

ORDINARY MEETING OF COUNCIL - 26 MAY 2026 ATTACHMENTS

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FINANCIAL REPORT

For the nine months ending
31 March 2026



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1. Overview

The March Quarterly Finance Report outlines the financial results for the nine months ended 31 March 2026, along with a comparison to the amended budget including carry-forward projects (as adopted by Council on 23 September 2025). This report includes the following:

- Income Statement;
- Statement of Capital Works;
- Balance Sheet;
- Statement of Cash Flows;
- Cash, investments and financial reserve schedules;
- Key performance indicators;
- Rates and other debtors; and
- Councillor expenditure.

Appendices include:

- Capital Works Detailed Report
- Special Operating Projects Report

The current financial position needs to be read in the context of Council's financial plan contained within the 2025/26 Budget, and the adopted Financial Vision (10 September 2024).

The ongoing impacts of current cost inflations on operational costs and support for the community will be monitored through the remainder of the 2025/26 financial year, as well as high CPI and contractor availability. The Australian Bureau of Statistics noted that the national monthly CPI indicator rose 4.6% in the 12 months to March 2026, with Melbourne's CPI indicator also rising by 4.6%.

This report represents nine months of operations in the 2025/26 financial year.

The main items to note at the end of the third quarter are:

- The operating surplus for the nine months ended 31 March 2026 was \$7.3 million. This is \$2.3 million (or 45%) favourable to the YTD amended budgeted surplus of \$5.1 million. This is primarily comprised of the following variances:

Income

- Statutory fees & fines - favourable by \$106k (13%), mainly due to higher-than-expected fire prevention fines as well as additional environmental and planning infringement enforcement fines.
- User fees – favourable by \$101k (17%), mainly due to an increase in waste transfer station gate fees.
- Grants (operating) - favourable by \$469k (12%), due to funding of the MERP (Municipal Emergency Resource Planning) being received earlier than expected, in addition to the phasing of grant income received in advance last financial year and being brought to account earlier than budgeted.

- Grants (capital) - unfavourable by \$227k (17%), mainly due to the Local Roads and Community Infrastructure Program funding not yet received.
- Other income – favourable by \$282k (26%), mainly due to additional interest income.

Expenses

- Materials and services - favourable by \$1.0M, is mainly due to delayed spending on special operating projects (\$227K), general maintenance (\$375k), and waste services contractor payments (\$360k), offset by YTD overspends in information services for software licencing which will be capitalised at year end. These variances are partially due to timing of receiving invoices, and partially due to delayed spending, and are expected to resolve by the end of the financial year.
- Based on current income and expenditure, we expect that the year end operating position will be on budget, if not, slightly better than budget.
- Year-to-date Capital Works expenditure for the nine months ended 31 March 2026 was \$4.8 million which is 31% of the \$15.4 million amended budget.
- Cash holdings as at 31 March 2026 are \$2.2 million higher than the same time last year, this is due to higher cash holdings at the start of the period. Total cash and investments for the quarter is \$11.8 million. Other financial assets are lower than at the same time last year, due to investments maturing and the resulting cash being utilised to fund council operations.
- Trade and other receivables as at 31 March 2026 are \$3.4 million higher than the same time last year. This growth is attributed to a higher Emergency Services Volunteers Fund, the annual rise in rates, outstanding rental payments, and the increased offerings of support packages relating to payment extensions on rates instalments. Overall, there is no material concerns of outstanding debts.

2. Financial Statements

Income Statement

This statement details our sources of income for the reporting period under headings including general rates, charges, and the day-to-day expenses required to operate Council. While capital expenditures are excluded, we do account for the use of our assets (depreciation). Expenses include employee costs, materials and services, together with utility and insurance costs.

The final result for the reporting period is calculated by subtracting total expenses from total income, indicating whether we've operated at a surplus or a deficit (deficits are shown in brackets). A positive variance means revenue increased or expenses decreased. Conversely, negative figures (in brackets) indicate either a drop in revenue or a rise in expenses.

The adjusted underlying result calculated in the Income Statement is the net surplus/(deficit) for the year adjusted for non-recurrent capital grants, monetary contributions (open space contributions) and capital contributions from other sources. It is a measure of financial sustainability and Council's ability to achieve its service delivery objectives as it is not impacted by non-recurrent capital income items, which can often mask the operating result.

Capital Works Program

This represents our portfolio of capital projects that have been adopted and formally approved by Council as part of the 2025/26 budget process. These projects involve the planning and construction of new assets, fixing or upgrading what we already have, and expanding our existing infrastructure, facilities, equipment and properties. The program covers important projects, technology upgrades, roadworks, footpaths, drainage, parks, recreation areas, and community facilities.

Capital projects not finished from last year (2024/25), the money for those are carried over to be completed in the current financial year. We compare how much we've spent so far to the total budget for all projects, including any leftover funds from last year and any changes made to the budget.

Balance Sheet

The balance sheet shows our financial health at a certain point in time. It lists everything we own (assets) and everything we owe (liabilities). Our net worth (net assets or equity) equals total assets minus total liabilities – the larger the net equity, the stronger our financial position is.

Cashflow Statement

The cashflow statement is a financial statement that summarises the cash receipts and payments over the period. It provides information about the ability to generate cash, pay debts, and invest in new opportunities. The cash flow is categorized into three main activities:

- Operating (day-to-day business)
- Investing (buying or selling assets)
- Financing (loans and repayments)

It is an essential tool to assess Council's financial health and to make informed decisions.

2.1. Income Statement for nine months ending 31 March 2026

Hepburn Shire Council Comprehensive Income Statement For the Period Ended 31 March 2026

	Note	YTD Budget 2025/26	YTD Actual 2025/26	YTD Variance		FY Budget 2025/26
		\$'000	\$'000	\$'000	%	\$'000
Income						
Rates and charges		28,869	29,228	358	1%	28,951
Statutory fees and fines	1	784	890	106	13%	908
User fees	2	597	698	101	17%	792
Grants - operating	3	3,916	4,385	469	12%	4,807
Grants - capital	4	1,363	1,136	(227)	-17%	6,954
Contributions - monetary		208	119	(89)	-43%	270
Contributions - non monetary		-	-	-	100%	-
Net gain/(loss) on disposal of assets		100	180	80	80%	207
Other income	5	1,072	1,354	282	26%	1,427
Total Income		36,909	37,989	1,080	3%	44,317
Expenses						
Employee costs		12,452	12,419	33	0%	16,081
Materials and services	6	11,162	10,120	1,042	9%	14,813
Bad and doubtful debts		6	4	2	28%	6
Depreciation and amortisation		7,105	7,105	0	0%	9,473
Borrowing costs		406	413	(8)	-2%	555
Other expenses	7	706	579	127	18%	931
Total Expenses		31,836	30,641	1,195	4%	41,859
Surplus/(Deficit) for the year		5,073	7,348	2,275	45%	2,458

Commentary is provided for variances greater than both \$100,000 and 10%.

Note 1 – Statutory fees and fines

Statutory fees & fines are favourable by \$106k (13%), mainly due to higher-than-expected fire prevention fines as well as additional environmental and planning infringement enforcement fines.

Note 2 – User fees

User fees are favourable by \$101k (17%), mainly due to an increase in waste transfer station gate fees.

Note 3 – Operating grants

Grants (operating) are favourable by \$469k (12%), due to funding of the MERP (Municipal Emergency Resource Planning) being received earlier than expected, in addition to the phasing of grant income received in advance last financial year and being brought to account earlier than budgeted.

Note 4 – Capital grants

Grants (capital) are unfavourable by \$227k (17%), mainly due to the Local Roads and Community Infrastructure Program funding not yet received.

Note 5 – Other income

Other income is favourable by \$282k (26%), mainly due to additional interest income.

Note 6 – Materials and services

Materials and services are favourable by \$1.0m (9%), mainly due to delayed spending on special operating projects (\$227K), general maintenance (\$375k), and waste services contractor payments (\$360k), offset by YTD overspends in information services for software licencing which will be capitalised at year end. These variances are partially due to timing of receiving invoices, and partially due to delayed spending, and are expected to resolve by the end of the financial year.

Underspends are being utilised to fund additional legal and fuel costs. Council's fuel budget is \$9k under budget and legal costs are \$14k over budget as at March, but we expect increased costs in the last quarter of the year.

Note 7 – Other expenses

Other expenses are favourable by \$127k (18%), mainly due to an underspend in community grants which is due to timing.

2.2. Statement of Capital Works for the nine months ending 31 March 2026

Hepburn Shire Council Statement of Capital Works as at 31 March 2026

<i>Capital Works Category</i>	<i>Original Budget</i>	<i>Original inc C/F Budget</i>	<i>YTD Actual</i>	<i>% Spent YTD (Including commitments) on C/F Budget</i>	
	\$000	\$000	\$000		
Property					
Buildings	848	2,287	831	45%	
Building Improvements	1,364	712	292	52%	
Total Property	2,212	2,999	1,123	46%	
Plant and Equipment					
Plant, machinery and equipment	1,331	1,381	377	102%	
Computers and telecommunications	610	610	177	30%	
Library books	62	62	46	114%	
Total Plant & Equipment	2,003	2,053	601	81%	
Infrastructure					
Roads	6,873	7,285	2,151	40%	
Bridges	276	376	74	23%	
Drainage	320	320	60	89%	
Recreational, leisure and community facilities	1,384	2,407	816	51%	
Total Infrastructure	8,853	10,388	3,101	44%	
Total Capital Works	13,068	15,441	4,825	49%	
Represented by:					
New asset expenditure	2,284	3,176	220	12%	
Asset renewal expenditure	10,298	10,955	4,159	59%	
Asset upgrade/expansion expenditure	485	1,309	446	53%	
Total Capital Works Expenditure	13,068	15,441	4,825	49%	
				% Spent YTD Original Budget	37%
				% Spent YTD Original inc C/F Budget	31%

Capital Works Program Update Program Overview

The 2025/26 Capital Works Program now comprises 77 projects, with a total value of \$15.440M (being \$13.067M new budget in addition to \$6.51M carry forward from 2024/25 and \$0.67M adjustments). A recent adjustment has been made following the February 2026 Council resolution on the Wheelers Bridge project, reducing the expenditure budget by \$3.459M.

A breakdown of the program by project value, asset type and by delivery status is provided below, based on the 2025/26 amended allocations.

CAPITAL PROJECTS BY ASSET TYPE

Type	Number	Total Value	% program - \$	% program – no.
Buildings and facilities	21	\$2,999,247	19%	27%
Civil Infrastructure	28	\$7,981,294	52%	36%
Recreation and Open Space	24	\$2,406,990	16%	31%
Other	4	\$2,053,000	13%	5%
	77	\$15,440,531	100%	100%

CAPITAL PROJECTS BY SIZE

Size	No.	Total Value	% program - \$	% program – no.
>\$1M	2	\$3,381,000	22%	3%
\$501k - \$1M	7	\$4,715,237	31%	9%
\$101K - \$500K	31	\$5,853,420	38%	40%
\$50K - \$100k	15	\$1,107,532	7%	19%
<\$50K	22	\$383,342	2%	29%
	77	\$15,440,531	100%	100%

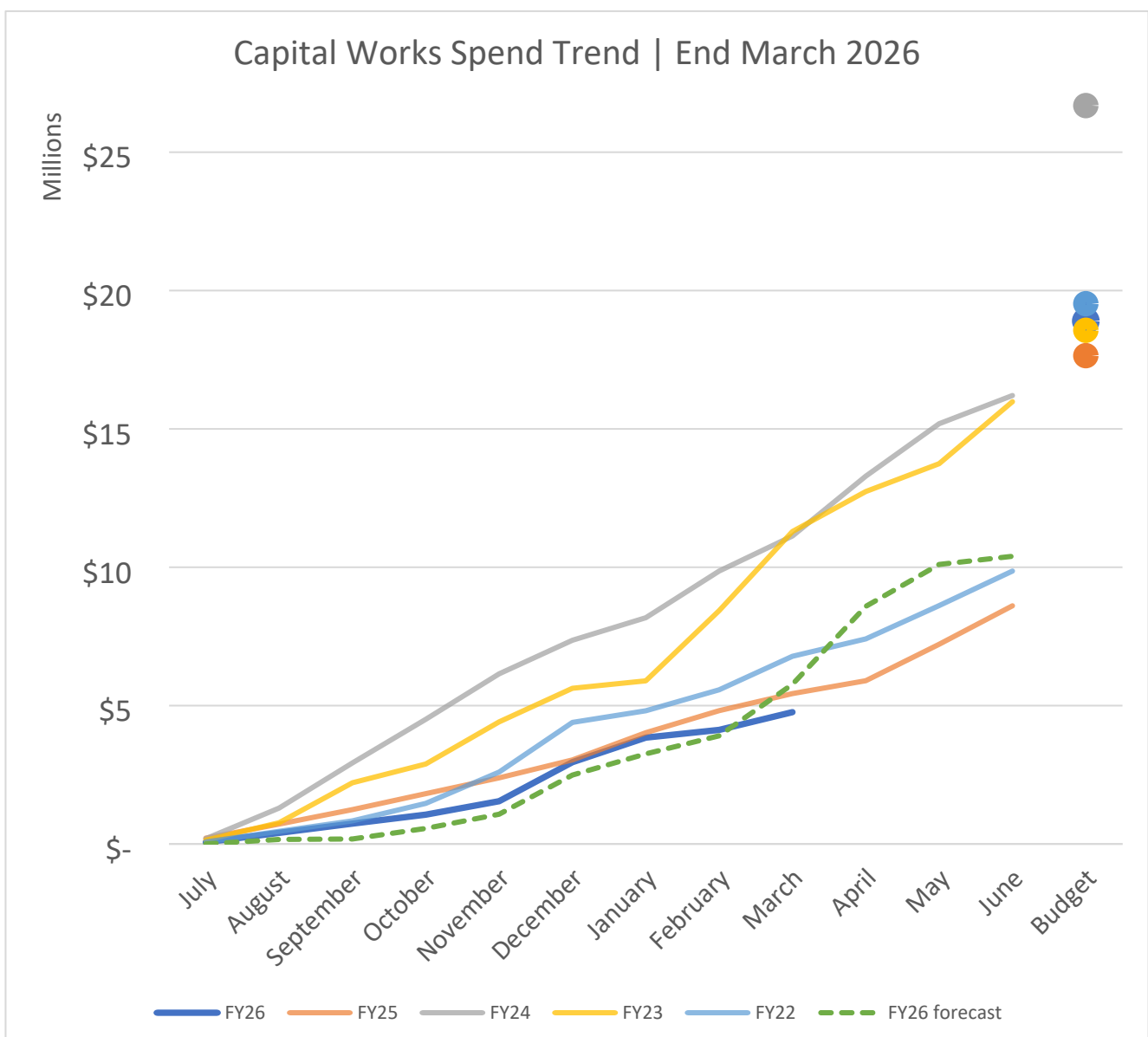
CAPITAL PROJECTS BY DELIVERY STATUS

Stage	Number – current status	Number – planned	Value	% program - \$	% program – no.
Planning	4	6	\$1,450,000	9%	5%
Procurement	12	4	\$3,885,209	25%	16%
Delivery	34	43	\$7,352,698	48%	44%
Completion	27	24	\$2,752,624	18%	35%
	77	77	\$15,440,531	100%	100%

Capital Works Expenditure

At end March 2026, capital works expenditure was \$4.825M of the \$15.440M budget, representing 31% of the total program budget. In addition, \$2.682M of commitments were in place at the end of March. Preliminary end of April expenditure is \$6.378M, with \$2.727M commitments in place.

Actual expenditure at the end of March as a percentage of the adopted budget is lower compared to previous years, and whilst tracking well against the 2025-26 phasing up to February, has fallen behind in March. The forecast expenditure for the end of the year is \$10.646M.



Forecast Position

The current forecast for expenditure is \$10.646M, which would be 69% of the budgeted capital work program. The average percentage of expenditure of the prior four years' capital programs is 62%. This requires significant expenditure to the end of the year; officers have reviewed every project in detail and this is the best estimate at this stage.

The projection for unexpended budget (\$5.044M) includes:

- A number of road projects that have been delayed in delivery due to permit or other planning stage complexities (\$2.63M)
- A range of building projects where the scope and timeframes have been revised due to Council resolutions or service agency delays (Daylesford Town Hall, Glenlyon Pavilion) (\$1,139,920)
- A range of projects, particularly building, completed with some savings against budget (\$302,227)

Across the program, the anticipated position includes:

- Potential carry forwards (\$4.223M of potential carry forward)
- Projects to be completed with overspends (\$328,118 of overspends)
- Projects to be completed with savings (\$898,153 of savings)
- Of the above \$898,153, \$511,426 needs to be excluded from Council's forecasted unrestricted cash position, as they are externally funded (and therefore unspent funds must be returned) or were funded from reserves (that is, the balance of budget not required for the Daylesford Community Facilities Project). This means the effective savings is \$386,727, and the forecast net unrestricted cash impact for the capital works program is \$58,609.

Significant potential carry forwards include:

- Road Safety Upgrades (\$1.750M carry forward) – Projects will be delivered by end October (requiring a carry forward) which meets funding requirements.
- Chanters Lane and Pearson Road Reconstruction (\$177,000 carry forward) – this is a collaborative project, led by Macedon Ranges Shire Council, that experienced approvals delays. The majority of expenditure will be realised this year, with remaining expenditure anticipated in 2026/27.
- Cambridge Street kerb and channel (\$316,981 carry forward) – Procurement is underway with contract award planned for June due to these works being tied in with the wider SLRSP project.
- St Georges Lake Road Traffic Management Plan Works (\$386,475 carry forward) – following extensive planning and consultation, this project will likely be delivered in the first half of 2026/27 and incorporates road sealing and safety works.
- Daylesford Town Hall (\$401,978 carry forward) – Remaining essential electrical upgrades will be undertaken following programmed, required Powercor works. Timing uncertain due to Powercor programming, which has delayed the works.
- Daylesford Community Facilities (\$237,000 carry forward) – procurement underway for next stage as defined in Council resolution.

The Executive team continue to be concerned at the low level of expenditure and the identified delays across a number of projects. We are working across the teams to address these concerns and implementing a number of actions as a result, including, regular meetings with Project Managers and accountability against project phasing as part improvements to our Project Management Framework.

2.3. Balance Sheet as at 31 March 2026

Commentary is provided for variances greater than both \$100,000 and 10%.

Hepburn Shire Council Balance Sheet As at 31 March 2026

	Note	Current	Prior Year	Variance Year on Year	
		Year Actual	Actual		
		\$'000	\$'000	\$'000	%
Assets					
Current Assets					
Cash and cash equivalents	8	11,763	9,538	2,225	23%
Trade and other receivables	9	16,294	13,865	2,429	18%
Other financial assets		190	190	-	0%
Inventories		32	92	(60)	-65%
Non-current assets classified as held for sale		-	-	-	0%
Other assets		12	30	(18)	-61%
Total Current Assets		28,290	23,715	4,576	19%
Non-Current assets					
Property, infrastructure, plant and equipment		507,780	483,172	24,609	5%
Intangible assets		-	-	-	0%
Total Non-Current Assets		507,780	483,172	24,609	5%
TOTAL ASSETS		536,071	506,886	29,184	6%
Liabilities					
Current liabilities					
Trade and other payables	10	1,884	1,013	(871)	-86%
Trust funds and deposits	11	4,665	3,323	(1,342)	-40%
Provisions		2,475	2,583	108	4%
Interest-bearing loans and borrowings	12	1,896	883	(1,013)	-115%
Other Liabilities	13	144	9	(135)	-1514%
Total Current Liabilities		11,064	7,811	(3,253)	-29%
Non-Current Liabilities					
Provisions		453	431	(22)	-5%
Interest-bearing loans and borrowings	12	10,551	8,030	(2,521)	-31%
Other Liabilities	13	623	10	(613)	-5890%
Total Non-Current Liabilities		11,628	8,471	(3,156)	-37%
TOTAL LIABILITIES		22,692	16,282	(6,409)	-39%
NET ASSETS		513,379	490,604	22,775	5%
Equity					
Accumulated surplus		147,330	150,560	(3,230)	-2%
Reserves		366,049	340,044	26,005	8%
TOTAL EQUITY		513,379	490,604	22,775	5%

Note 8 – Cash & cash equivalents, Other financial assets

Cash and cash equivalents are higher than at the same time last year. This is primarily due to slower than expected capital spending, and another SRO payment for the ESVF falling due. Other financial assets are lower than at the same time last year, and this is due to investments maturing and being utilized to fund council operations.

Note 9 – Trade & other receivables

Trade and other receivables are higher than the previous year and this is influenced by a higher annual rates, significantly increased charges for the Emergency Services Volunteers Fund (collected on behalf of the State Government), both of which are higher than the previous year, and outstanding rental income (due to ongoing legal negotiations). Council is actively collecting overdue rates, and outstanding debts, with staff making a further concerted effort in the lead up to 30 June 2026 reporting.

Note 10 – Trade & other payables

Trade and other payables are higher than the previous year, simply due to a higher volume of accruals booked this financial year compared to last year. All suppliers and commitments are being met on time, with no cashflow issues experienced by Council.

