15/11/2024	1:30:00	989.001041931806	female	adult	3	684
Big Pats Creek	BPC03	-37.76872675	145.7555374	downstream	15/11/2024	7:12:00	989.001041931809	female	adult	3	752
Bunyip River	BUR08	-37.98308879	145.7560202	downstream	10/10/2024	21:51:00	989.001041931782	female	adult	3	842

Bunyip River	BUR08	-37.98308879	145.7560202	downstream	11/10/2024	1:33:00	**NOT TAGGED**	male	adult	3	1240
Bunyip River	BUR09	-37.96922138	145.7358619	downstream	11/10/2024	4:26:00	989.002028008514	male	adult	5	1294
Bunyip River	BUR11	-37.94372466	145.7421	upstream	11/10/2024	1:32:00	989.001041931868	female	adult	3	746
Bunyip River	BUR11	-37.94372466	145.7421	downstream	11/10/2024	3:13:00	989.002028008519	male	adult	4	1065
Cardinia Creek	CAR06	-38.02807983	145.3758291	upstream	4/09/2024	3:45:00	982.000190529062	male	adult	2	1852
Chum Creek	CHC01	-37.6305642	145.5166272	upstream	2/10/2024	21:56:00	989.001041931814	male	adult	3	1680
Chum Creek	CHC01	-37.6305642	145.5166272	upstream	2/10/2024	21:56:00	989.001041931829	female	adult	4	907
Chum Creek	CHC01	-37.6305642	145.5166272	downstream	3/10/2024	1:49:00	982.000405789438	male	adult	4	1591
Chum Creek	CHC01	-37.6305642	145.5166272	upstream	3/10/2024	7:25:00	989.001041931781	male	adult	3	1431
Chum Creek	CHC03	-37.61861313	145.4981893	downstream	2/10/2024	21:14:00	989.001041931831	female	adult	3	845
Chum Creek	CHC04	-37.60515109	145.490016	downstream	2/10/2024	21:01:00	989.001041931790	female	adult	3	782
Chum Creek	CHC04	-37.60515109	145.490016	downstream	3/10/2024	0:55:00	989.001041931811	female	juvenile	3	659
Diamond Creek	DIC03	-37.72744487	145.1428976	upstream	10/09/2024	21:47:00	989.001041931768	male	adult	4	1641
Diamond Creek	DIC03	-37.72744487	145.1428976	upstream	11/09/2024	0:00:00	989.001044390318	male	adult	4	1493
Diamond Creek	DIC04	-37.7224122	145.1441449	upstream	11/09/2024	1:46:00	982.000148409366	male	adult	3	1381
Diamond Creek	DIC04	-37.7224122	145.1441449	upstream	11/09/2024	3:56:00	989.001041931879	female	adult	3	955
Diamond Creek	DIC06	-37.70285967	145.1531344	upstream	11/09/2024	3:23:00	989.001044390326	female	adult	2	1032
Diamond Creek	DIC08	-37.68825648	145.1553481	upstream	10/09/2024	20:54:00	989.001044390345	male	adult	3	2017
Donnellys Creek	DOC01	-37.63576437	145.5353154	downstream	2/10/2024	22:16:00	989.001042727912	male	adult	5	937
Donnellys Creek	DOC01	-37.63576437	145.5353154	downstream	2/10/2024	22:16:00	989.001041931854	female	adult	3	626
Donnellys Creek	DOC01	-37.63576437	145.5353154	downstream	3/10/2024	22:16:00	989.001041931850	female	adult	3	652
Grace Burn Creek	GBC01	-37.65265499	145.5228143	downstream	3/10/2024	2:18:00	989.001041931855	female	adult	3	824
Grace Burn Creek	GBC01	-37.65265499	145.5228143	downstream	3/10/2024	2:18:00	989.001041931826	female	adult	3	821
Jacksons Creek	JAC01	-37.66401168	144.7707703	downstream	10/09/2024	23:16	989.001041931877	female	adult	3	1281
Jacksons Creek	JAC07	-37.57523041	144.7391534	upstream	10/09/2024	20:18:00	989.002028008686	male	adult	3	2215
Jacksons Creek	JAC07	-37.57523041	144.7391534	downstream	11/09/2024	6:25:00	989.001041931789	male	adult	4	2001