Note 11 – Trust funds and deposits

Trust funds and deposits are higher than the previous year due to another payment for the State Revenue Office for the emergency services volunteer fund levy, falling due but not yet paid. It is anticipated that this will be paid before the end of the financial year.

Note 12 – Interest-bearing liabilities

Current and non-current interest-bearing loans have increased in comparison to last year as a result of Council drawing down the loan for \$5.528 million in May 2025 per the 2024/25 adopted budget.

Note 13 – Other liabilities

In 2024/25, a right-of-use asset was recorded, representing Council's right to use a leased asset (24 Vincent St Daylesford) for a set period. This asset appears on the balance sheet, with the related lease obligations shown as both current and non-current liabilities. Council does not own the asset itself but has the right to use it during the lease term.

2.4. Statement of Cash Flows as at 31 March 2026

Hepburn Shire Council Statement of Cash Flows For the Period Ended 31 March 2026

		Current Year Actual	Prior Year Actual 31/03/2025	Variance Year on Year	
	Note	Inflows/ (Outflows) \$'000	Inflows/ (Outflows) \$'000	(Inc/Dec) \$'000	%
Cash flows from operating activities					
Rates and charges	14	22,948	20,473	2,475	12%
Statutory fees and fines		695	629	65	10%
User fees	15	1,195	973	222	23%
Grants - operating	16	3,350	7,987	(4,636)	-58%
Grants - capital	17	774	945	(171)	-18%
Contributions - monetary	18	119	279	(160)	-57%
Reimbursements		-	-	-	0%
Interest received		491	553	(62)	-11%
Rent received	19	34	840	(805)	-96%
Trust funds and deposits taken	20	(139)	686	(825)	-120%
Rents (inclusive of GST)		-	-	-	0%
Other receipts		156	92	64	70%
Net GST refund/payment		350	265	86	32%
Employee costs		(12,418)	(12,706)	288	-2%
Materials and services		(12,175)	(12,651)	476	-4%
Trust funds and deposits repaid		-	-	-	0%
Other payments		(579)	(584)	5	-1%
Net cash provided by/(used in) operating activities		4,801	7,780	(2,979)	-38%
Cash flows from investing activities					
Payments for property, infrastructure, plant and equipn		(4,833)	(5,237)	404	-8%
Proceeds from sale of prop, infrastructure,	21	180	36	144	404%
Payments for investments	22	2,000	5,997	(3,997)	-67%
Proceeds from sale of investments	22	(2,000)	-	(2,000)	100%
Loans and advances made		-	-	-	0%
Payments of loans and advances		-	-	-	0%
Net cash provided by/(used in) investing activities		(4,653)	796	(5,449)	-684%
Cash flows from financing activities					
Finance costs	23	(413)	(216)	(197)	91%
Proceeds from disposal of financial assets		-	-	-	0%
Proceeds from borrowings		-	-	-	0%
Repayment of borrowings	23	(1,341)	(469)	(872)	186%
Net cash provided by/(used in) financing activities		(1,754)	(685)	(1,069)	156%
Net increase (decrease) in cash and cash equivalents		(1,606)	7,894	(9,499)	-120%
Cash and cash equivalents at the beginning of the fina		13,368	1,645	11,724	713%
Cash and cash equivalents at the end of the period		11,763	9,538	2,224	23%

Cash holdings as at 31 March 2026 are \$2.2 million higher than the same time last year, and this is mainly due to higher cash holdings at the start of the period. Total cash and investments for the quarter is \$11.8 million.

Note 14 – Rates and charges

Rates and charges are \$2.4m higher than the same time last year due to the increase in the rate cap and ESVF levy, in addition to the collection campaigns being run during the year to date. Full reconciliation of debtors will be completed as part of financial year end, as officers are currently working with our software provider to provide much improved data reporting.

Note 15 – User fees

User fees are higher than at the same time last year due to the increase in user fees across the services year to date.

Note 16 – Grants operating

Operating grants are lower than the same time last year due to the 2025/26 financial assistance grants being received in advance in 2024/25, whereas the 2026/27 grants have not been received in advance during 2025/26 – further detail regarding the timing of these payments would be known post the Federal Government Budget.

Note 17 – Grants capital

Capital grants are lower than the same time last year due to the Local Roads and Community Infrastructure Program (LRCIP) grant having not yet been received – capital income is timing related, and funding is fully expected as projects are advanced.

Note 18 – Contributions - monetary

Monetary contributions are lower than the same time last year due to lower-than-expected public open space contributions.

Note 19 – Rent received

Rent received is lower than the same time last year due to the Mineral Springs lease income remaining unpaid, while Council negotiates with a number of parties given unplanned closure and construction works being undertaken.

Note 20 – Trust funds & deposits taken

Trust funds and deposits taken are lower than the same time last year due to repayment of bonds and deposits.

Note 21 – Proceeds from sale of property, plant and equipment

Proceeds from the sale of assets is higher than the same time last year due to receiving higher plant sales income than last year.

Note 22 – Proceeds from and payments for investments

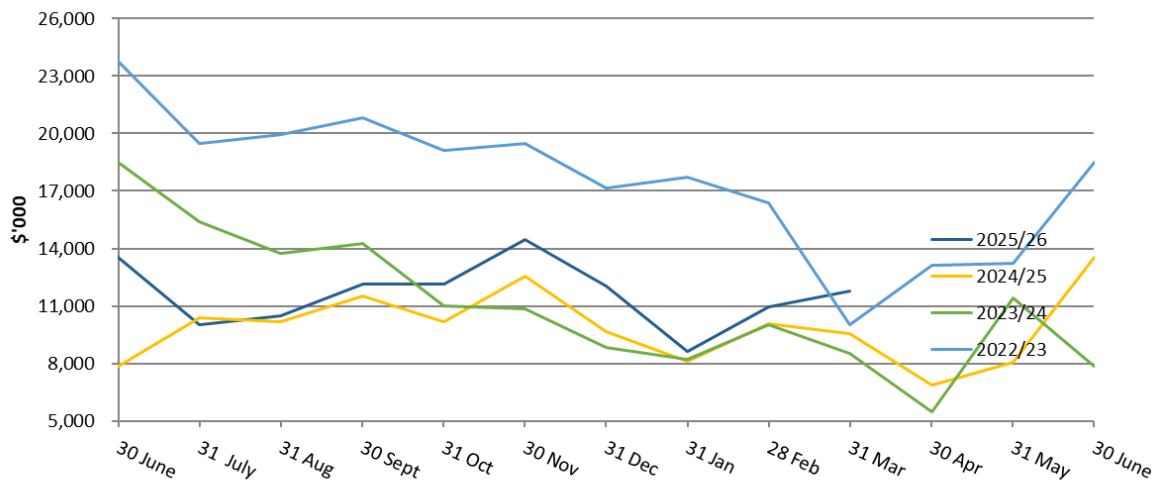
This is the neutral movement in investing in term deposits.

Note 23 – Finance costs and repayment in borrowings

Council has more borrowings in the current financial year resulting in increased borrowing repayments.

3. Cash Holdings

The graph below illustrates the combined monthly balances of cash and investments. As of 31 March 2026, cash and term deposits totaled \$11.8 million. Compared to the same time last year, cash holdings at the close of March 2025 were slightly lower, mainly because of a lower starting cash position.



The table below shows the balances of cash and investments as at 31 March 2026.

Cash and investments	Amount \$'000	%
Cash and cash equivalents		
Cash on hand	25	0.2%
Cash at Bank	488	4.2%
At call funds	9,232	78.5%
Community Asset Committee Cash at Bank ¹	4	0.0%
Total Cash and cash equivalents	9,749	82.9%
Other financial assets		
Investments	2,000	17.0%
Community Asset Committee Term Deposits ¹	14	0.1%
Total Other financial assets	2,014	17.1%
Total Cash and investments	11,763	100.0%

1. Council incorporates investments held on behalf of Community Asset Committees into our financial position.

3.1. Restrictions on Cash and Investments

Council's working capital (current assets / current liabilities) and unrestricted cash to current liabilities are measures of Council's liquidity. Restrictions on cash and investments do not account for cash liabilities.

The table below should be considered in the context of Council's 2024/25 financial results and financial plan contained within the 2025/26 Budget.

The unrestricted cash will be continually monitored and is expected to improve towards the end of the financial year. We are budgeted to have \$437k unrestricted cash at 30 June 2026 as per the adopted budget.

A change in the allocation of certain reserves has taken place in the previous quarter, with the reserves for Mineral Springs and Waste Services realigned to the statutory reserves section. This has been realigned for prior years for comparison purposes on the report. It does not affect the out-turn position.

Additionally, a new Grants Reserve has been established with the funding from the Creswick-Lawrence Rd project transferred to the reserve.

	Actuals 31-Mar-25 \$'000	Actuals 30-Jun-25 \$'000	Actuals 31-Mar-26 \$'000
Cash and Investments			
Cash and cash equivalents	3,348	13,368	11,573
Other financial assets	6,190	190	190
Total Cash and Investments	9,538	13,558	11,763
Restrictions on Cash and Investments¹			
Trust Funds and Deposits	1,182	1,666	4,665
Statutory Reserves	3,310	3,967	4,194
Other Restrictions ²	4,901	6,637	2,481
Total Restricted Cash and Investments	9,393	12,270	11,340
Total Unrestricted Cash and Investments	145	1,288	423

1. A statutory requirement for Council to hold in trust. This includes bond payments, development contributions toward Public Open Space and grant income received in advance for future year projects.

2. Other restrictions.

Other Restrictions	\$'000	\$'000	\$'000
Cash held to fund carry forward projects	3,054	1,243	-
Grants and other income received in advance	-	3,332	-
Discretionary Reserves	1,847	2,062	2,481
Total other restricted amounts	4,901	6,637	2,481

3.2. Unrestricted cash (VAGO ratio)

Measure:

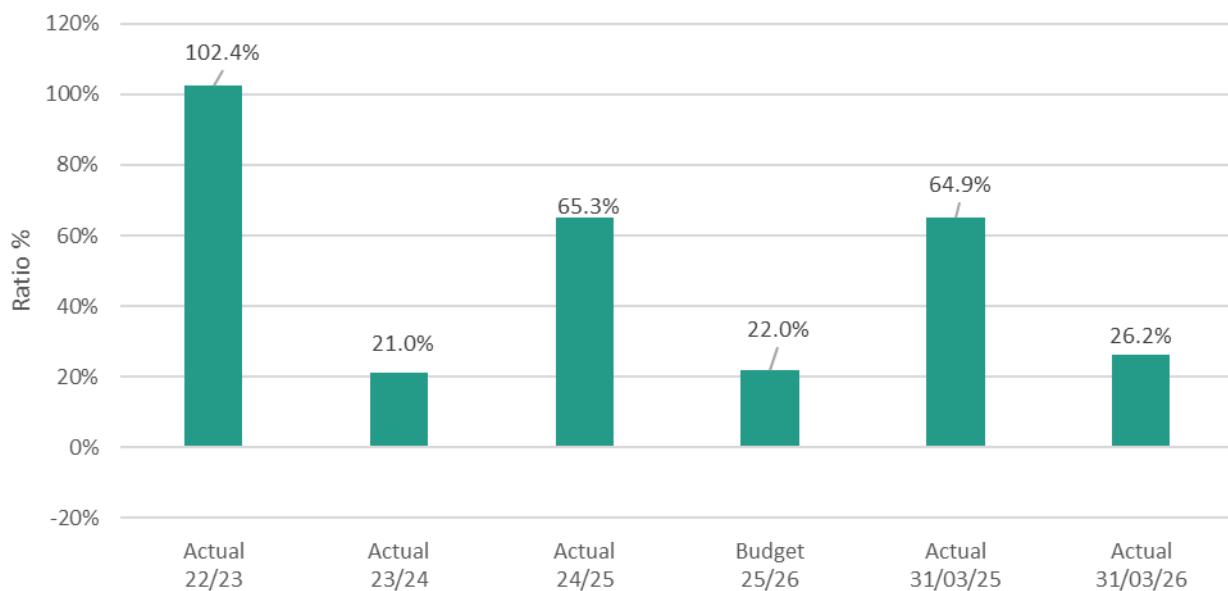
unrestricted cash / current liabilities

2025/26 Budget Calculation:

\$1,974K / \$8,967K = 22.0%

31 March 2026 Actual Calculation:

\$2,903K / \$11,064K = 26.2%



Purpose of ratio:

To assess if Council has enough cash, that is not tied to a reserve or trust account, to meet its obligations for the financial year.

The current actual KPI of 16.8% is within range of the year-end budgeted position of 22%, and at this stage the unrestricted cash position as at 30 June appears on target. Council’s unrestricted cash continues to be a key consideration in the setting of the 2026/27 budget.

4. Financial Reserves

The table below shows reserve balances as at 30 June 2025, 31 March 2026, expected balances as at 30 June 2026, and the Budget at financial year end of 2026.

Known reserve transfers have been actioned during quarter three – with full reconciliations to occur as part of the year-end audit process.

Reserve Balances	Actual 30 June	Actual 31 March	Forecast 30 June	Budget 30 June
	2025 \$'000	2026 \$'000	2026 \$'000	2026 \$'000
Statutory Reserves				
Open Space Recreation Reserve	2,118	2,049	2,094	1,379
Mineral Springs Financial Reserve	314	610	308	-
Waste Management Reserve	1,535	1,535	1,928	1,109
Total Statutory Reserves	3,967	4,194	4,330	2,488
Discretionary Reserves				
Clunes Caravan Park	7	7	7	-
Heritage Advisory Fund Reserve	20	20	20	-
Mt Beckworth Pit Reserve	28	28	28	28
Smeaton Hill Pit Reserve	74	74	74	74
Staff Accommodation & Community Facilities	1,933	1,845	1,558	1,434
Grants Reserve	0	507	507	
Total Discretionary Reserves	2,062	2,481	2,194	1,536
Total Reserves	6,029	6,675	6,524	4,024

Public Open Space Reserve

The Public Open Space Reserve is used to hold developer contributions towards public open space infrastructure arising from property developers undertaking property subdivisions. These funds are then used to expand and upgrade Council's public open space facilities. Use of the funds in the Public Open Space Reserve are restricted by legislation.

Mineral Springs Financial Reserve

The purpose of this reserve is to fund future works associated with mineral springs across the municipality and the refurbishment of the spa complex. The annual operating surplus of the Hepburn Mineral Springs Reserve is transferred to this reserve each year. Reserve funds are then used for capital projects at the Hepburn Mineral Springs Reserve. The use of funds in this reserve is not restricted by legislation and is at the discretion of Council. It should be noted this figure is representative of the funds available prior to Council decision regarding the repair work at the Bathhouse, and this will be reviewed inline with works undertaken at that site.

Waste Management Reserve

The annual operating surplus of Council's waste management function is transferred to the Waste Management Reserve each year. Reserve funds are then used for waste management capital projects. Council is continuing

with the Waste Strategy which will inform future waste management capital projects required by the shire. The use of funds in this reserve is not restricted by legislation and is at the discretion of Council.

Clunes Caravan Park Reserve

The Clunes Caravan Park Reserve contains funds reserved for future capital works projects at the Clunes Caravan Park. The use of funds in this reserve is not restricted by legislation and is at the discretion of Council.

Heritage Advisory Reserve

The purpose of this reserve is to provide low interest loans for heritage renovations. The use of funds in this reserve is not restricted by legislation and is at the discretion of Council.

Smeaton Hill Pit Reserve

The Smeaton Hill Pit Reserve contains funds reserved for future gravel pit restoration works at the Smeaton Hill gravel pit. The use of funds in this reserve is not restricted by legislation and is at the discretion of Council.

Mt Beckworth Pit Reserve

The Mt Beckworth Pit Reserve contains funds reserved for future gravel pit restoration works at the Mt Beckworth gravel pit. The use of funds in this reserve is not restricted by legislation and is at the discretion of Council.

Staff Accommodation and Community Facilities Reserve

This reserve is the surplus from the sale of The Rex and the repayment of the loan drawn down to purchase The Rex. This reserve is to be allocated to projects associated with accommodation for Hepburn Shire Staff and Community Facilities within the Birch Ward.

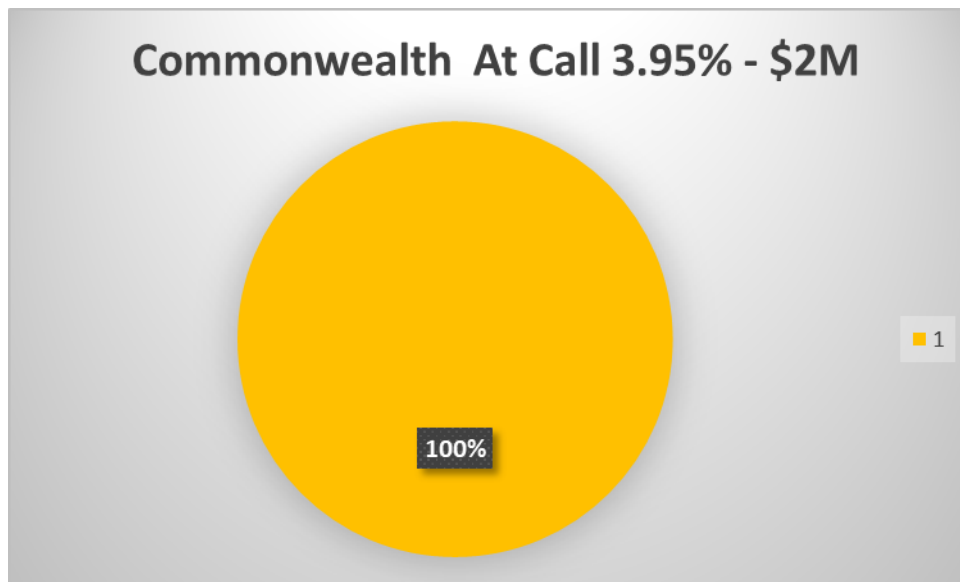
5. Investment Mix

Council invests funds held in Trust and Reserves in short to medium term investments such as term deposits. All investments are made in accordance with the *Local Government Act 2020* and are made with APRA (Australian Prudential Regulation Authority) approved financial institutions.

The table below shows a comparable interest rate per investment. Interest rates have historically been lower, however due to the higher rates being available these have been captured and utilised for the maximum allowable investments with financial institutions as per Council's policy. It is expected that Council will continue to invest at higher interest rates as we move through the new calendar year.

As at 31 March 2026 investments consisted of the following term deposits and are compliant based on the below short-term investments:

Institution	Maturity Date	Interest Rate	Term (months)	Amount \$'000
Commonwealth	At Call	3.95%	-	2,000
Total Investments				2,000



6. Financial Performance Indicators

6.1. Adjusted underlying result

Measure:

adjusted underlying surplus (deficit) / adjusted underlying revenue

2025/26 Budget Calculation:

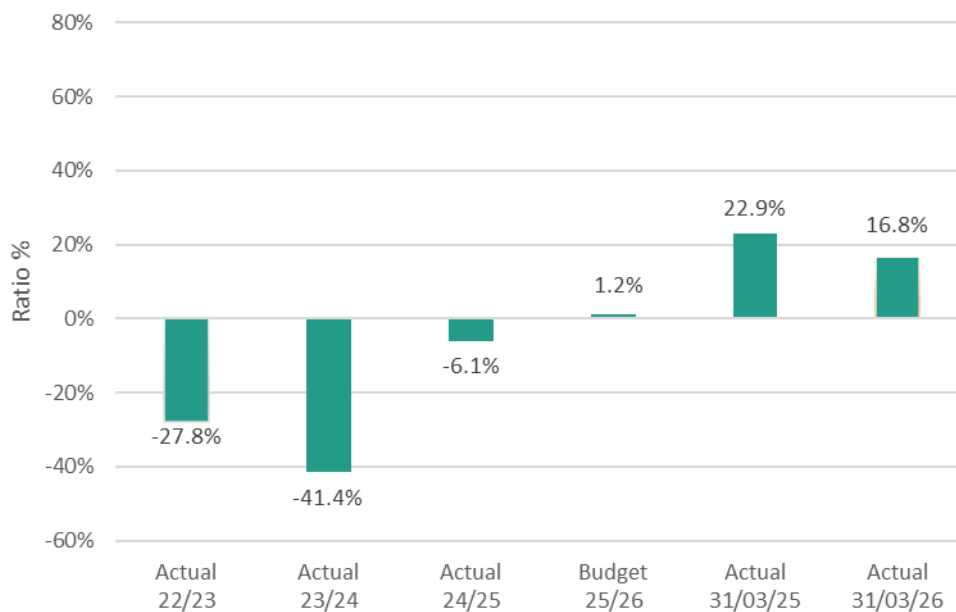
\$505K / \$41,293K = 1.2%

31 March 2026 Actual Calculation:

\$6,168 / \$36,809 = 16.8%

Purpose of ratio:

This ratio measures Council’s ability to meet operating expenditure with operating revenue. The current budget of 1.2% sits within the State Government target of between 0-10%.



Actual calculation is within the State Government target, this is due to recognition of rates revenue in the first quarter of the 2025/26 financial year. As expenditure increases throughout the year this percentage is expected to decrease.