Jacksons Creek	JAC07	-37.57523041	144.7391534	downstream	11/09/2024	8:10:00	989.001041931801	male	adult	4	2882
Jacksons Creek	JAC07	-37.57523041	144.7391534	downstream	11/09/2024	3:25:00	989.001041931793	female	adult	3	1033
Jacksons Creek	JAC07a	-37.57052173	144.73885	upstream	10/09/2024	20:03:00	982.000190528391	female	adult	2	1377
Jacksons Creek	JAC07a	-37.57052173	144.73885	downstream	11/09/2024	3:10:00	989.001041931871	male	juvenile	2	1531
Jacksons Creek	JAC07a	-37.57052173	144.73885	upstream	11/09/2024	1:06:00	989.001041931813	male	juvenile	4	1642
Jacksons Creek	JAC13	-37.53999199	144.7378343	downstream	10/09/2024	20:49:00	989.001041931802	male	adult	3	1937
Jacksons Creek	JAC13	-37.53999199	144.7378343	upstream	10/09/2024	20:44:00	989.001041931876	male	adult	3	1972
Jacksons Creek	JAC13	-37.53999199	144.7378343	upstream	11/09/2024	3:53:00	982.000148338171	female	adult	3	1573
Labertouche creek	LAC01	-38.07476789	145.7877041	upstream	7/11/2024	11:40:00	956.000012880934	male	adult	3	1530
Labertouche creek	LAC01	-38.07476789	145.7877041	upstream	8/11/2024	23:40:00	989.001041931797	female	adult	3	778
Labertouche creek	LAC02	-38.06083017	145.810562	upstream	7/11/2024	23:18:00	989.000141931851	male	adult	3	1407
Labertouche creek	LAC02	-38.06083017	145.810562	downstream	8/11/2024	1:51:00	989.001041931861	male	2nd_year	3	1316
Labertouche creek	LAC03	-38.05483802	145.8240921	downstream	8/11/2024	0:32:00	989.001041931787	female	adult	3	830
Labertouche creek	LAC04	-38.04940156	145.8296594	downstream	8/11/2024	6:50:00	989.001041931783	female	juvenile	4	860
Labertouche creek	LAC06	-38.05517394	145.8202012	downstream	8/11/2024	1:37:00	989.001041931807	female	adult	3	898
Minnieburn Creek	MBC01	-38.23350317	145.8356036	downstream	12/11/2024	1:34:00	989.001041931786	male	adult	4	1781
McMahons Creek	MCM01	-37.70129056	145.8308532	downstream	6/12/2024	2:26:00	989.002028008500	female	adult	3	634
McMahons Creek	MCM05a	-37.70927313	145.8444033	downstream	6/12/2024	23:38:00	956.000016650288	female	adult	2	676
McMahons Creek	MCM05a	-37.70927313	145.8444033	downstream	6/12/2024	23:38:00	956.000016654143	female	adult	3	556
McMahons Creek	MCM07	-37.71685971	145.8801557	upstream	6/12/2024	1:23:00	989.002028008436	female	adult	3	556

McKenzie King Creek	MKK01	-37.75251297	145.6589331	upstream	14/11/2024	22:27:00	989.001041931827	male	juvenile	3	916
McKenzie King Creek	MKK01	-37.75251297	145.6589331	upstream	15/11/2024	10:29:00	989.001041931820	male	2nd_year	4	833
Mullum Mullum Creek	MMC01	-37.7392239	145.1632025	downstream	4/09/2024	23:20:00	989.001041931626	male	adult	3	1862
Mullum Mullum Creek	MMC01	-37.7392239	145.1632025	downstream	4/09/2024	1:30:00	989.001041931865	female	adult	4	892
Mullum Mullum Creek	MMC01	-37.7392239	145.1632025	downstream	4/09/2024	1:30:00	989.002028008721	female	adult	3	1001
Mullum Mullum Creek	MMC01	-37.7392239	145.1632025	downstream	4/09/2024	4:30:00	989.002028008714	male	juvenile	3	1343