6.2. Obligations

Borrowing Ratio

Measure:

interest bearing loans and borrowings / rate revenue

2025/2026 Budget Calculation:

$\$12,026\text{K} / \$28,951\text{K} = 41.5\%$

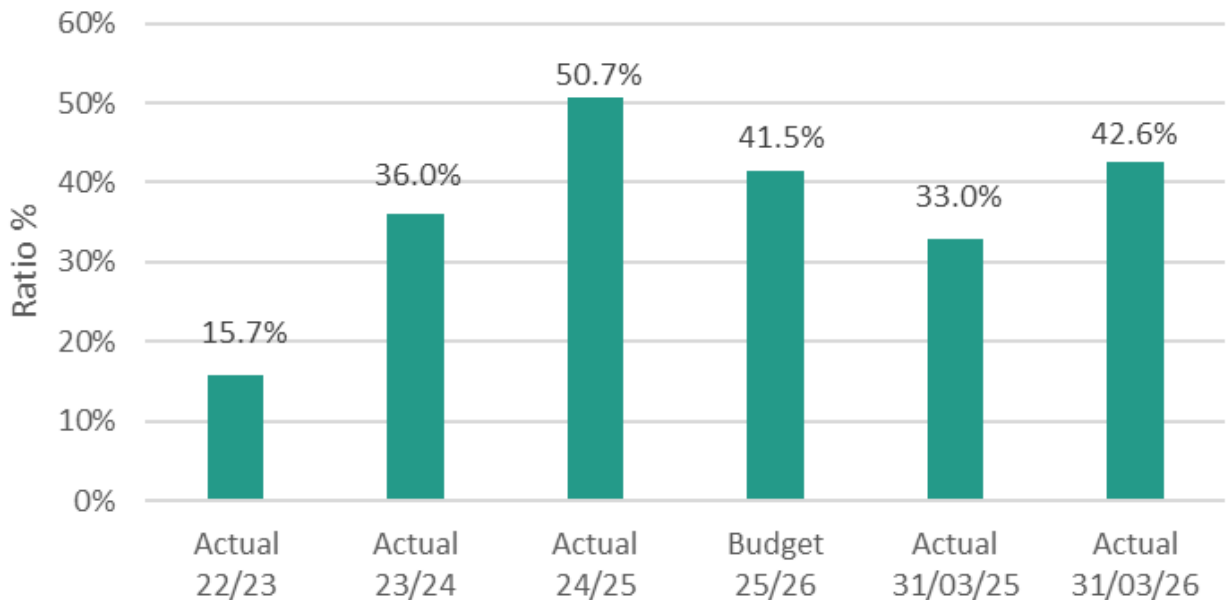
31 March 2026 Actual Calculation:

$\$12,447 / \$29,227\text{K} = 42.6\%$

Purpose of ratio:

To assess the utilisation of debt to fund Council's intergenerational works projects, relative to rates and charges revenue.

The budget ratio of 41.5% and the actual ratio as at 31 March 2026 of 42.6% sits within the State Government target of between 0-60%.



Debt Commitment

Measure:

interest and principal repayments on interest bearing loans and borrowings / rate revenue

2025/2026 Budget Calculation:

$\$2,506\text{K} / \$28,951\text{K} = 8.7\%$

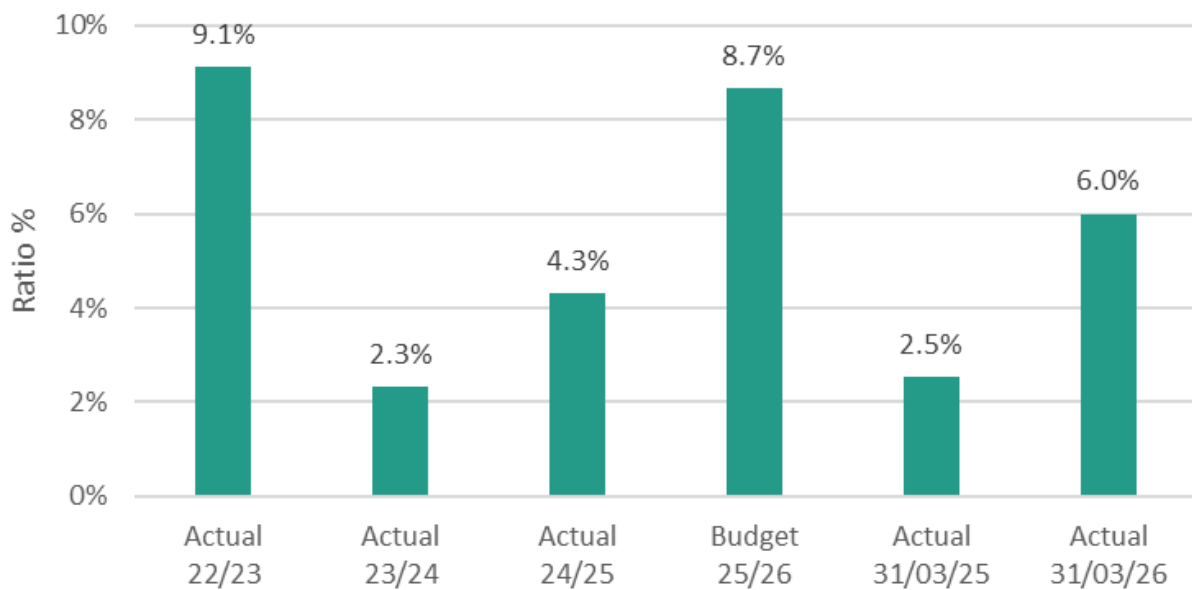
31 March 2026 Actual Calculation:

$\$1,754\text{K} / \$29,227\text{K} = 6.0\%$

Purpose of ratio:

To assess how reliant Council is on rates and charges revenue to meet interest and principal loan repayments.

The actual ratio as at 31 March 2026 of 6.0% sits just outside the State Government target of between 0-5%.



Indebtedness

Measure:

non-current liabilities / own source revenue

2025/2026 Budget Calculation:

\$10,537K / \$32,078K = 32.8%

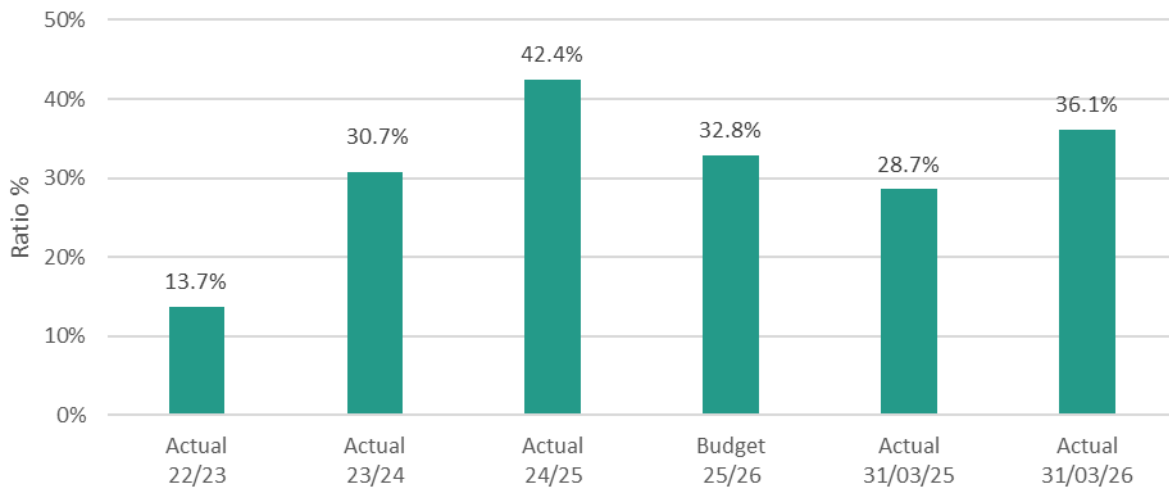
31 March 2026 Actual Calculation:

\$11,627K / \$32,168K = 36.1%

Purpose of ratio:

To assess Council's ability to cover its medium to long-term liabilities with revenue not sourced by grants, monetary contributions, or non-monetary contributions.

This measure is relatively static over time and remains just out-with the State Government target of between 0-40% based on the actual calculation.



6.3. Rates and charges

Rates concentration

Measure:

rates and charges / adjusted underlying revenue

2025/2026 Budget Calculation:

\$28,951K / \$41,293K = 70.1%

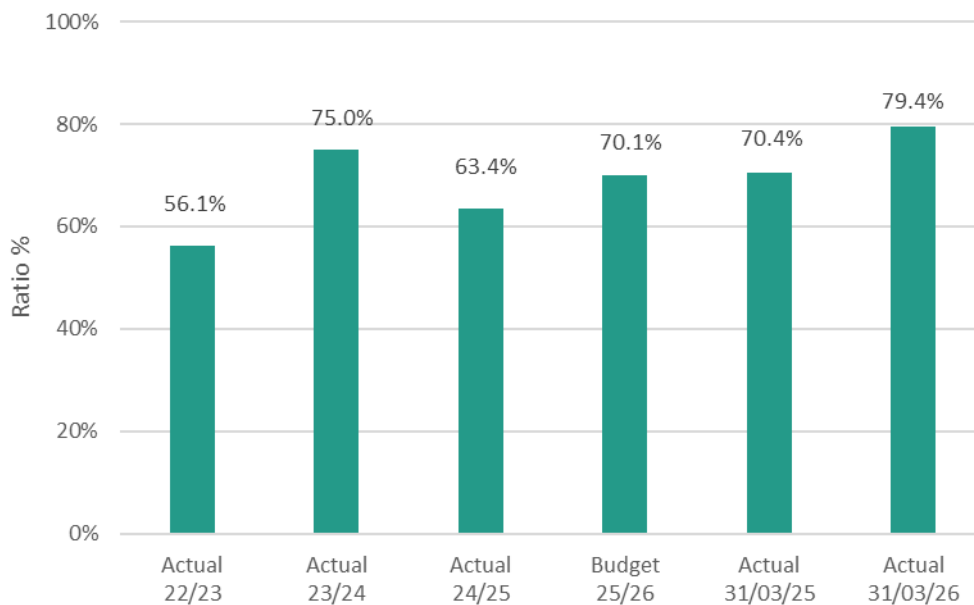
31 March 2026 Actual Calculation:

\$29,227K / \$36,809K = 79.4%

Purpose of ratio:

This ratio measures Council’s reliance on rates and charges to fund operating services.

Sitting within the KPI range (30-80%) means that Council is less reliant on operating grants and user fees to fund operating expenditure. This measure is generally higher early in the financial year as rates revenue has already been recognised, as other user fees and charges are received during the year the actual result is expected to decrease and be within the State Government target by year end, which is consistent with prior years.



7. Rates and Other Debtors

As at 31 March 2026, Council's debtors are summarised below:

Debtor	March 2025 \$'000	March 2026 \$'000	Current \$'000	> 30 Days \$'000
Rates (including ESVF debtors) ¹	12,435	13,880	10,476	3,404
Sundry	524	1,102	264	838
Other Debtors	365	750	750	
-GST	144	222	222	
-Pension Concession	217	467	467	
Less: provision for doubtful debts	(124)	(126)	(126)	
TOTAL	13,561	16,294	12,052	4,242

1. Any payments made on rates and charges are applied to prior year outstanding balances first. Rates are classified as overdue when payment is not received by instalment date.

As of 31 March 2026, overdue rates debtors totalled \$3.4 million, which includes amounts collected for the Emergency Services Volunteers Fund on behalf of the State Government. This is a slight increase of \$344,000 (11%) compared to the \$3.070 million recorded at the same time last year, however given the increase in Council's Rate Cap and the State Government's significant increase in the ESVF this increase was a) expected, and b) is reasonable. A breakdown of the \$3.4 million is reflected in the table below:

Rates Debtors	March 2026 \$'000
Rates Charges	1,957
Waste Charges	592
ESVF Levy	349
Interest	524
Legal Fees	11
Pre-payments	(29)
Total	3,404

Over recent years (post COVID Pandemic), significant efforts have been made to reduce overdue rates. The current position is influenced by a higher annual rate cap of 10% and increased charges for the Emergency Services Volunteers Fund, both of which are notably higher than the previous year.

An engagement campaign will be underway in June to improve the collection rates for overdue rates.

As at 31 March 2026, there were 48 properties on hardship arrangements and 212 properties on payment arrangements. Council is continuing to improve its rates analysis data and will endeavour to provide a more detailed breakdown of the arrears as soon as possible.

Outstanding sundry debtors of \$1.102 million comprise the following, of which \$945k is for Hepburn Bathhouse & Spa:

Sundry Debtor Details	March 2025 \$'000	March 2026 \$'000
Government Grants	209	-
Leases	173	970
Planning	1	2
Environmental Health	1	12
Building	3	2
Fire Hazards	9	8
Local Laws	3	1
Other	125	107
Total	524	1,102

8. Councillor Expenses

Councillor Expenses for the nine months ended 31 March 2026.

Councillor	Councillor Allowance	Mobile and Data	Conferences and Training	Travel and Accom	Mayoral Car Allowance	Childcare	Total
Cr Clark	44,309	756	900	1,260	4,756	-	51,981
Cr Cornish	27,292	756	900	1,239	-	-	30,187
Cr Drylie	21,062	756	1,627	365	-	-	23,811
Cr Henderson	42,740	756	-	-	4,000	-	47,496
Cr Hewitt	27,556	756	1,500	-	-	-	29,812
Cr Hockey	20,998	756	-	420	-	-	22,174
Cr Hood	20,998	756	-	532	-	-	22,286
Total	204,955	5,292	4,927	3,815	8,756	-	227,745

Councillor Allowances and Expenditure



























The Victorian Government sets upper and lower limits for all allowances paid to Councillors and Mayors. Hepburn Shire Council is classified as a category one Council, and allowances are paid in accordance with section 39 of the *Local Government Act 2020*. These allowances increased on 1 July 2025 (3%) with a further increase from 18 December 2025 (3%).

Mobile and Data

The provision of telecommunications services, including phones and laptop/tablet, are paid for by Council.

Travel and Accommodation

This category covers expenses associated with attendance by Councillors at approved short-term training, conferences and/or functions.

PJ no.	Project	EXPENDITURE				Phase	Status	Comment	STATUS
		Full year budget	YTD Actual	YTD Budget	% Variance				
Property									
975	Creswick Mechanics Institute Upgrades	\$ 29,521	\$ 32,962	\$ 27,061	 18%	Completion	Completion		
1183	Daylesford Town Hall Refurbishment	\$ 661,978	\$ 257,011	\$ 275,104	 -7%	Procurement	Off Track	Stage 2 electrical is on track to be delivered later in 2026 to coincide with Powercor's supply install. Carry forward will be required to complete.	
1185	Hepburn Kinder Refurbishment	\$ 383,849	\$ 112,401	\$ 300,000	 -167%	Delivery	On track	Primary and secondary scope of works on track for delivery mid-May. Savings due to agreed change of scope and must be returned to Department of Education.	
1234	Daylesford Community Facilities Detailed Design	\$ 229,352	\$ 83,275	\$ 21,024	 75%	Completion	Completion		
1235	Newlyn Recreation Reserve Pavilion Floor Replacement	\$ 157,300	\$ 139,169	\$ 121,625	 13%	Completion	Completion		
1240	Forward Design Program (Buildings)	\$ 150,000	\$ 9,498	\$ 25,000	 -163%	Delivery	On Track	Project progressing to timeline. Expenditure behind phasing, however commitments of \$80,000 made after this month's figures will increase expenditure over next two months	
1274	Minor Capital Works Program (Buildings)	\$ 165,000	\$ 133,110	\$ 89,000	 33%	Delivery	On Track	All other works delivered. Creswick Roller Door works will cause overspend but are due to safety concern.	
1281	Clunes Recreation Reserve Stadium Remediation Works	\$ 36,300	\$ 28,529	\$ 32,688	 -15%	Completion	Completion	Project complete and under budget	
1282	Park Lake Reserve Rotunda Remediation Works	\$ 24,200	\$ 2,904	\$ 2,373	 18%	Procurement	On track	Works scheduled for May	
1162	Wombat Hill Pioneer Tower Strengthening	\$ 67,372	\$ 55,120	\$ 55,121	 0%	Completion	Completion	Income will be recognised in Q4 when acquittal is completed.	
1270	Hepburn Bathhouse Lift Renewal	\$ 172,970	\$ 118,720	\$ 172,970	 -46%	Completion	Completion	Project complete, no further expenditure to occur	
1271	Hepburn Bathhouse & Spa Pool Hall Ceiling Remediation	\$ 101,390	\$ 9,888	\$ 9,888	 0%	Completion	Completion		
1275	Daylesford Transfer Station Masterplan	\$ 110,000	\$ 16,561	\$ 70,000	 -323%	Delivery	On track	Following community engagement, a draft masterplan document has been prepared. Savings due to preparation of masterplan in house.	
1276	Lake Jubilee Caravan Park Shed Replacement	\$ 78,650	\$ 9,814	\$ 35,397	 -261%	Procurement	On track	Project overspend - additional items required including shed/tree removal, storage	
1277	Lake Jubilee Caravan Park Toilet Renewal	\$ 24,200	\$ 4,671	\$ 10,373	 -122%	Delivery	On track	Works undertaken 20 April	
1278	Wombat Hill Botanic Gardens Glasshouse Replacement	\$ 66,550	\$ 46,734	\$ 50,301	 -8%	Completion	Completion		
1279	Wombat Hill Botanic Gardens Restaurant Electrical Renewal	\$ 18,150	\$ 12,012	\$ 11,731	 2%	Completion	Completion		
1280	Lee Medlyn Bottle Museum Remediation Works	\$ 72,600	\$ 18,691	\$ 25,000	 -34%	Procurement	Off Track	Procurement delayed due to other priority. Contract planned to be awarded 2025/26 with Delivery planned for 2026/27.	
1314	Daylesford Town Hall - Municipal Offices Upgrade (Design)	\$ 220,000	\$ 3,543	\$ 152,308	 -4198%	Procurement	On Track	Request for Tender closed mid-April. Several suitable, in-budget submissions. Expect to award design contract at June or July Council meeting	
1315	Daylesford Town Hall - Auditorium Upgrade (Design)	\$ 50,000	\$ 2,321	\$ 34,615	 -1391%	Procurement	On Track	Project complete	
Sub Total		\$ 2,819,382	\$ 1,096,932	\$ 1,521,579					
Plant and Equipment									
1283	Plant & Fleet Renewal Program	\$ 1,381,000	\$ 377,372	\$ 525,601	 -39%	Delivery	On Track	Procurement undertaken or underway for all major plant; the program is on track for full delivery this financial year.	
1226	Plant & Fleet Renewal Program 24-25	\$ -	\$ -	\$ -	 0%	Completion	Completion		
557	JCT Renewal Program	\$ 610,000	\$ 177,392	\$ 305,000	 -72%	Delivery	On Track		
423	Library Collection Program	\$ 62,000	\$ 46,347	\$ 30,582	 34%	Delivery	On Track		
Sub Total		\$ 2,053,000	\$ 601,111	\$ 861,183					
Infrastructure									
100	Road Reseal Program	\$ 805,049	\$ 712,496	\$ 550,000	 23%	Delivery	Off Track	Minor project close out tasks such as line marking outstanding underway	
102	Road Reseal Program Preparation	\$ 200,000	\$ 204,697	\$ 125,000	 39%	Completion	Completion		

PJ no.	Project	EXPENDITURE				STATUS		
		Full year budget	YTD Actual	YTD Budget	% Variance	Phase	Status	Comment
103	Gravel Road Resheet Program	\$ 644,412	\$ 639,229	\$ 500,000	22%	Completion	Completion	
1202	Chanters Lane & Pearson Road Reconstruction	\$ 850,000	\$ 3,397	\$ -	100%	Planning	Off Track	Project being managed by Macedon Ranges Shire Council, approvals including Cultural Heritage and Planning in progress.
1205	Cambridge Street Kerb & Channel Renewal	\$ 316,981	\$ -	\$ -	0%	Procurement	On Track	Project in procurement phase, with contract award anticipated at June Council Meeting. Construction phase to begin in June.
1246	Forward Design Program (Roads)	\$ 110,000	\$ 48,425	\$ 70,257	-45%	Delivery	On Track	Project designs underway and will be complete this financial year
1273	Dean Newlyn Road Rehab Stage 2	\$ 75,734	\$ 10,629	\$ 30,000	-182%	Delivery	Off Track	Awaiting final service authority approvals for installation of hydrant which will be installed in June.
1284	Road Safety Improvements Program (SLRSP)	\$ 2,000,000	\$ 13,334	\$ 200,000	-1400%	Procurement	Off Track	Project scopes approved and funding agreements executed. All designs have been completed and procurement underway. Delivery to begin in June.
1285	Street Lighting Installations	\$ 30,250	\$ 5,345	\$ -	100%	Delivery	On Track	
1286	Central Springs Road Path & Kerb Improvements	\$ 181,500	\$ 14,185	\$ 181,500	-1179%	Delivery	Off Track	Works underway. Additional unplanned drainage renewal required.
1287	Kierces Road Reconstruction	\$ 543,798	\$ 5,190	\$ 400,000	-7606%	Delivery	On Track	Works underway, to be complete by June.
1288	Creswick-Lawrence Road Reconstruction	\$ -	\$ -	\$ -	0%	Planning	Off Track	Project scope changed as per Council resolution in February 2026.
1289	Burrall Street Reconstruction	\$ 423,500	\$ 280,186	\$ 423,500	-51%	Delivery	Off Track	Works practically complete, some additional drainage works in progress.
1290	Verge Improvement Program	\$ 110,000	\$ 13,659	\$ -	100%	Delivery	On Track	
1291	Minor Capital Works Program (Roads)	\$ 110,000	\$ 67,589	\$ -	100%	Delivery	On Track	
753	Wheeler's Bridge Renewal	\$ 100,000	\$ 69,917	\$ 55,000	21%	Delivery	On Track	Scope changed as per Council resolution in February 2026. Interim traffic safety works underway and will be completed in June.
1292	Hepburn Mineral Springs Pedestrian Bridge Renewal	\$ 144,000	\$ 4,244	\$ -	100%	Delivery	On Track	Construction contract to be awarded for completion in 2025/26.
1293	Minor Capital Works Program (Bridges)	\$ 132,000	\$ -	\$ -	0%	Delivery	On Track	
1297	Lake Daylesford Footpath Renewal	\$ 105,000	\$ 2,071	\$ -	100%	Delivery	On Track	Works beginning in April, to be complete by June.
1298	Minor Capital Works Program (Paths)	\$ 100,000	\$ 13,897	\$ -	100%	Delivery	On Track	
1299	Midland Highway Path Renewal	\$ 24,070	\$ 12,426	\$ 24,070	-94%	Delivery	On Track	Majority of works complete, final seal to follow.
1259	Creswick Flood Mitigation Works (Stage 1)	\$ -	\$ 9,375	\$ -	100%	Planning	On Track	Fauna & Flora Assessment and Cultural Heritage Management Plan in progress. Design and delivery to follow in 2026/27.
1294	Clunes Flood Study	\$ 210,000	\$ 13,648	\$ 70,000	-413%	Delivery	On Track	Contract awarded for the development of Clunes Flood Study, work in progress and anticipated for completion in 2026/27.
1295	Creswick Flood Study Stage 2 Planning	\$ 55,000	\$ 11,101	\$ 40,000	-260%	Delivery	On Track	Fauna & Flora Assessment and Cultural Heritage Management Plan in progress. Design and delivery to follow in 2026/27.
1296	Minor Capital Works Program (Drainage)	\$ 55,000	\$ 25,670	\$ 15,000	42%	Delivery	On Track	
1088	Glenlyon Pavilion Redevelopment	\$ 179,865	\$ 26,346	\$ 43,320	-64%	Delivery	On Track	Project progressing to timeline. Expenditure behind phasing, however a recent invoice has not been captured in this month's figures
1081	Pool Facilities Renewal Program	\$ 234,002	\$ 55,643	\$ 37,782	32%	Delivery	On Track	
1137	Creswick Bowls Club - Green Redevelopment	\$ -	\$ -	\$ -	0%	Completion	Completion	
1192	Newlyn Sportsground Lighting Upgrade	\$ -	\$ -	\$ -		Completion	Completion	
1220	Victoria Park Oval and Netball Lighting	\$ -	\$ 800	\$ -	100%	Completion	Completion	Project complete
1247	Doug Lindsay Oval Irrigation & Drainage Renewal	\$ 324,230	\$ 189,142	\$ 178,004	6%	Completion	Completion	Contracted works completed after negotiated removal of initial contractor. Outstanding defects being rectified. Outstanding income to be received in May.
1248	Victoria Park Soccer Field Lighting	\$ 294,851	\$ 48,755	\$ 97,530	-100%	Delivery	Off Track	Project progressing to timeline. Expenditure behind phasing, although expected to catch up by May
1249	Glenlyon Accessible Horse Mounting Ramp	\$ 38,322	\$ 54,696	\$ 38,322	30%	Completion	Completion	
1250	Victoria Park Masterplan	\$ 96,826	\$ 95,570	\$ 90,179	6%	Completion	Completion	
1251	Clunes Medlyn Playspace Renewal	\$ 10,365	\$ 26,010	\$ 2,000	92%	Completion	Completion	
1252	Lyonville Community Playspace Renewal	\$ 20,400	\$ -	\$ 20,400	-2040000%	Delivery	On Track	Whole playspace has not been renewed at this stage just the swing set.
1253	Trentham Outdoor Fitness Equipment Installation	\$ 47,564	\$ 87,945	\$ 47,564	46%	Completion	Completion	

PJ no.	Project	EXPENDITURE				% Variance	Phase	Status	Comment	STATUS
		Full year budget	YTD Actual	YTD Budget						
1254	Queens Parks Playspace Shade Structure Installation	\$ 60,000	\$ 65,062	\$ 60,000		8%	Completion	Completion		
1255	Newlyn Recreation Reserve Playspace Upgrade	\$ -	\$ 12,169	\$ -		100%	Completion	Completion		
1256	Forward Design Program (Recreation & Open Space)	\$ 110,000	\$ 38,952	\$ 26,675		32%	Procurement	On track	DLRR Masterplan Review RFQ closed	
1300	Trentham, Drummond & Clunes Sports Court Remediation	\$ 226,430	\$ 22,898	\$ 27,330		-19%	Delivery	On Track	Due to Council's current financial position an application did not proceed for the 2026/27 Country Football Netball Program (Trentham Netball Court Redevelopment)	
1301	Trentham Sportsground Cricket Net Renewal	\$ 242,000	\$ 21,797	\$ 1,788		92%	Completion	Completion	Required external funding not able to be secured, propose pursuing funding in 2026/27.	
1305	Minor Capital Works Program (Recreation & Open Spaces)	\$ 110,000	\$ 13,006	\$ 28,225		-117%	Procurement	Off Track	Delays in playground installation	
1307	Daylesford & Creswick Soccer Club Upgrade Planning	\$ 66,000	\$ 46,921	\$ 26,417		44%	Delivery	On track	Ground re-alignment underway	
1308	BBQ & Park Furniture Renewal Program	\$ 55,000	\$ 14,156	\$ 23,626		-67%	Delivery	On Track	Second round of BBQ renewal works in progress.	
1190	Old Melbourne Road Pedestrian Crossing (carry forward from 001190)	\$ 600,000	\$ 89,825	\$ 35,000		61%	Planning	Off Track	Melbourne Road Pedestrian Crossing in progress, construction to be complete in June. Remaining expenditure to deliver traffic management plan outcomes around St Georges Lake Road as adopted by Council will occur in 2026/27.	
1073	Wombat Hill Botanic Gardens	\$ -	\$ 4,303	\$ -		100%	Completion	Completion	Project complete, acquitted. Additional spend for bronze plaque.	
1302	Hepburn Mineral Springs Reserve Lighting Renewal	\$ 145,200	\$ 7,413	\$ -		100%	Delivery	Off Track	To obtain a more in depth understanding of the reason for the lighting fault, the works have been broken into stages - Investigation/Recommendation and Implementation. Investigation works underway.	
1303	Trentham Open Space Minor Projects	\$ 144,000	\$ -	\$ 40,000		-400000%	Procurement	On track	Following successful negotiation with stakeholder group, works are currently being procured.	
1304	Township Improvement Program	\$ 110,000	\$ -	\$ 25,000		-250000%	Delivery	On Track	Materials purchased installation on going	
1306	Queens Park Playspace Combination Unit Replacement	\$ 96,800	\$ 24,429	\$ 6,997		71%	Procurement	Off Track	RFQ has closed, evaluation in progress with delivery planned for 2025/2026	
1309	Bath Street Reserve Upgrade Planning	\$ 30,000	\$ 884	\$ 10,000		-1030%	Delivery	On track	Draft masterplan document complete ahead of community engagement in late April. Savings from undertaking work in house.	
Sub Total		\$ 10,568,149	\$ 3,127,434	\$ 3,550,486						
Total		\$ 15,440,531	\$ 4,825,477	\$ 5,933,248						

Hepburn Shire Council
Special Operating Projects Report as at 31 March 2026

ATTACHMENT 7.1.3

Project Number	Project Name	FY26 Current Budget FY	FY26 Current Budget YTD	FY26 Actual Expenses YTD	FY26 YTD Variance (Budget vs Actual)	FY26 Current Budget	Actual Income YTD
		2025/26 Expenditure				2025/26 Income	
Special Operating Projects							
PERFORMANCE AND TRANSFORMATION							
001230	Local Government Election 2024	23,959	17,969	6,499	11,471	-	-
001231	Councillor Inductions 2024	18,329	13,747	11,941	1,806	-	-
Total Governance		42,288	31,716	18,440	13,276	-	-
001150	Technology One Development	119,616	89,712	244,504	(154,792)	-	-
Total Information Technology & Transformation		119,616	89,712	244,504	(154,792)	-	-
TOTAL PEOPLE & TRANSFORMATION PROJECTS		161,904	121,428	262,944	(141,516)	-	-
DEVELOPMENT AND COMMUNITY							
001210	Short Term Rental Regulation	10,000	10,000	-	10,000	-	-
Total Director Development & Community		10,000	10,000	-	10,000	-	-
001147	Western Transmission Line Strategy	188,900	141,675	237,410	(95,735)	-	-
001160	Settlement Strategy & Township Structure Plans(Future Hepbn)	372,469	279,351	20,761	258,590	-	-
001166	Integrated Transport Strategy	50,000	37,500	-	37,500	-	-
Total Strategic Planning & Environment		611,369	458,526	258,171	200,355	-	-
001311	Djaara Engagement Land Practices	30,000	22,500	-	22,500	-	-
Total Planning and Building		30,000	22,500	-	22,500	-	-
001113	Storm Recovery 2021 BRV	11,040	8,280	-	8,280	-	42,659
001115	Storm Recovery - January 2022 - NDFA	-	-	583	(583)	-	-
001169	Storm Recovery - Community Led Recovery Projects	-	-	1,297	(1,297)	-	-
001177	Community Recovery Officer AGRN 1037	246,171	184,628	63,092	121,536	242,698	114,698
001180	Council Flood Support Fund	179,622	13,472	11,250	2,222	179,622	162,732
001191	Onsite Domestic Wastewater Management Plan	40,000	30,000	10,064	19,936	20,000	20,000
001199	Community Recovery Hub	123,249	92,437	57,881	34,556	123,249	123,249
001258	Cat Desexing Program	-	-	73	(73)	-	-
001267	Bushfire – December 2024	-	-	-	-	-	7,043
001268	2024 Bushfires and Storms (LGSF)	-	-	41,998	(41,998)	-	241,584
001313	Heatwave January 2026	-	-	4,946	(4,946)	-	-
000456	Fire Hazard Slashing	-	-	398	(398)	-	-
Total Health & Community Safety		600,082	328,817	191,581	137,235	565,569	711,967
001225	Hepburn Open Access Libraries Program	62,265	46,699	44,037	2,662	62,481	53,645
Total Communications and Customers		62,265	46,699	44,037	2,662	62,481	53,645
TOTAL DEVELOPMENT AND COMMUNITY PROJECTS		1,313,716	866,542	493,790	372,752	628,050	765,612

Hepburn Shire Council
Special Operating Projects Report as at 31 March 2026

ATTACHMENT 7.1.3

Project Number	Project Name	FY26 Current Budget FY	FY26 Current Budget YTD	FY26 Actual Expenses YTD	FY26 YTD Variance (Budget vs Actual)	FY26 Current Budget	Actual Income YTD
		2025/26 Expenditure				2025/26 Income	
INFRASTRUCTURE AND DELIVERY							
Total Director Infrastructure and Delivery		-	-	-	-	-	-
Total Major Projects		-	-	-	-	-	-
001215	Kerbside Reform Support Fund	36,402	27,302	-	27,302	44,674	44,675
001312	Sale of 7 parcels of surplus land	-	-	1,155	(1,155)	-	-
Total Facilities & Circular Economy		36,402	27,302	1,155	26,147	44,674	44,675
000628	Roadside Weeds and Pests Program	-	-	22,856	(22,856)	-	39,667
001118	WHBG Collections Policy and Plant Labels	10,383	7,787	-	7,787	10,383	10,383
001189	Creswick Flood Mitigation Study	25,000	18,750	13,190	5,560	15,820	16,922
001222	Willow Removal - Creswick Creek Clunes	-	-	4,887	(4,887)	-	4,991
001223	Bright-eyed Brown Butterfly Habitat Restoration Program	25,608	19,206	33,069	(13,863)	25,608	48,107
Total Operations (not RMP)		60,991	45,743	74,002	(28,259)	51,811	120,070
Total Emergency Management		-	-	-	-	-	-
000570	Innovate RAP	-	-	1,288	(1,288)	-	-
001181	Best Start Best Life reform	32,250	24,188	-	24,188	32,250	32,350
001194	Mineral Springs Awareness	8,900	6,675	-	6,675	8,900	8,900
001224	Creswick Trails Activation	23,522	17,642	-	17,642	23,522	23,522
001260	Daylesford Community Child Care Expansion Planning	-	-	7,101	(7,101)	-	92,825
001262	Hepburn Mineral Springs Reserve Masterplan	75,833	56,875	63,451	(6,576)	19,833	51,833
001272	CSF Creswick Soccer Club Equipment	-	-	1,272	(1,272)	-	3,734
Total Community & Economic Development		140,505	105,379	73,113	32,266	84,505	213,166
TOTAL INFRASTRUCTURE AND DELIVERY		237,898	178,424	148,269	30,154	180,990	377,911
TOTAL NON-RECURRENT PROJECTS		1,713,518	1,166,393	905,003	261,391	809,040	1,143,522



Final Report

Creswick Flood Mitigation Study

Hepburn Shire Council

9 April 2026



Document Status

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Client Project Manager	Tim Powell
Water Technology Project Manager	Lachlan Inglis
Water Technology Project Director	Ben Tate
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Cover Image: October 2022 Flood Event

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GLOSSARY OF TERMS

Afflux	Refers to the difference in water level (or depth) between two modelling scenarios, usually measured in metres and a change in extent (e.g. “was wet now dry”)
Annual Exceedance Probability (AEP)	Refers to the probability or risk of a flood of a given size occurring or being exceeded in any given year. A 90% AEP flood has a high probability of occurring or being exceeded; it would occur quite often and would be relatively small. A 1% AEP flood has a low probability of occurrence or being exceeded; it would be fairly rare but it would be of extreme magnitude.
Australian Height Datum (AHD)	A common national surface level datum approximately corresponding to mean sea level. Introduced in 1971 to eventually supersede all earlier datums.
Cadastre, cadastral base	Information in map or digital form showing the extent and usage of land, including streets, lot boundaries, water courses etc.
Catchment	The area draining to a site. It always relates to a particular location and may include the catchments of tributary streams as well as the main stream.
Design flood	A design flood is a probabilistic or statistical estimate, being generally based on some form of probability analysis of flood or rainfall data. An average recurrence interval or exceedance probability is attributed to the estimate.
Discharge	The rate of flow of water measured in terms of volume over time. It is to be distinguished from the speed or velocity of flow, which is a measure of how fast the water is moving rather than how much is moving.
Flood	Relatively high stream flow which overtops the natural or artificial banks in any part of a stream, river, estuary, lake or dam, and/or overland runoff before entering a watercourse and/or coastal inundation resulting from elevated sea levels and/or waves overtopping coastline defences.
Flood Frequency Analysis (FFA)	A statistical analysis of observed flood magnitudes to determine the probability of a given flood magnitude.
Flood hazard	Potential risk to life and limb caused by flooding. Flood hazard combines the flood depth and velocity.
Floodplain	Area of land which is subject to inundation by floods up to the probable maximum flood event, i.e. flood prone land.
Flood storages	Those parts of the floodplain that are important for the temporary storage, of floodwaters during the passage of a flood.



Geographical information systems (GIS)	A system of software and procedures designed to support the management, manipulation, analysis and display of spatially referenced data.
Hydraulics	The term given to the study of water flow in a river, channel or pipe, in particular, the evaluation of flow parameters such as stage and velocity.
Hydrograph	A graph that shows how the discharge changes with time at any particular location.
Hydrology	The term given to the study of the rainfall and runoff process as it relates to the derivation of hydrographs for given floods.
Intensity frequency duration (IFD) analysis	Statistical analysis of rainfall, describing the rainfall intensity (mm/hr), frequency (probability measured by the AEP), duration (hrs). This analysis is used to generate design rainfall estimates.
LiDAR	Spot land surface heights collected via aerial light detection and ranging (LiDAR) survey. The spot heights are converted to a gridded digital elevation model dataset for use in modelling and mapping.
Peak flow	The maximum discharge occurring during a flood event.
Probability	A statistical measure of the expected frequency or occurrence of flooding. For a fuller explanation see Average Recurrence Interval.
Probable Maximum Flood	The flood that may be expected from the most severe combination of critical meteorological and hydrologic conditions that are reasonably possible in a particular drainage area.
RORB	A hydrological modelling tool used in this study to calculate the runoff generated from historic and design rainfall events.
Runoff	The amount of rainfall that actually ends up as stream or pipe flow, also known as rainfall excess.
Stage hydrograph	A graph that shows how the water level changes with time. It must be referenced to a particular location and datum.
Topography	A surface which defines the ground level of a chosen area.



EXECUTIVE SUMMARY

Water Technology were engaged by Hepburn Shire Council to deliver the Creswick Flood Mitigation Study. The project funding was sourced from a combination of Government opportunities and budget allocations from Council.

The study reviewed the available flood data for Creswick Creek and produced flood modelling and mapping in line with current industry best practices and the recommendations of Australian Rainfall and Runoff 2019. Flood modelling and mapping was produced for the 20%, 10%, 5%, 2%, 1%, 0.5%, 0.2%, 0.1% and Probable Maximum Flood (PMF) events.

In addition to the flood modelling and mapping, mitigation options and flood intelligence products detailing the flood behaviour and impacts in Creswick was developed and included in a draft update to the Hepburn Shire Municipal Flood and Storm Emergency Sub Plan (MFSEP).

Flood Mitigation Options focusing on riverine and stormwater inundation were investigated at six key flooding hotspot areas as part of a pre-feasibility assessment. The mitigation options were then refined and ranked against each of the options assessed. The options investigated at each of the six locations were:

- Location 1: Building a 1.8-hectare retarding basin upstream of Pasco Street and redirecting overland flow along Johns Road using new culverts and a levee. It also involves upgrading drainage from Clunes Road to Davies Street and adding a new pipe between 1 and 1A Davies Street.
- Location 2: Enhance the existing Cambridge Retention Basin by increasing its volume, testing a pumped outlet and adding a one-way outlet to Creswick Creek. An additional scenario assessed connecting the Pearman Street drain directly to the basin.
- Location 3: Constructing a 0.5m levee on an existing bluestone wall and an upstream retarding basin with twin outlets. Additionally, Hyde Park Road was lowered further upstream.
- Location 4: Upgrading the existing 525mm culvert north of Bald Hills Road to a twin 900x600mm box culvert. Constructing an upstream embankment to function as a retarding basin at near Cassels Lane.
- Location 5: Council pumping station at North Parade to reduce stormwater inundation behind the Creswick Creek Levee.
- Location 6: Installing new pipes and pits to direct stormwater from White Hills Road, Caddy Drive, and Wright Court to Nuggetty Gully. A cutoff drain behind 31 Gardiner Street to divert runoff into the drainage network.

Modelling and assessment for each mitigation options suggest that Mitigation 6 and Mitigation 1 would provide the best value to mitigate flooding, followed by Mitigation 3 and 5. Mitigation 2 and 4 ranked as the lower of the options assessed, however refinement options and further work may indicate them as feasible strategies to improve flood risk in Creswick.



Non-structural mitigation in the form of planning scheme mapping was also developed (in draft format) and is recommended for inclusion in the Hepburn Shire Planning Scheme. The mapping is based on the 1% AEP flood with projected increased rainfall intensity to 2100 under a Shared Socioeconomic Pathway (SSP) 5 -8.5 Climate Scenario. The extent of the mapping extends on the current flood related controls within Creswick.

Flood intelligence products developed throughout the study include the following:

- A rating table for the existing manual read gauge on Creswick Creek at the Water Street bridge;
- Summaries of flood behaviour and impacts in concise tables for design flood events and gauge heights at the Water Street gauge;
- Flood peak timing estimates from the beginning of rainfall;
- A simple tool to link rainfall to potential flood impacts, and;
- Recommended Flood Class Levels for the Water Street gauge in line with the Bureau of Meteorology's Flood Class definitions.

Additional components to improve the flood warning capability for Creswick were recommended, with a sub-daily rainfall gauge within the catchment and a streamflow gauge along Slaty Creek upstream of the confluence with Creswick Creek proposed to improve the town's flood monitoring capacity.

The study outputs aim to support drainage and floodplain management in Creswick into the future by providing a sound basis for the implementation of riverine and stormwater flooding mitigation options. The extension of the current planning controls aims to ensure development within the town is appropriate and responds to the risk. Future flood events can be responded to in a more proactive way through utilisation of the intelligence products produced.