Mullum Mullum Creek	MMC05a	-37.75733748	145.1821721	upstream	3/09/2024	20:40:00	989.002028008653	female	adult	4	885
Mullum Mullum Creek	MMC05a	-37.75733748	145.1821721	upstream	3/09/2024	20:40:00	989.002028008697	female	adult	4	1057
Mullum Mullum Creek	MMC06a	-37.76795922	145.1863972	downstream	4/09/2024	2:20:00	989.001041931584	female	adult	2	1220
Mullum Mullum Creek	MMC06b	-37.7752433	145.1895556	downstream	3/09/2024	21:18:00	989.001041931604	male	adult	3	1461
Monbulk Creek	MOC19	-37.90818111	145.3651961	upstream	19/12/2024	23:43:00	989.002028008474	female	adult	3	849
Monbulk Creek	MOC16	-37.91570299	145.3575723	downstream	20/12/2024	2:10:00	989.002028008507	male	2nd_year	3	1773
Monbulk Creek	MOC18	-37.91623341	145.3638152	upstream	20/12/2024	7:25:00	982.000405791705	female	adult	2	1208
Monbulk Creek	MOC10	-37.92448586	145.3222704	upstream	17/01/2025	2:06:00	989.002028008509	male	3rd_year	2	2124
Monbulk Creek	MOC16	-37.91570299	145.3575723	downstream	17/01/2025	23:09:00	989.001041931835	male	3rd_year	3	1818
Monbulk Creek	MOC18	-37.91623341	145.3638152	upstream	17/01/2025	23:45:00	989.002028008501	female	adult	3	1208
Menzies Creek	MZC01	-37.90995425	145.4396186	upstream	20/11/2024	1:43:00	989.002028008510	male	adult	2	1263
Olinda Creek	OLC01	-37.76983119	145.3595859	downstream	17/09/2024	21:30:00	989.001041931808	male	2nd_year	3	1197
Olinda Creek	OLC01	-37.76983119	145.3595859	downstream	17/09/2024	21:30:00	989.001041931817	male	3rd_year	3	1488
Olinda Creek	OLC01	-37.76983119	145.3595859	downstream	18/09/2024	1:26:00	989.001041931805	male	2nd_year	3	1256
Olinda Creek	OLC01	-37.76983119	145.3595859	downstream	18/09/2024	1:26:00	989.001041931825	male	adult	3	1287
Olinda Creek	OLC01	-37.76983119	145.3595859	downstream	18/09/2024	4:07:00	989.001041931794	male	adult	3	1637
Olinda Creek	OLC03	-37.77774455	145.3613139	upstream	17/09/2024	21:10:00	989.001041931842	male	2nd_year	3	1512
Olinda Creek	OLC03	-37.77774455	145.3613139	downstream	17/09/2024	21:10:00	989.001041931867	male	juvenile	3	1066
Olinda Creek	OLC03	-37.77774455	145.3613139	upstream	18/09/2024	0:50:00	982.000148389087	male	adult	3	2007
Olinda Creek	OLC05	-37.79171917	145.3597103	upstream	18/09/2024	0:30:00	989.001041931856	female	adult	3	944
Olinda Creek	OLC07	-37.79380896	145.3836031	downstream	17/09/2024	20:30:00	989.001041931815	male	adult	2	1662
Olinda Creek	OLC07	-37.79380896	145.3836031	upstream	18/09/2024	7:12:00	989.001041931862	male	adult	3	1587
Tarago River	QTC01	-37.95794864	145.8968545	downstream	11/12/2024	23:45:00	989.002028008523	female	adult	2	943
Sassafras Creek	SAS01a	-37.88317771	145.4076038	downstream	20/11/2024	23:37:00	989.001041931832	female	adult	3	695
Sassafras Creek	SAS01a	-37.88317771	145.4076038	downstream	20/11/2024	23:37:00	989.002028008511	female	adult	3	808
Sassafras Creek	SAS02	-37.8754235	145.4010145	upstream	20/11/2024	23:48:00	989.001041931788	female	adult	2	832
Surrey Rd Creek	SRC01	-37.75590185	145.6768001	downstream	14/11/2024	22:42:00	989.001041931859	female	adult	3	759
Surrey Rd Creek	SRC01	-37.75590185	145.6768001	upstream	15/11/2024	7:58:00	989.001041931804	male	adult	4	1049