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1 INTRODUCTION

1.1 Overview

Water Technology was commissioned by Hepburn Shire Council (Council) to undertake the Creswick Flood Mitigation Study. The investigation area covers the Creswick Creek and tributaries in the township of Creswick, as shown in Figure 1-1. The study was to produce updated draft planning controls, and complete a detailed investigation into drainage issues in Creswick as identified as a High Priority in the North Central Regional Floodplain Management Strategy (2018).

The outcomes of the Creswick Flood Mitigation Study are documented in a series of reports detailing each stage of the analysis:

- R01 – Return Brief
- R02 - Hydrology & Hydraulic Modelling Report.
- R03 - Priority Project Mitigation Evaluations Assessment Report.
- R04 – Flood Intelligence and Warning Report
- **R05 - Final Study Report - This Report**

Further to these reports and as part of the emergency management deliverables, Water Technology produced flood intelligence and consequence information for use by emergency services.

Previous flood investigations covering Creswick include Council and NCCMA investigations undertaken in 2012. The 2012 study focussed on the flood behaviour along Creswick Creek and Nuggetty Gully and used the Australian Rainfall and Runoff (ARR 1987) guidelines¹. This project also investigated stormwater inundation across the town, not just riverine flooding associated with these creeks. The hydrology parameters developed for the urban stormwater mitigation assessments are discussed in an earlier report (R03).

As recommended in the Return Brief (R01), the hydrology model was updated in line with the current Australian Rainfall and Runoff Guidelines² (ARR 2019), considering the Victorian Specification Information³ commissioned by Melbourne Water and DEECA regarding application of pre-burst rainfall. A thorough review of the hydrology model was undertaken, particularly focusing on the design rainfall and storm losses. Design flows were compared with the previous investigation flows and validated against a long-term streamflow gauge record (at Clunes) and several empirical estimation methods. Additional investigation into the rating curve of the Creswick Creek at Clunes gauge was undertaken to provide justification for the use of a rating curve prior to 2015 which saw a significant change in flow ratings following a rating curve update. The development of a hydraulic model at Clunes was undertaken to provide further validation of this approach. The report also provides details of the hydrology model, selection of representative temporal patterns and discussion on the design results.

¹ Water Technology 2012, Creswick Flood Study, developed for North Central CMA.

² ARR 2019 - Ball J, Babister M, Nathan R, Weeks W, Weinmann E, Retallick M, Testoni I, (Editors) Australian Rainfall and Runoff: A Guide to Flood Estimation, C Commonwealth of Australia (Geoscience Australia), 2019.

³ Victorian Specification Information: http://data.arr-software.org/vic_specific



Further to the initial scope of the project and the details in the return brief, an assessment of the design hydrology under different climate change scenarios was completed, responding to the release of ARR v4.2 during the delivery of this study. This involved updates to the design baseline rainfall IFDs to assess the current day/near-term risk in 2024, as well as a future year 2100 scenario. Design modelling referring to 'existing conditions' throughout the report is in reference to scaled up rainfall IFDs for the current day/near-term (2024). Where the baseline IFDs were used to verify design flows, these were referred to as 'baseline' conditions.

The modelling completed in 2012 is the basis for the current Land Subject to Inundation Overlay (LSIO1 and LSIO2) in the Hepburn Planning Scheme. The modelling within this study was carried out to ensure that the planning scheme mapping accurately reflects flood hazard and to ensure that growth in Creswick is managed appropriately into the future and considers climate change.

In addition, the study produced flood intelligence information for use in emergency management situations, assessed the current flood impact/exposure in terms of annual average damages caused by flooding in Creswick, investigated structural and non-structural mitigation options to reduce damages, investigated and made recommendations for establishing a flood warning system for the town.

1.2 Objectives and Outputs

The Creswick Flood Mitigation Study outputs are required to meet several floodplain management objectives as highlighted in the project brief prepared by Hepburn Shire Council. The objectives of the investigation are described below:

- Evaluate and re-model the areas of the catchment where flood risks have been identified by either formal or empirical observations.
- Identify other areas of flood risk and evaluate mitigation methods;
- Evaluate (inclusive of calculations, high-level design, costings, and prioritisations) mitigation measures identified across several known flooding hotspots;
- Assist in the preparation of community flood awareness and education products; and
- Assess feasibility for improved flood warning arrangements.
- The priority areas for the current investigation are shown in Figure 1-2.



1.3 Modelling Approach

This study focusses on both the riverine flood risk through Creswick as well as the stormwater flood risk from runoff of local catchments throughout the town. Within the town and peri-urban areas, a rain on grid modelling approach was adopted. This compliments the direct inflow approach used for Creswick Creek and several other tributaries which used flow hydrographs developed in RORB. This approach also allowed for investigation of mitigation options related to stormwater inundation to be assessed within the same model. Details of the hydrology and hydraulic models are provided in the following sections.

Local stormwater inundation was observed across Creswick in the January 2022 storm event. This was largely due to an isolated storm burst to the south-west of the Creswick township within the Nuggety Gully catchment. Stormwater runoff impacted the Caddy Drive and Wright Street area significantly, as runoff made its way towards Nuggety Gully and the Creswick township.

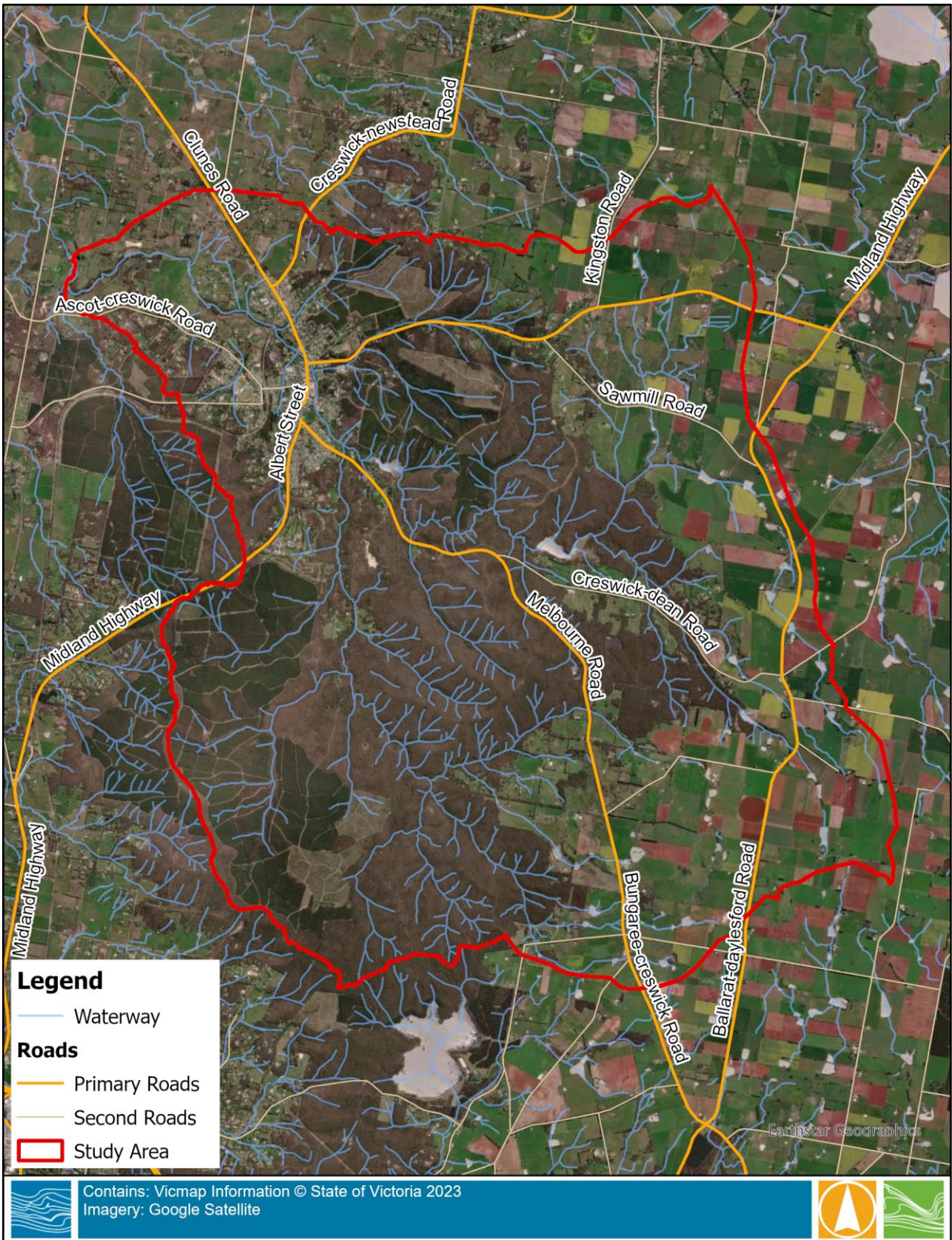
The hydrology approach was undertaken in line with the latest ARR guidelines as well as the latest Climate Change modelling recommendations released during the project (ARRV4.2). A summary of the modelling approach is listed below.

- Existing RORB model review and updates
- Joint Calibration
 - September 2016, January 2022, October 2022
 - September 2010 and January 2011 (hydrology calibration only)
- Update hydrology to ARR2019 (including 2016 IFDs and temporal patterns)
- Verification to FFA
 - Rating Table Review due to gauging discrepancy
- Climate Change Modelling
 - Near Term/Present Day Scenario
 - Long Term (2100) Scenario

1.4 Study Area

The township of Creswick is located in central Victoria, approximately 18 km north of Ballarat. Creswick is within the North Central CMA boundary and is a major town within Hepburn Shire Council.

Creswick Creek is the main watercourse flowing through the township. Slaty Creek, Sawpit Gully (also known as Spring Gully) and Nuggety Gully are major tributaries of Creswick Creek. Other tributaries within the upper catchment include Adekate Creek, Slattery Creek, Glendonald Creek, Reedy Creek, Glendaniel Creek and Kilkenny Creek, alongside numerous small streams and gullies which also feed into Creswick Creek. Two notable water storages are located upstream of Creswick on Creswick Creek, these include Cosgrave Reservoir and St Georges Lake. The Creswick Creek catchment and other waterways are shown in Figure 1-1.



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Figure 1-1 Creswick Creek Catchment

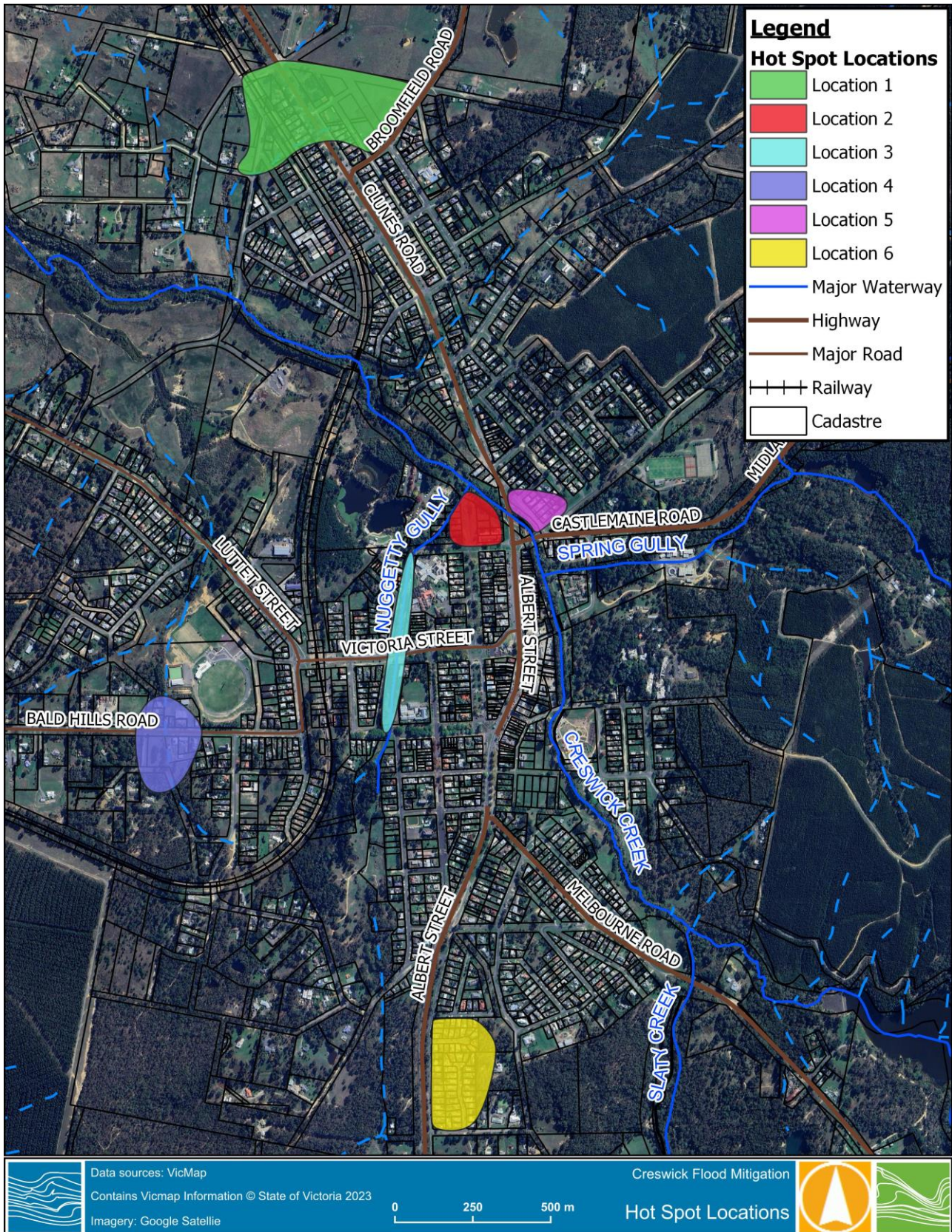


Figure 1-2 Priority Investigation Areas



2 DATA COLLATION AND REVIEW

The first stage of the project included the collation and review of available data relevant to flooding in Creswick. This included the following:

Previous flood studies and reports covering the area (see Table 2-1 below)

Table 2-1 Flood related studies completed in Creswick and Creswick Creek Region

Related Studies	Author	Year
Victorian Flood Data Transfer Project (2001)	DNRE/SKM	2001
<i>Creswick Flood Mitigation and Urban Drainage Plan</i>	Water Technology	2012
<i>Creswick Flood Mitigation and Urban Drainage Plan Summary</i>	Water Technology	2011

Historical flood events and accompanying anecdotal evidence:

- The NCCMA captured flood heights following the January and October 2022 flood events.
- Water Technology, Council and NCCMA also gathered anecdotal evidence from the two 2022 flood events. This information was used in the validation modelling based on the information available.

Recorded streamflow:

- There are no streamflow gauges along the Creswick Creek through Creswick. There are four active streamflow gauges located within the Creswick Creek catchment (three relatively short record gauges upstream around the major storages and a long-term gauge downstream of the study area at Clunes) as shown in Table 2-2. The Creswick at Clunes gauge was previously used to calibrate hydrology models within the study area. The gauges upstream of Creswick, at and upstream of Cosgrave Reservoir gauge, are relatively new with a short period of record and have primarily been used to provide information for the 2022 floods.

Table 2-2 Streamflow Gauge Data

Station Name	Station No.	Start
Creswick Creek at Clunes	407214	11/08/1943
Creswick Creek at Cosgrave Reservoir	407324	04/09/2018
Creswick Creek U/S Cosgrave Reservoir	407237	14/04/2010
Adekate Creek at Creswick	407238	14/04/2010

Recorded rainfall

- Historic daily and sub daily rainfall data was used for the hydrologic and hydraulic model calibration. Daily rainfall gauges were used to provide a representation of spatial rainfall variation while sub daily gauges provide a representation of timing of the rainfall distribution.
- Table 2-3 summarises the active daily rainfall information available within or near the Creswick Creek catchment. The locations of the rainfall gauges and several non-active gauges are shown in Figure 2-1.
- There are no sub daily rainfall gauges located within the Creswick Creek catchment. The closest sub-daily gauges are located at Mt Hope (located southeast of the catchment) and Ballarat Aerodrome (southwest of the catchment).



Table 2-3 Daily Rainfall Station Information

Station Name	Dist. From Creswick	Station No.	Start	End
Creswick	0 km	088019	1949	Current
Glen Park	10.17 km S	089048	1953	Current
Ballarat Aerodrome	12.61 km SW	089002	1908	Current
Smeaton	13.16 km N	088113	1968	Current
Ballarat Hopetoun Rd	13.72 S	089111	2004	Current
Bungaree	13.9 km S	087014	1881	Current
Wilsons Reservoir	14.58 km SE	087067	1896	Current
Clunes	17 km NW	088015	1879	Current
Addington	19.23 km W	089106	1956	Current
Moorabool Reservoir	19.35 km SE	087045	1912	Current

Road and drainage infrastructure

- Drainage data was supplied by council with gaps infilled by survey for major structures and site visits for minor structures with a key focus on capturing culvert/pipe diameters.

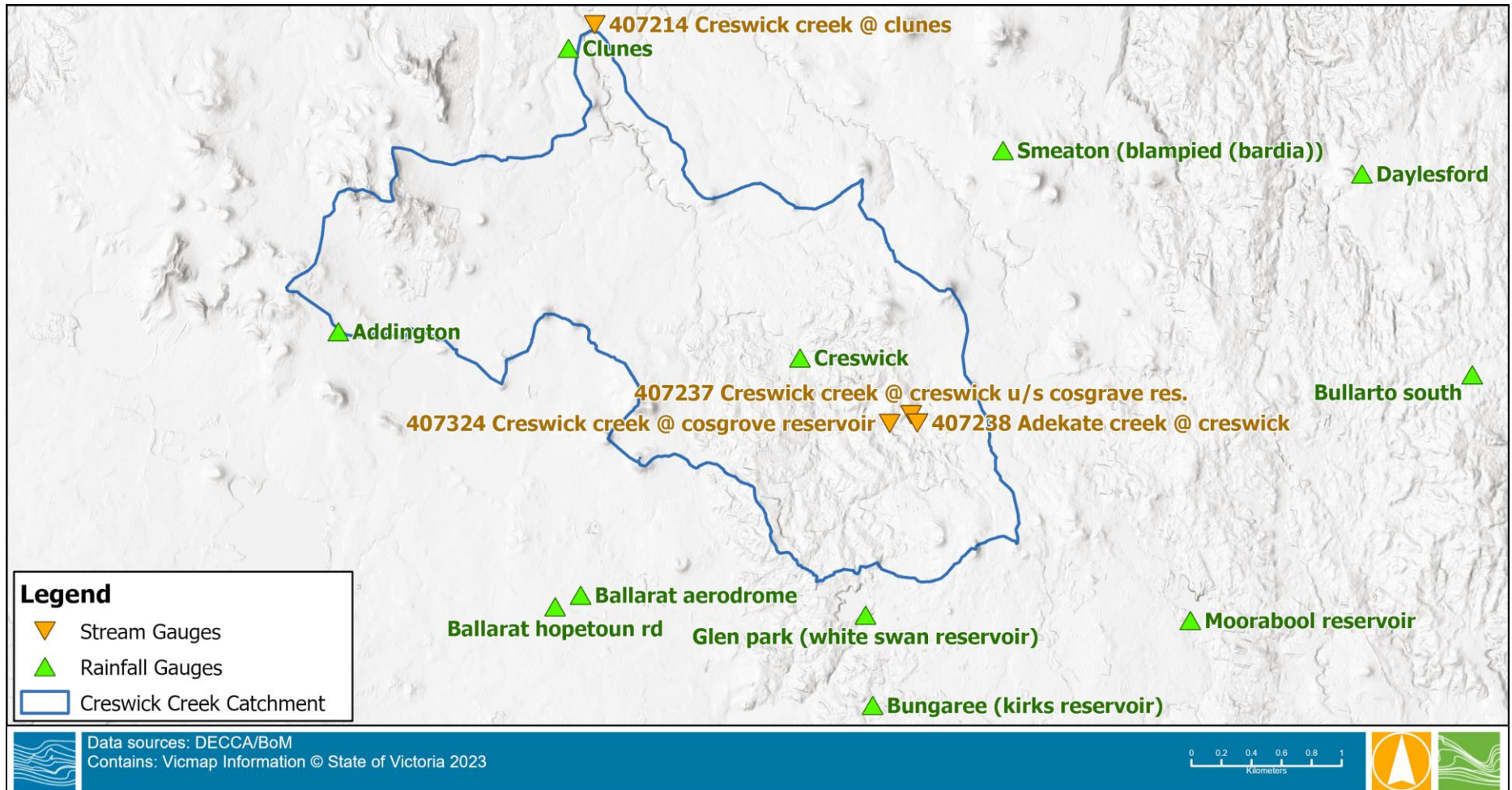
Topographic data

Multiple LiDAR data sets were available and were verified against survey captured for the project. The key dataset used in the development of the hydraulic model DEM and catchment delineation was the **2020-21 Golden Plains LiDAR Data – DEECA**. This dataset covers the entire study area with a reported Vertical accuracy 0.1m.

LiDAR data was verified in order to ensure the hydraulic model can accurately replicate flood behaviour within the study area. The capture of ground survey at three locations within the study area was commissioned to assist with verification of the available LiDAR datasets. The survey captured transects along the crest of roadways. The 2021 Golden Plains LiDAR was verified with comparison to surveyed road transects (captured at three road locations). Comparison to cross section survey was completed in two ways; on a point by point basis to create a statistical distribution of the differences, and as transects to get a visual comparison of the reliability of the data. A total of 62 surveyed crest points were available across the road transects, each of the surveyed levels was compared to the level determined in the LiDAR data with the difference between the two calculated. Of the 62 points compared, all were within 0.05m while 57 were within 0.03m. The average difference across the three transects is less than 1cm and indicates a high degree of accuracy and that the LiDAR is suitable for use in the development of the Digital Elevation Model (DEM) for the hydraulic modelling.

Additionally, floor level survey of 102 properties was captured to complement the existing 131 floor level surveyed in 2012. The top and toe of several levees within Creswick were captured and incorporated into the hydraulic model.

The Data Collation Report (R01) also confirmed and detailed the modelling methodology for the following stages of the project.



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3/10/2023

Figure 2-1 Streamflow and Rainfall Gauge Locations



2.1 Rating Curve Review

When investigating the calibration of the 2016 and 2022 flood events as well as undertaking the Flood Frequency Analysis (FFA), it was noted that the reported streamflow discharges for mid to high flows were significantly higher than values previously reported for similar water levels (particularly for 2016 and 2022 flood events). The rating curve which was updated around 2015 suggests the peak flow at Clunes in the October 2022 flood event (344 m³/s) was double the peak flow rate in September 2010 (177 m³/s) and significantly higher than January 2011 (222 m³/s). The 2011 flood event resulted in over 50 buildings flood above floor in Clunes. In the October 2022 flood event, it is understood no above floor flooding occurred in Clunes.

Information from the hydrographers indicated that changes to the Creswick Creek in the vicinity of the Clunes streamflow gauge (the significant removal of vegetation), were likely the result of the significant change in the rating table. While the changes to the vegetation within Creswick Creek may have reduced the associated drag/roughness and result in lower levels for equivalent flows prior to the works, it is not expected to impact flood levels as much as suggested by the hydrographers. An image of the Creswick Creek at Clunes gauge (captured in May 2024) is shown in Figure 2-2.



Figure 2-2 Creswick Creek at Clunes gauge (May 11, 2024)

Further investigation into the gauge discrepancies assessed streamflow gauges further down the catchment. Creswick Creek flows into Tullaroop Creek downstream of Clunes. The Tullaroop Creek at Clunes streamflow gauge located 10 km downstream of Clunes indicates the September 2016 (315 m³/s) and October 2022 (433 m³/s) flood events were of significantly less magnitude than September 2010 (544 m³/s) and January 2011 (573 m³/s). Creswick Creek contributes around 53% of the total catchment area to this point and flows at Clunes are likely to be generally reflective of the Tullaroop Creek at Clunes peak flows.

Additional testing of the changes at the Clunes gauge through the development of a small hydraulic model using TUFLOW software, indicated the application of the latest rating curve may over-estimates flows. The



hydraulic model initially utilised the January 2011 flow hydrograph based on pre 2016 rating table (Rating 978) and was modelled using three roughness scenarios.

- The first scenario adopted the surface roughness values and delineation used in the 2012 flood study.
- The second scenario adopted a uniform Mannings n value of 0.04 (used to represent a Main Channel with clean, winding, some pools and shoals⁴).
- The third scenario adopted a more detailed roughness assessment.

The results (Figure 2-3) plotted against the recorded gaugings and the two rating curves (pre and post 2016) show the current rating curve results in significantly higher flows in large events compared with model results for either the calibrated roughness or a smooth channel using a Mannings n value 0.04. This indicates the previous rating curve (pre-2016) better represents high flow events and should be adopted for the development of the annual series and hydrologic calibration. It is noted that the 2010 event is not well matched for either model and indicates further refinement of the rating table may be necessary. For the purposes of the investigation, we have adopted the previous rating table (Rating 978) for comparison of flows.

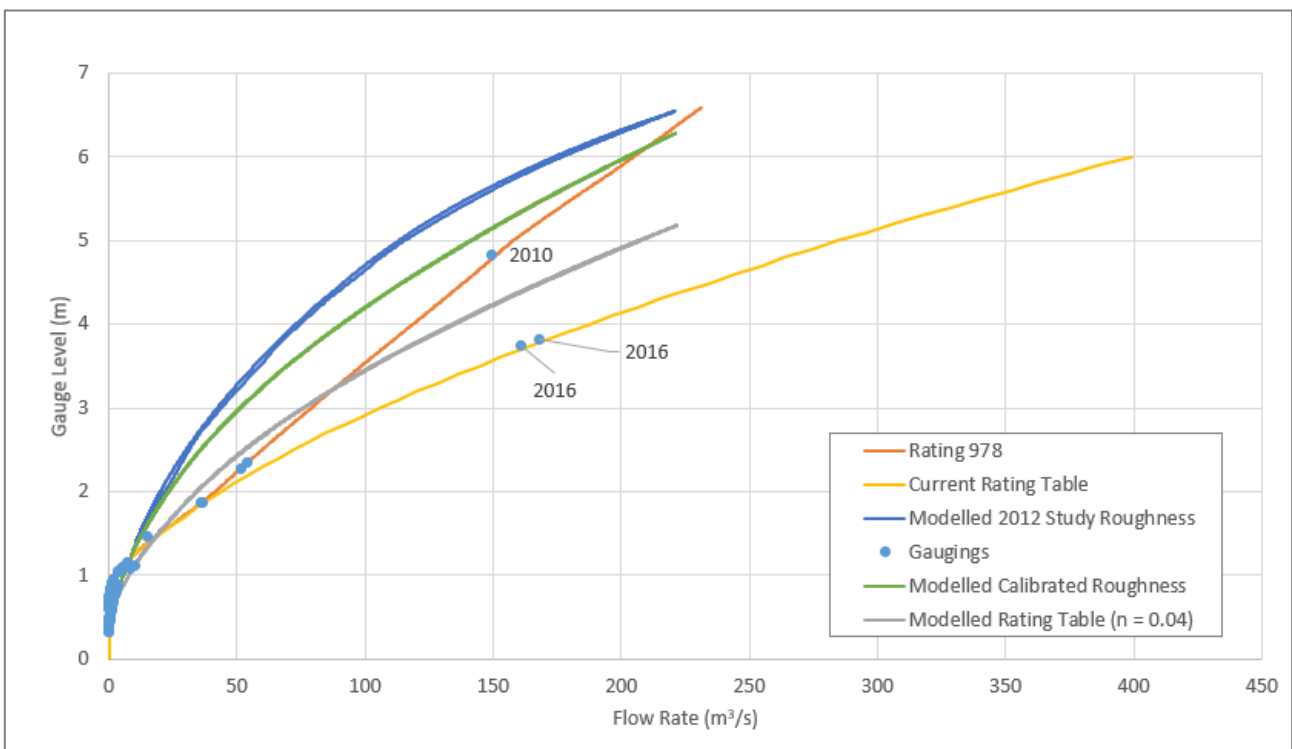


Figure 2-3 Modelled rating curves compared with gaugings and derived rating curves

As an additional verification, the October 2022 event was modelled using the flows from the pre 2016 rating table (Rating 978) and the latest rating table. The modelled water levels at the Clunes gauge were compared to the recorded water level shown in Figure 2-4. The revised flows based on the Rating 978 rating table show a good fit to the recorded levels, while the current published rating table flows show the modelled level is over two metres higher than the recorded levels. This provides further verification to adopt the pre 2016 rating table (Rating 978) for the hydrology assessment.

⁴ Chow (1958), Manning's n values for Channels, Closed Conduits Flowing Partially Full, and Corrugated Metal Pipes.

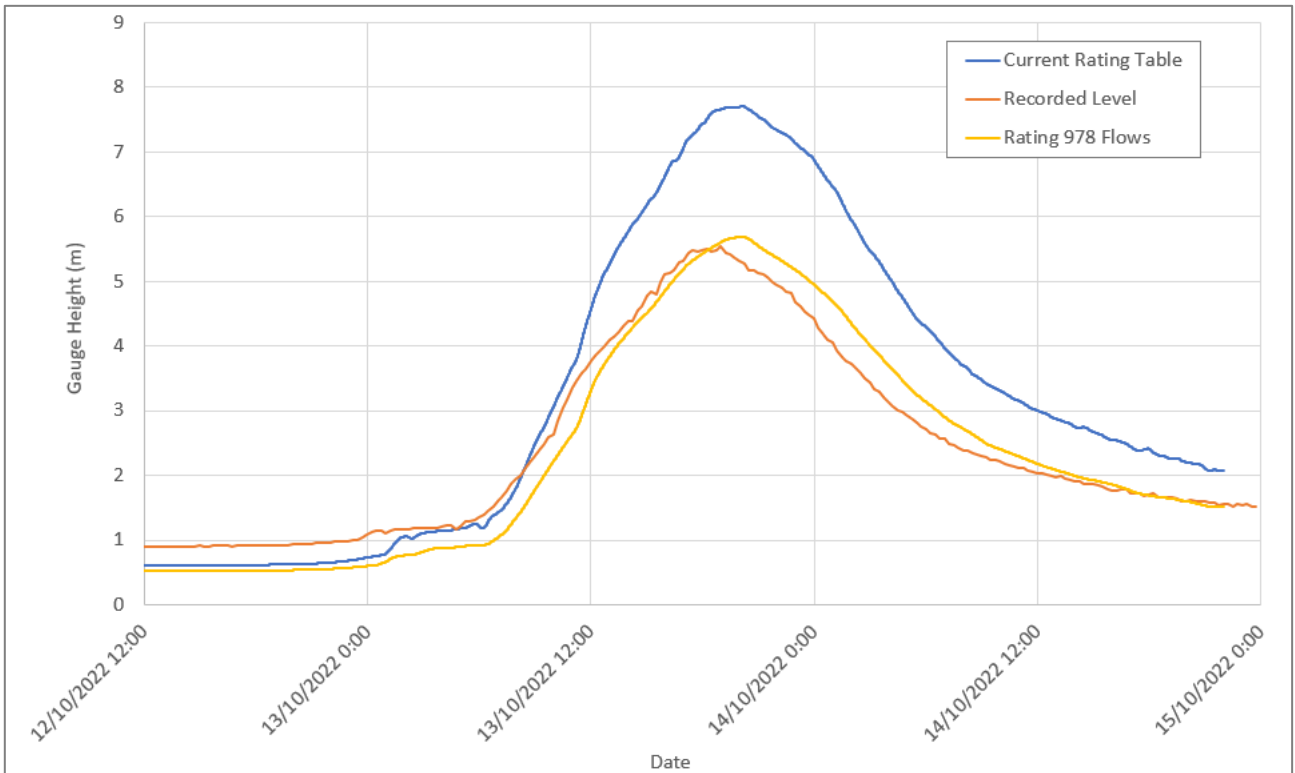


Figure 2-4 Modelled water levels compared with recorded water levels for the current published rating table (Rating 31.02) and Rating 978 for October 2022 event.



3 HYDROLOGY MODELLING

3.1 Overview

The Hydrology and Hydraulic Modelling Report (R02) describes in detail the hydrologic (RORB) and hydraulic (TUFLOW) model builds and parameter selection adopted for the study. The report also details the hydrology calibration of historic flood events (2010, 2011, 2016, January 2022 and October 2022) along with hydraulic model calibration of the 2022 floods. Model performance and alignment with the calibration evidence was utilised to determine the RORB routing parameter k_c for the catchment. These parameters were selected based in consideration of values from nearby flood studies and regional approximations with a key focus in conjunction with local data.

3.2 RORB Summary

3.2.1 Model Build

The hydrologic model for the 2012 Study was developed using RORB, a non-linear rainfall runoff and streamflow routing model for calculating flow hydrographs in drainage and stream networks. The catchment was divided into 114 sub-areas, connected by the reach network presented in Figure 3-5.

Modifications to the RORB model setup for this study included:

- The addition of the gauging interstation areas for the following gauges for calibration to the October 2022 event:
 - Creswick Creek at Creswick US Cosgrave Reservoir and
 - Adekate Creek at Creswick
- The further delineation of several smaller sub-areas for Nuggety Gully and several unnamed tributaries around the Creswick township to allow for the mapping of these waterways as part of the flood study.
- The application of excavated unlined type reaches along Creswick Creek from just upstream of Creswick through to Clunes. This recognises the quicker routing of the waterway to provide an improved fit of historic flood events at Clunes.
- Flow hydrographs were extracted at the following locations for input into the hydraulic model:
 - Creswick Creek; (downstream of St Georges) Lake
 - Slaty Creek (upstream of Melbourne Road);
 - Spring Gully (at Sawpit Rd); and
 - Unnamed tributary, upstream of Pascoe St (flows into Creswick Creek upstream of the railway crossing).
- Additionally, design flow hydrographs were extracted along Creswick Creek at Creswick and Clunes (gauge location) for comparison of calibration and design flows as outlined in the reporting from the 2012 Study.

3.2.2 Calibration

The RORB model developed for the 2012 flood study was used to undertake a calibration of two major flood events that occurred between the studies as well as validation to a major storm event (January 2022) along with the events previously calibrated during the 2012 flood study.

As part of the hydrology calibration, further investigation was conducted on the Creswick Creek at Clunes Rating Table. As discussed in Section 2.1, the current rating table shows a significant discrepancy between



the rating table used in the 2012 Flood study, with peak flows increasing almost double that previously quoted for the same flood level. Flow rates quoted using the current rating table were not achievable in the RORB model when applying losses in the expected range at the Clunes gauge. As such, calibration to the previous rating table (rating 978) was undertaken.

Additionally, the October 2022 and January 2022 events were calibrated in the hydraulic model. The current day/near-term AEP for each calibration event based off the revised design event modelling for the Creswick Creek at Clunes streamflow gauge (discussed further in the report) is shown in Table 3-1.

Table 3-1 Calibration Event Magnitude for Creswick Creek at Clunes gauge

Calibration Event	AEP (approximation)
October 2022	2%
January 2022	5%
September 2016	5%
January 2011	1%
September 2010	4%