Tarago River	TAR01	-38.07645327	145.7745624	upstream	17/12/2024	1:10:00	989.002028008518	female	adult	3	885
Tarago River	TAR01	-38.07645327	145.7745624	upstream	17/12/2024	23:20:00	989.002028008489	female	adult	2	1066
Tarago River	TAR06	-38.07730661	145.873661	downstream	17/12/2024	1:25:00	989.002028008467	male	adult	2	1456
Tarago River	TAR06	-38.07730661	145.873661	upstream	17/12/2024	6:20:00	989.002028008515	female	adult	2	1162
Tarago River	TAR09	-38.03224512	145.9393143	downstream	17/12/2024	0:35:00	989.002028008475	female	adult	3	789

Lower Werribee River	WER03	-37.91327771	144.6535726	upstream	18/09/2024	3:44:00	989.001039147545	male	adult	3	1656
Werribee River	WER16	-37.68155127	144.4423376	upstream	23/09/2024	22:01:00	989.001044390346	male	adult	4	1625
Werribee River	WER16	-37.68155127	144.4423376	upstream	23/09/2024	22:02:00	989.001044390262	female	adult	3	965
Werribee River	WER16	-37.68155127	144.4423376	upstream	24/09/2024	0:33:00	989.001044390360	male	adult	4	1712
Werribee River	WER22	-37.67940026	144.3775373	downstream	23/09/2024	21:06:00	989.001044390280	female	adult	2	990
Werribee River	WER22	-37.67940026	144.3775373	downstream	23/09/2024	21:07:00	989.001044390282	male	adult	4	1639
Werribee River	WER23	-37.68611396	144.3941722	upstream	23/09/2024	23:52:00	989.001044390305	male	adult	3	1439
Woori Yallock Creek	WOY04	-37.8926468	145.4319856	upstream	20/11/2024	2:05:00	989.001044390316	male	adult	3	1588
Woori Yallock Creek	WOY05	-37.89561672	145.4252834	upstream	20/11/2024	23:18:00	989.001041931592	female	adult	2	735

Appendix 2 Catch Per Unit Effort for all 2024 surveys

Location	Trap nights	Sub/adult platypus caught	CPUE sub/adult	Juveniles caught	Total platypus	% Juveniles	CPUE juv/sub/adult
Autumn							
Monbulk	5	3	0.60	0	3	0	0.60
Jacksons	9	1	0.11	0	1	0	0.11
Werribee Lower	6	1	0.17	2	3	66.67	0.50
Werribee Middle	5	0	0	0	0	0	0
Cardinia	7	0	0	0	0	0	0
Mullum Mullum	6	2	0.33	1	3	33.33	0.50
Diamond	6	0	0	1	1	100	0.17
Woori Yallock	6	6	1.00	0	6	0	1.00
Olinda	6	3	0.50	1	4	25	0.67
Chum creek	7	1	0.14	0	1	0	0.14
Lang Lang	4	1	0.25	0	1	0.00	0.25
Bunyip	4	2	0.50	0	2	0	0.50
Labertouche	4	1	0.25	2	3	66.67	0.75
Lower Tarago	5	4	0.80	0	4	0	0.80
Upper Tarago	3	1	0.33	0	1	0	0.33
McMahons	5	1	0.2	0	1	0	0.20
Warburton	5	2	0.4	0	2	0	0.40
Total	**93**	**29**	**NA**	**7**	**36**	**NA**	**NA**
Spring							
Monbulk	20	6	0.30	0	6	0	0.30
Jacksons	10	9	0.90	2	11	18.18	1.10
Werribee Lower	6	1	0.17	0	1	0	0.17
Werribee Middle	5	6	1.20	0	6	0	1.20
Cardinia	7	1	0.14	0	1	0	0.14

Mullum Mullum	6	7	1.17	1	8	12.50	1.33
Diamond	6	6	1.00	0	6	0	1.00
Woori Yallock	6	6	1.00	0	6	0	1.00
Olinda	5	10	2.00	1	11	9.09	2.20
Lang Lang	6	1	0.17	0	1	0	0.17
Bunyip	5	5	1.00	0	5	0	1.00
Labertouche	6	6	1.00	1	7	14.29	1.17
Lower Tarago	6	5	0.83	0	5	0	0.83
Upper Targao	6	1	0.17	0	1	0	0.17
McMahons	6	4	0.67	0	4	0	0.67
Warburton	5	5	1.00	1	6	16.67	1.20
Chum creek	7	11	1.57	1	12	8.33	1.71
Total	**118**	**90**	**NA**	**7**	**97**	**NA**	**NA**
2024 Total	**211**	**119**	**NA**	**14**	**133**	**NA**	**NA**