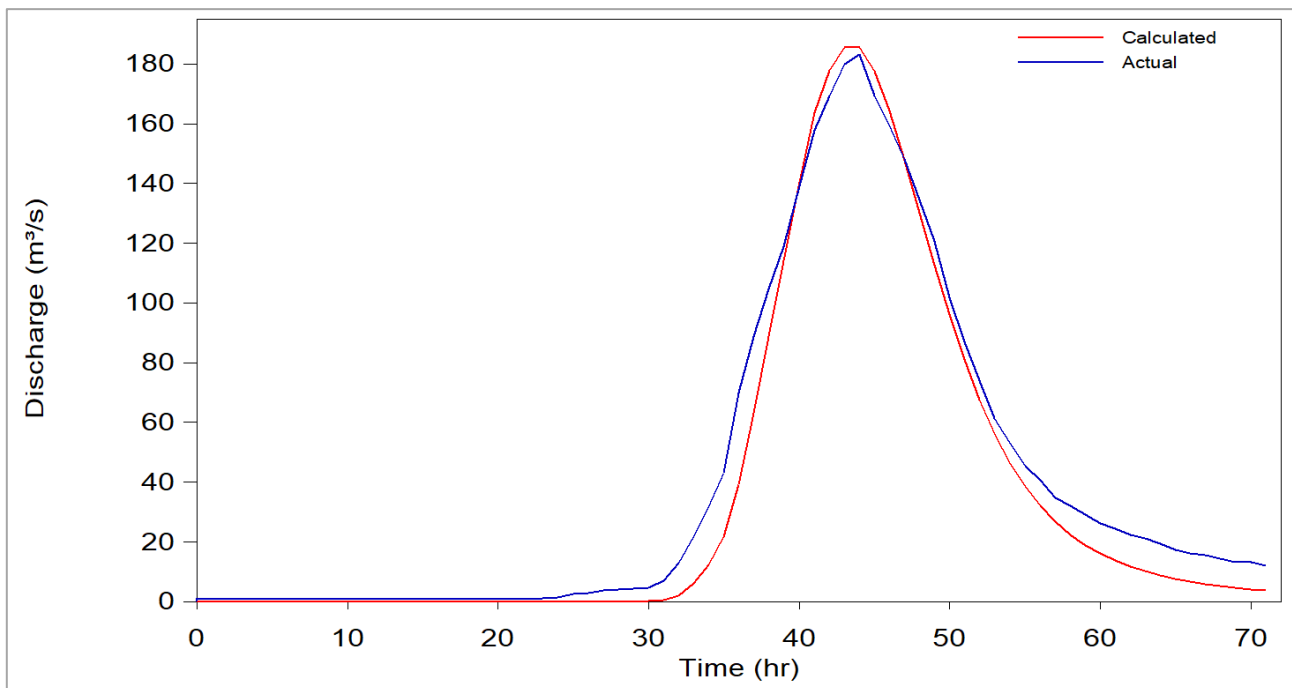


Figure 3-1 Creswick Creek at Clunes – October 2022

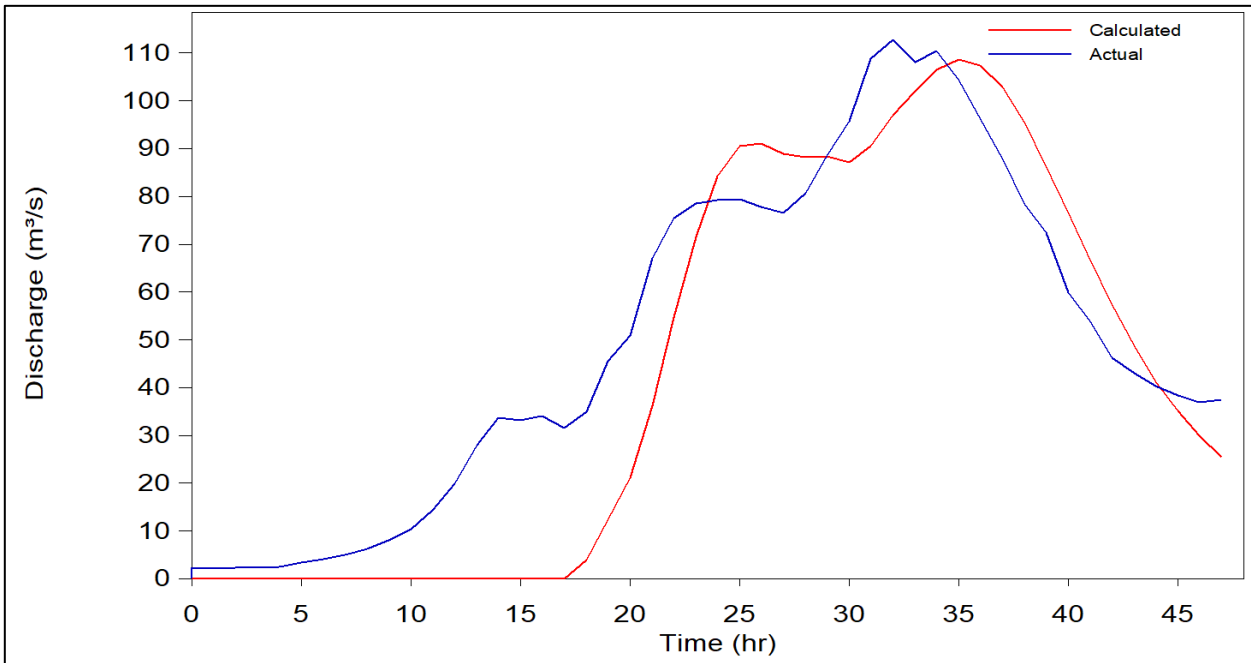


Figure 3-2 Creswick Creek at Clunes – September 2016

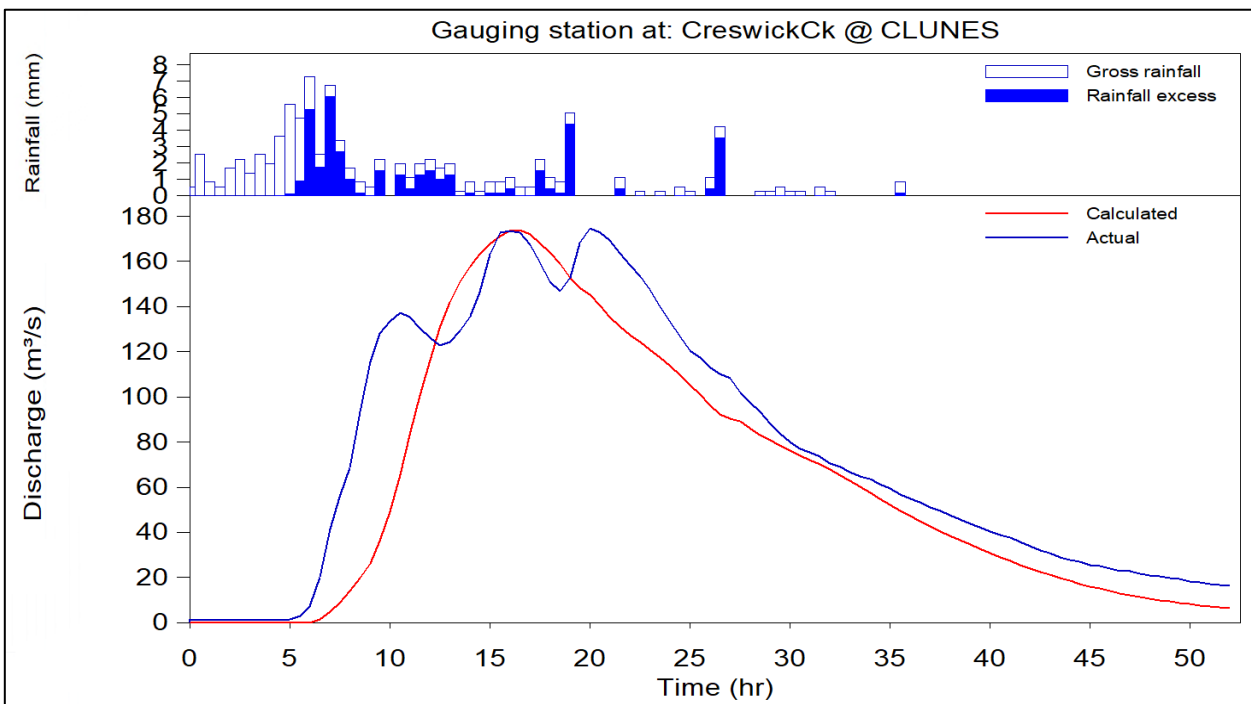


Figure 3-3 Creswick Creek at Clunes – September 2010

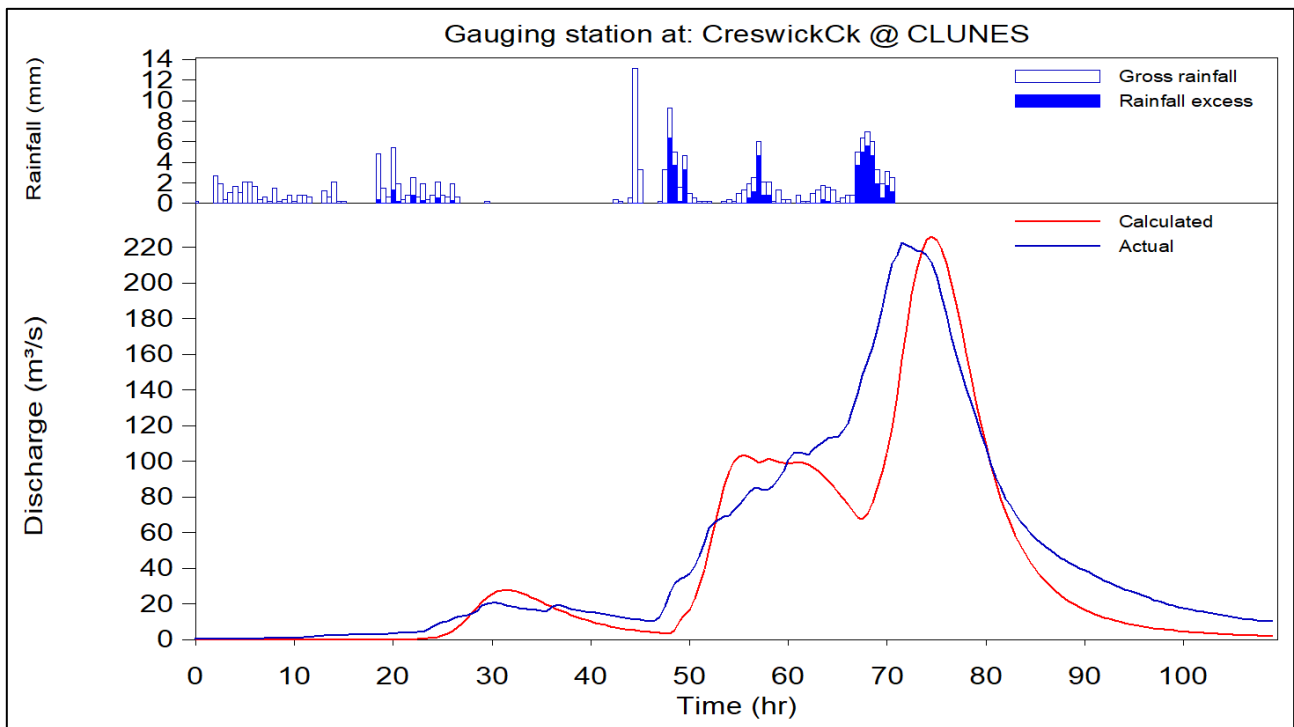


Figure 3-4 Creswick Creek at Clunes – January 2011

The hydrology model developed as part of the 2012 study was updated and calibrated to the October 2022 flood event at the Creswick Creek at Creswick US Cosgrave Reservoir, Adekate Creek at Creswick and the Creswick Creek at Clunes streamflow gauges. The parameters were then used to validate to the September 2016 and January 2022 flood event as well as the September 2010 and January 2011 events. The model parameters adopted for each of the calibration runs are provided in Table 3-2. The values are considered similar for each of the events allowing for the application of values within this range for design modelling.

The additional inter-stations included in the updated RORB model change the average distance (d_{av}) of the single interstation model (22.4 km), with multiple average routing distances from 1.2 km at Nuggetty Gully through to Clunes from down to 21.07 km. While not directly transferable due to changes to the RORB model setup, the k_c value was applied to fit calibration events showed a comparable k_c/d_{av} relationship.

The January 2022 event provided a reasonable match to the peak flow at Clunes (modelled flow of 113 m³/s compared to recorded flow 118 m³/s), however the timing and fit to the other gauges was not as well represented as the other events. This is likely due to the isolated bursts across the catchment that may not have been well represented at the daily rainfall gauges used for spatial variation. Overall, the RORB model was able to replicate several significant flood events well, with model parameters within an expected range of acceptable values. The flows developed in the RORB model were used as inflow boundaries for the hydraulic calibration.



Table 3-2 Hydrology calibration parameters

Event	Interstation	k_c	m	IL (mm)	CL (mm/hr)
October 2022	Creswick Ck US Cosgrave	12.00	0.80	20.0	2.50
	Adekate Ck at Creswick	3.22	0.80	20.0	2.50
	Nuggetty Gully	1.63	0.80	20.0	2.00
	Bald Hills Road	1.48	0.80	20.0	2.00
	Creswick Ck at Clunes	24.60	0.80	20.0	2.10
September 2016	Creswick Ck US Cosgrave	12.00	0.80	25.0	2.00
	Adekate Ck at Creswick	3.22	0.80	25.0	2.00
	Nuggetty Gully	1.63	0.80	25.0	2.00
	Bald Hills Road	1.48	0.80	25.0	2.00
	Creswick Ck at Clunes	24.60	0.80	25.0	2.00
January 2022	Creswick Ck US Cosgrave	12.00	0.80	30.0	4.00
	Adekate Ck at Creswick	3.22	0.80	40.0	4.00
	Nuggetty Gully	1.63	0.80	30.0	4.00
	Bald Hills Road	1.48	0.80	30.0	4.00
	Creswick Ck at Clunes	24.60	0.80	30.0	4.00
September 2010	Creswick Ck US Cosgrave	12.00	0.80	31.5	1.5
	Adekate Ck at Creswick	3.22	0.80	31.5	1.5
	Nuggetty Gully	1.63	0.80	31.5	1.5
	Bald Hills Road	1.48	0.80	31.5	1.5
	Creswick Ck at Clunes	24.60	0.80	31.5	1.5
January 2011	Creswick Ck US Cosgrave	12.00	0.80	42 25*	3.5 3.0*
	Adekate Ck at Creswick	3.22	0.80	42 25*	3.5 3.0*
	Nuggetty Gully	1.63	0.80	42 25*	3.5 3.0*
	Bald Hills Road	1.48	0.80	42 25*	3.5 3.0*
	Creswick Ck at Clunes	24.60	0.80	42 25*	3.5 3.0*

* Dual burst applied. Value showing 1st burst initial/continuing loss | 2nd burst initial/continuing loss



3.2.3 Design Events

The RORB model was used to simulate a range of design storm events, namely the 20%, 10%, 5%, 2%, 1%, 0.5% and 0.1% Annual Exceedance Probability (AEP) as well as the Probable Maximum Flood (PMF) event. Design modelling was undertaken based on current day/near-term conditions to assess existing risk along with design modelling for a climate change scenario based on the year 2100 for climate scenario SSP5-8.5.

The design modelling process involved the use of event based calibration to provide a range of RORB model parameters. The RORB model losses were then reconciled to a flood frequency analysis (FFA) at the Creswick Creek at Clunes gauge. The reconciled design losses were then used with the scaled IFDs for current day/near-term risk assessment (2024) and 2100 under SSP5-8.5 in accordance with the equations supplied in the draft chapter. Scaled IFDs were checked to ensure that the curve of one duration does not cross the curve of another.

RORB was then run with the new IFDs and losses for both 2024 and 2100, and the resultant critical flows applied to TUFLOW. The 2024 flows were adopted as the present day and the 2100 SSP5-8.5 flows as the future climate change scenario to be run in TUFLOW. A PMP storm event was also modelled in RORB and the PMF flows run through TUFLOW. The ARR2019 temporal and spatial patterns and areal reduction factors from the ARR datahub were used for all design scenarios.

Baseline design rainfall depths for the range of AEPs and durations were downloaded from the Bureau of Meteorology's IFD (Intensity-Frequency-Duration) Design Rainfall Data System⁵. Given the size of the catchment, spatial variation in design rainfall was considered by deriving the spatial pattern in accordance with the method shown in section 6.5.4 of ARR2019 Book 2 Chapter 6.

3.2.4 Climate Change Design Rainfall (Current day/near-term 2024)

The baseline 2016 IFDs were scaled up to Current day/near-term totals based on the recently updated Climate Change ARR chapter. As outlined earlier, guidance on the increase in rainfall intensities is provided for four climate scenarios. SSP5-8.5 has been adopted for the Current-Day timelines to assess current day/near-term risk. This results in an increase in rainfall intensity of between 12% (24 hour and longer durations) up to 22% for durations shorter than 1 hour compared to the baseline 2016 IFDs.

3.2.5 Climate Change Design Rainfall (Long Term 2100)

The baseline 2016 IFDs were scaled up to totals reflecting a year 2100 timeline based on the recently updated Climate Change ARR chapter SSP5-8.5 results in an increase in rainfall intensity of between 41% (24 hour and longer durations) up to 88% for durations shorter than 1 hour.

3.2.6 Design Temporal Patterns and Areal Reduction Factors

The temporal patterns used to distribute the design rainfall depths were obtained from the ARR Datahub⁶. Unlike in the 2012 Study, where a single design storm was used, 10 temporal patterns (point patterns) were used for storm durations up to 9 hours. Areal temporal patterns were adopted when the catchment area exceeds 75 km², 10 areal temporal patterns were added to the analysis for storms 12 hours in duration and longer. Areal Reduction Factors (ARF) convert point rainfall to areal estimates and are used to account for the variation of rainfall intensities over a large catchment. Several ARF's were applied to the RORB model when assessing and generating flow hydrographs throughout the model. This included an ARF of 0.94 for hydraulic model inflows, 0.92 for the RORB assessment at Creswick and 0.87 for the RORB assessment at Clunes.

⁵ <http://www.bom.gov.au/water/designRainfalls/revised-efd/>

⁶ <https://data.arr-software.org/>

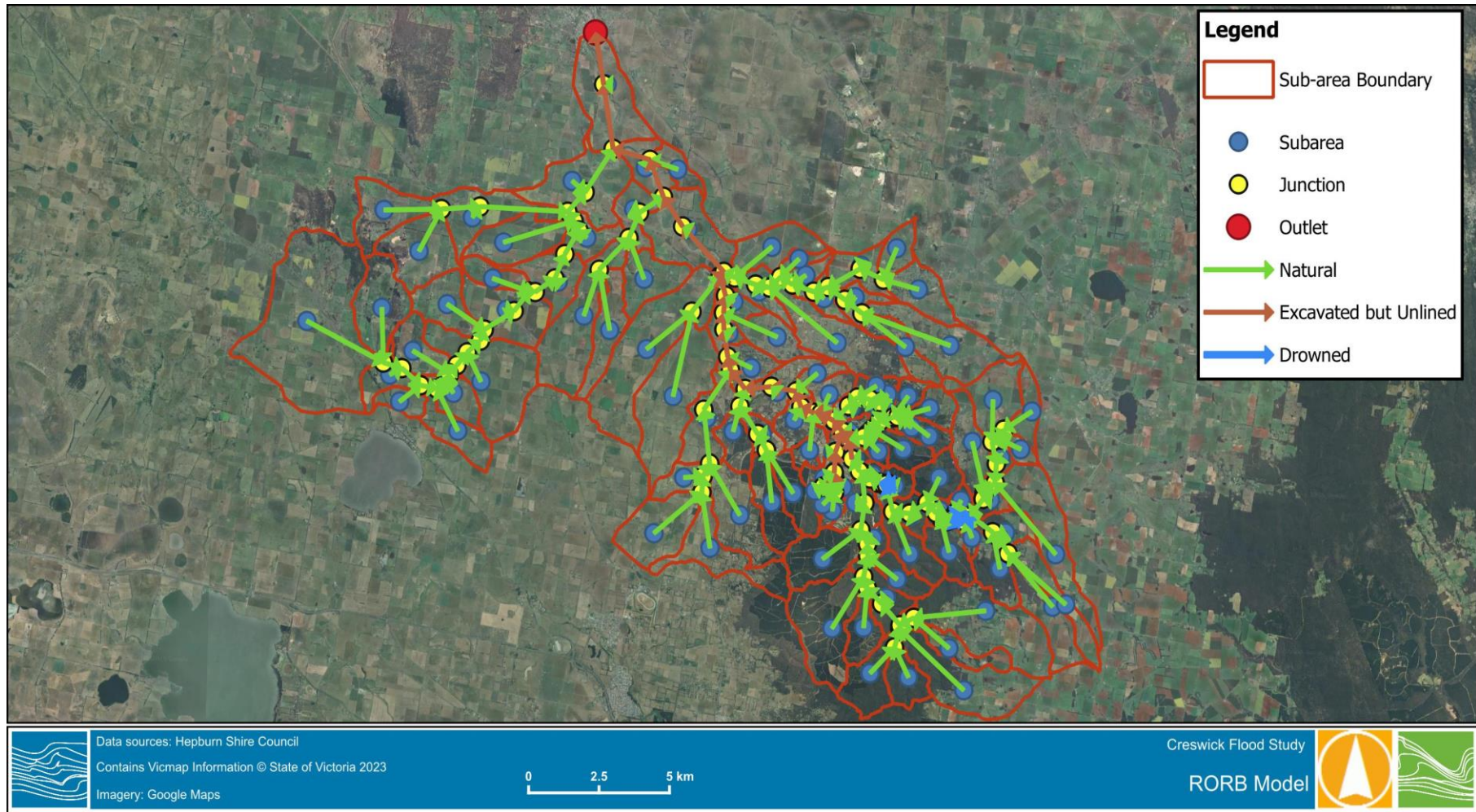


Figure 3-5 RORB model layout



4 HYDRAULIC MODELLING

4.1.1 Model Parameters and Design

The TUFLOW model design and parameter selection is described in detail in R02 – Joint Validation Report. A short summary of the modelling logic and selected parameters is provided below however readers wishing to know more about the model build should refer to the full report.

The key TUFLOW model parameters, along with the design approach for key components of the model, are shown in Table 4-1 below. The TUFLOW model extent and boundary areas are shown in Figure 4-1 below.

Table 4-1 Key TUFLOW model parameters

Parameter	Value/Approach
Model Build	2023-03-AA-iSP-w64
Model Precision	Single Precision
Grid Cell Size	3 metres
Sub Grid Sampling	Not adopted
Solution Scheme	HPC
Inflows	Source-Area boundaries coupled with streamlines
Outflow	Height-Flow Slope of 0.3% based on waterway slope
Hydraulic Roughness	Manning's 'n', varies with land use
1-Dimensional elements	Culverts and pipes linked to 2-D domain
Topography	2021 LiDAR dataset utilised after comparison and validation
Extent	The model extent was set such that the entire floodplain in Creswick would be captured and main flow boundaries would be a sufficient distance from the town to have no influence on model results within the town
Roughness	Assigned based on land use (planning zones), see Table 4-2
Hydraulic Structures	Culverts and pipes were represented as 1-dimensional elements linked to the 2-dimensional domain Bridges were represented as layered flow constrictions within the 2-dimensional domain based on survey captured as part of the

Table 4-2 Hydraulic Roughness

Land use / Topographic description	Roughness coefficient (Manning's n)
Pasture and Grasses	0.05
Sealed Roads (entire reserve)	0.02
Unsealed Roads (entire reserve)	0.03
Township Zone (Residential Lots)	0.20
Low Density Residential	0.06
Medium Density Bushland	0.08
Vegetated Ephemeral Waterway (Creswick Creek)	0.07

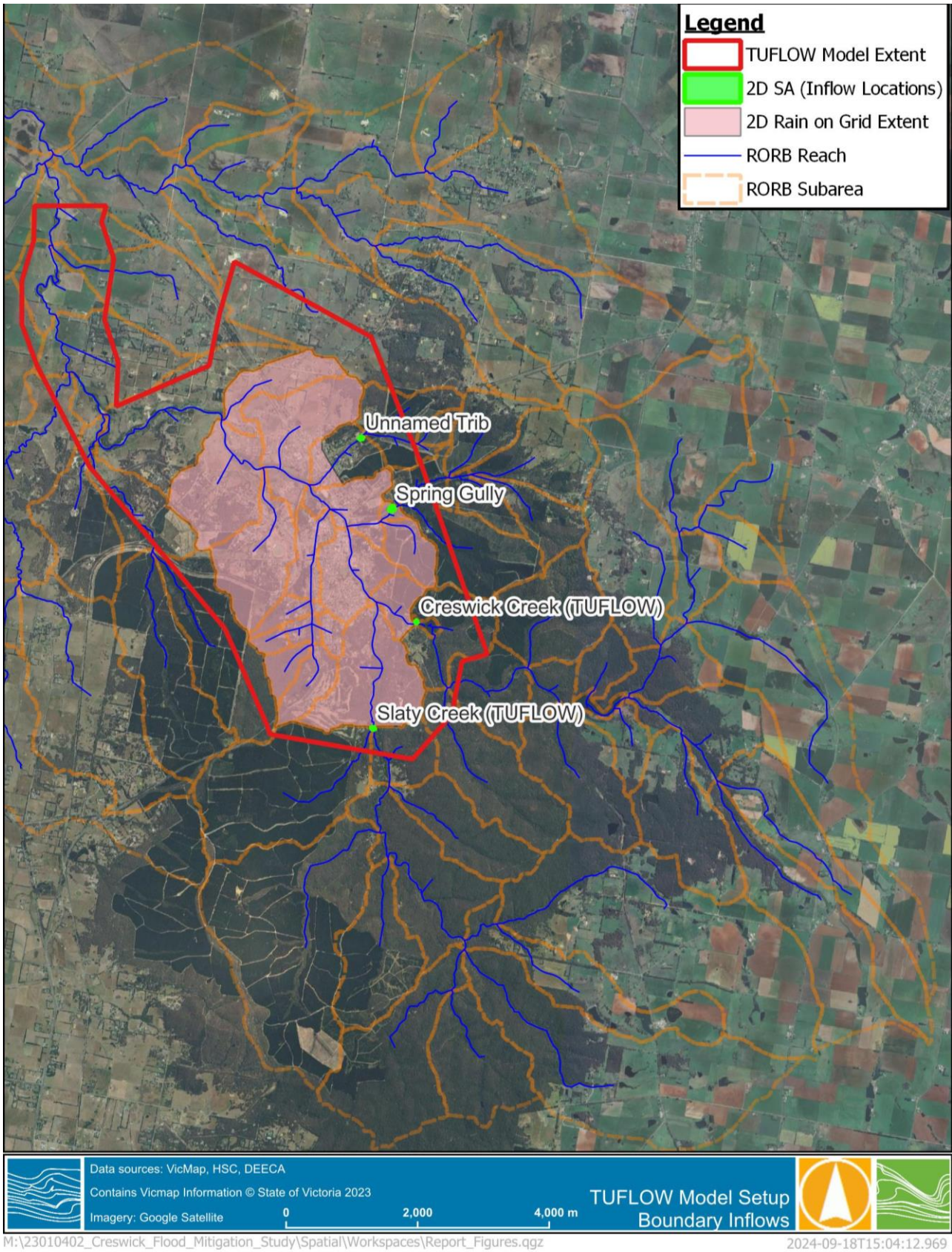


Figure 4-1 TUFLOW Extent and Model Boundaries



4.2 Hydraulic Model Calibration

The hydraulic model calibration process was undertaken using available flood level survey from the January and October 2022 flood events. Anecdotal evidence from the January 2022 flood event was also captured by NCCMA and Council as part of flood recovery works in March 2022.

4.2.1 October 2022

A riverine flooding event (Creswick Creek) occurred in October 2022 which saw parts of the town evacuated and roads overtopped as a result of flooding from Creswick Creek. The rainfall totals experienced were not extreme, highlighting the saturated nature of the catchment.

Three flood levels were surveyed following the event. The modelled results show a good match for two of the three locations. The third location shows the model over estimating levels by around 230 mm. This area located behind a levee on North Parade where a temporary pump is understood to have been installed during the event. The pump has not been modelled in this event due to the lack of information regarding the pump size and time it was connected to the drainage system.

Photos captured during the event were used to verify the flood mapping. These are shown in Figure 4-3, with a good verification to the flood depths.

4.2.2 January 2022

The modelled flood depths through Creswick are shown in Figure 4-2. Fourteen flood levels were surveyed through the town and along Creswick Creek following the January 2022 flood event. The modelled flood level was compared with the surveyed flood level. The results showed the model matches surveyed levels well (within 100mm), with the exception of three points. The surveyed level immediately downstream of Water St is around 300mm lower than the modelled level. The two survey locations located along Creswick Creek (upstream of the Midland Highway) are higher than the modelled flood level. Information collected following the flood event indicated there was considerable debris along Pearman Street which may have contributed to localised flood levels and flood debris marks used to capture flood levels. Levels along Nuggetty Gully and the breakout through the school into the town match well as outlined in Figure 4-4.

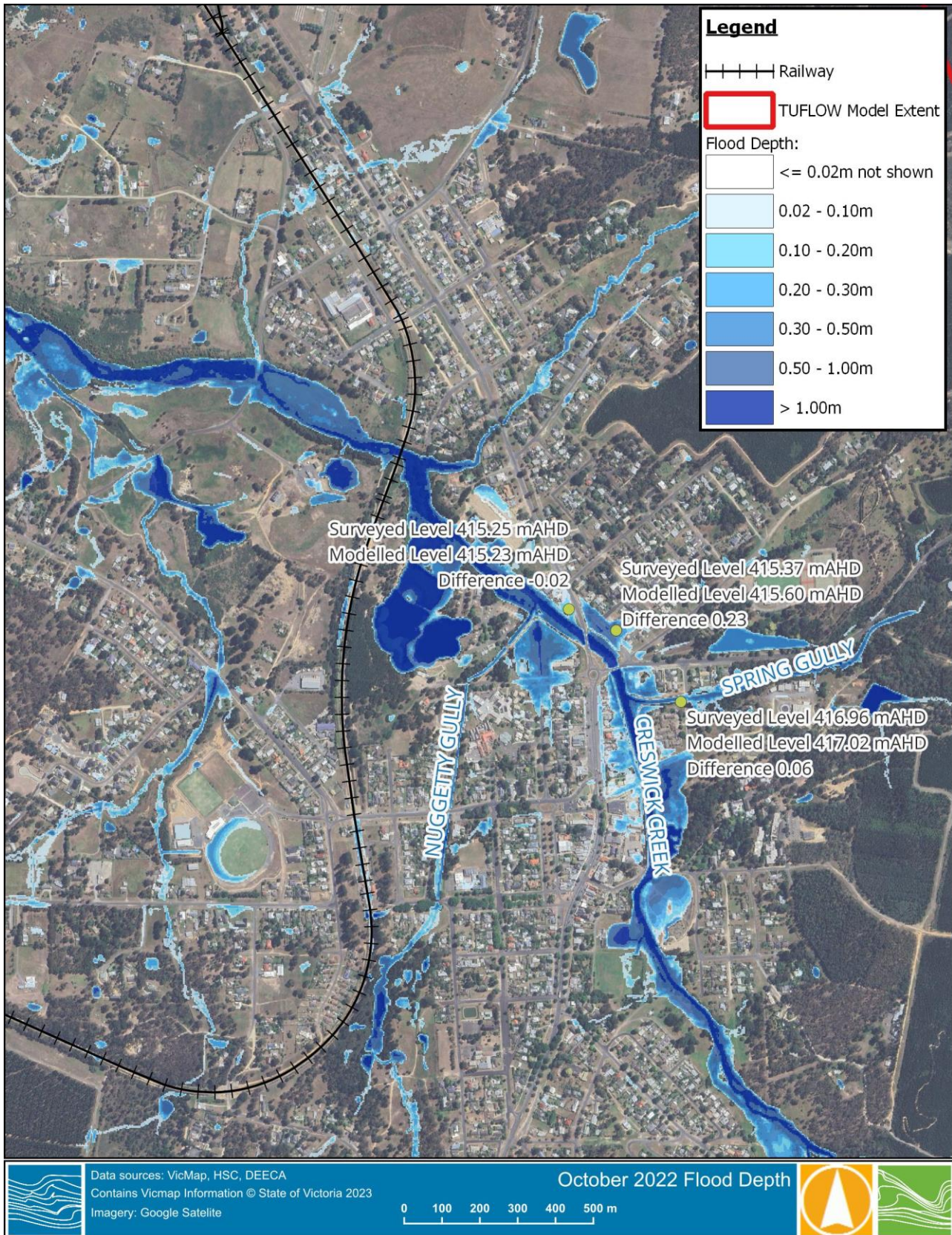


Figure 4-2 October 2022 Flood Depths and Surveyed Flood Level Difference

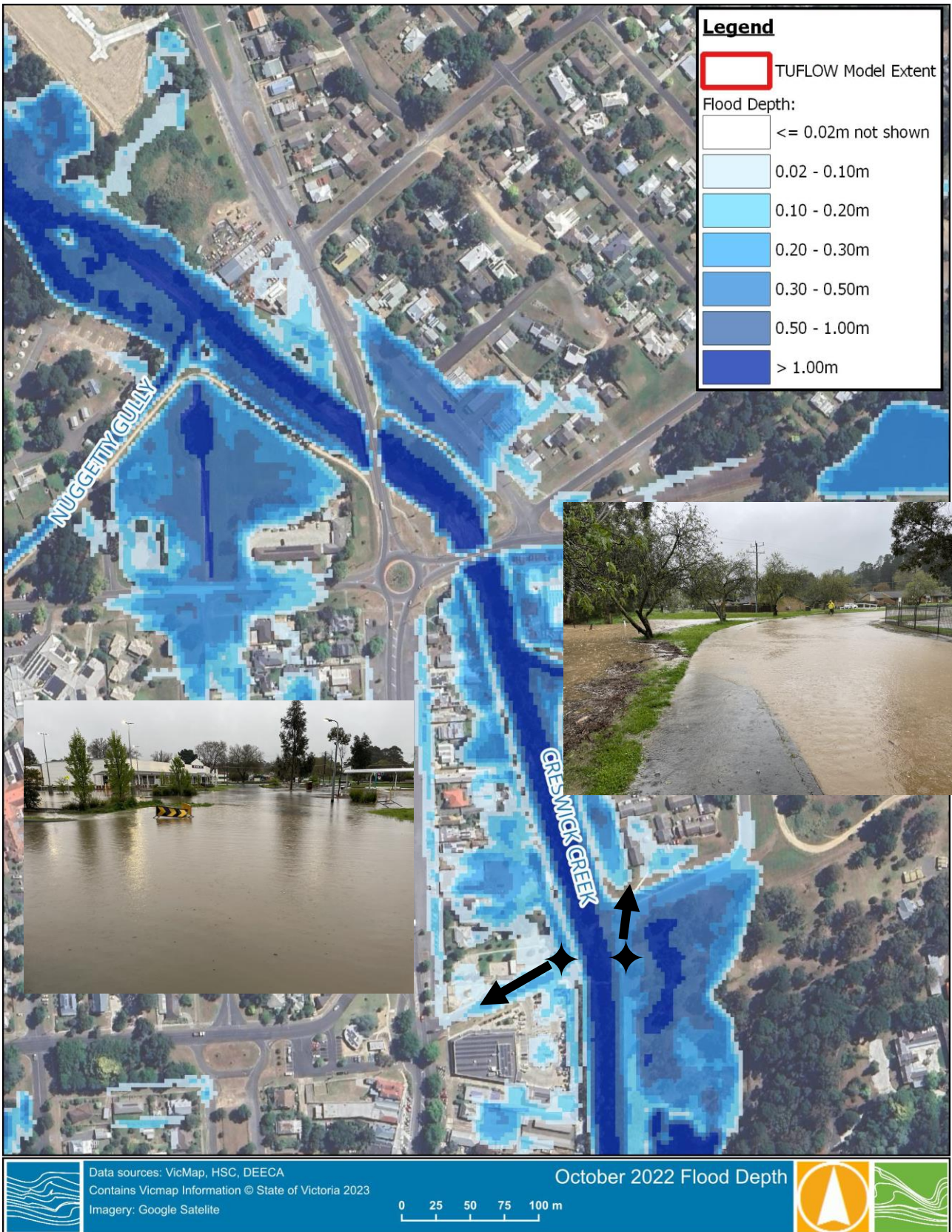


Figure 4-3 October 2022 Flood photography comparison (arrow denotes direction of photo)

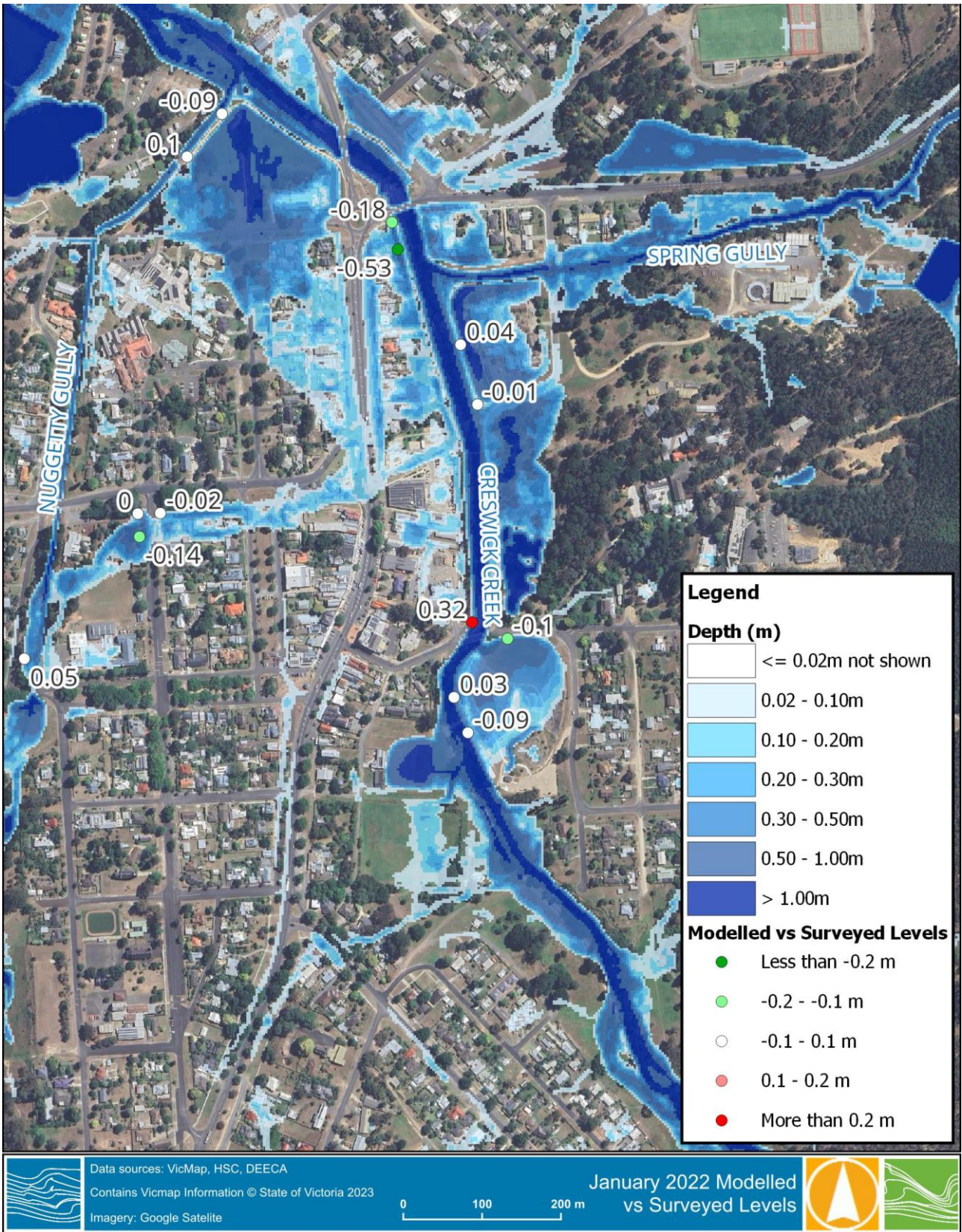


Figure 4-4 January 2022 Flood Depths and Surveyed Flood Level Difference



5 DESIGN MODELLING

5.1 Flood Frequency Analysis

A FFA was undertaken using recorded streamflow and water levels at gauge 407214 Creswick Creek at Clunes. The period from 1945 to 2024 was analysed. The software package FLIKE was used for conducting the FFA. It is an extreme value analysis package that calculates the probability of flood events based on historical records. Log Pearson III (LP III) and Generalised Pareto (GP) distributions generally aligned well and provided the best fit with the annual series flow data. It was noted that a number of the data series points between a 1 in 5 and 1 in 20 AEP were not within the confidence limits of either distribution. Filtering of low flows (up to 10 m³/s) was tested, however did not provide improved results between the 1 in 5 and 1 in 20 AEP series. Both the GP and LP III distribution produced similar results, the GP was selected as it produced slightly closer fit to the RORB design flows.

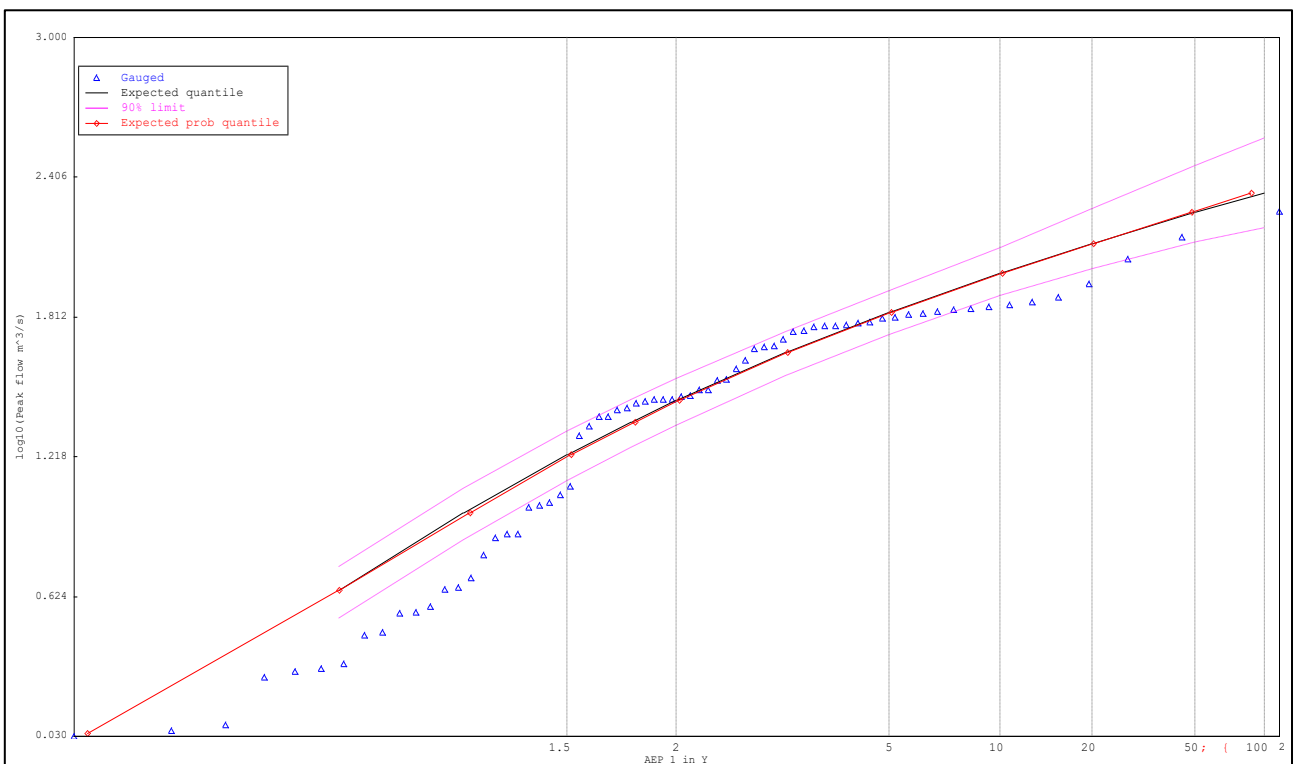


Figure 5-1 Generalised Pareto FFA (filtered below 1m³/s) – Creswick Creek at Clunes

Table 5-1 Peak Design Flows (m³/s) from FFA for gauge 407214 Creswick Creek at Clunes

AEP %	Generalised Pareto	Generalised Extreme Value	Log Pearson III	Log-Normal	Gumbel
20%	45.7	41.7	43.7	38.5	47.9
10%	99.6	103.8	102.3	121.6	83.6
5%	133.0	158.5	136.7	198.8	102.7
2%	180.1	265.7	180.6	345.6	127.4
1%	218.1	385.9	211.9	499.7	145.9
0.5%	258.2	555.2	241.1	700.2	164.3



5.2 Design Model Parameters

Following the release of ARR2019, jurisdictional guidance in relation to design flow estimation for Victoria was developed. The guidance highlighted a variety of approaches are available, and loss estimates can be obtained by one or more of the following approaches with the use of Flood Frequency Analysis (FFA) as the most defensible approach to design flow estimation in the following order.⁷

1. *Reconciliation with at-site flood frequency quantiles*: initial and continuing losses are varied within their expected range to achieve a reasonable level of agreement between estimates derived from rainfall-based modelling and flood frequency analysis.
2. *Reconciliation using within-catchment transposed flood quantiles*: streamflow observations are commonly available at gauging stations upstream or downstream of the site of interest, and flood quantiles derived from these sites can be transposed to the site of interest and used for reconciliation as described in approach 1.
3. *Event-based calibration*: continuing losses obtained from calibration of historical events provide some indication of typical design values, noting that past historical events are biased towards wet catchment conditions; initial losses from historical events are highly variable and information from a small sample of events are of low utility (and therefore some form of reconciliation with other sources of information is recommended).
4. *Reconciliation using nearby catchment transposed flood quantiles*: regional flood quantiles derived using RFFE and other procedures (Section 3, Book 3, ARR2019) can be used for reconciliation as described in approach 1.
5. *Transposition of losses*: initial and continuing loss estimates validated on nearby catchments which are considered to be hydrologically similar.
6. *Regional losses (ARR Data Hub)*: unmodified initial and continuing loss estimates obtained from the Data Hub losses can be adopted in data poor areas, noting that in loss region 3 these should be combined with 75th percentile pre-burst values.

The design hydrology approach was derived in the following manner:

- *Event-based calibration* to determine a range of design loss and routing parameters.
- *Reconciliation with at-site flood frequency quantiles*: Creswick Creek at Clunes gauge
- *Reconciliation using within-catchment transposed flood quantiles*: The Creswick Creek at Creswick catchment requires the adoption of a smaller ARF compared to the catchment to Clunes).

Following the verification of the Baseline period 1961-1990 design flows (2016 IFDs), the IFDs and reconciled design losses were then scaled to the year 2024 for current day/near-term risk assessment (existing conditions 2024) and finally the Long Term (2100) assessment.

⁷ Australian Rainfall and Runoff – Victorian Specification Information https://data.arr-software.org/vic_specific



5.2.1 Design Losses

In identifying a suitable set of design losses for this study, a range of design losses were developed in the calibration process. Table 5-2 shows the range of initial storm loss and continuing losses adopted for the calibration events as well as previous study losses and the Data Hub values. For the design modelling, losses were determined by reconciliation of the modelled peak flows to the Creswick Creek at Clunes gauge. A variable loss factor depending on event frequency and storm duration (Table 5-3) was then applied. It is noted that the continuing loss from the datahub is higher than the calibration losses, however the application of these losses provide a suitable comparison to the design flows developed in the Flood Frequency Analysis.

Table 5-2 Estimated design rainfall losses.

Source	Storm Initial Loss (mm)	Continuing Loss (mm/hr)
2012 Study – ARR 1987	20	2.5
Data Hub – ARR 2019	25	4.5
September 2016 Validation Event	25	2.0
October 2022 Calibration Event	20	2.0-2.5
January 2022 Validation Event	30-40	4.0
2011 Validation Event	42 25	3.5 3.0
2010 Validation Event	31.5	1.5
Adopted Design Loss	25mm then factored per duration (See Table 5-3)	2.5-4.3 (See Table 5-5)

Variable losses per duration

The median pre-burst rainfall was subtracted from the initial loss used to reconcile the FFA at the Creswick Creek at Clunes streamflow gauge. In RORB, this was implemented by using Loss Factors provided in DataHub. The pre-burst loss values for 1% AEP were applied to 0.5%, 0.2% and 0.1% AEP as well.

Table 5-3 Calculated variable rainfall initial losses for different storm durations and AEP (Data Hub initial loss minus median preburst)

Duration	20% AEP	10% AEP	5% AEP	2% AEP	1% AEP
1 hour	22.6	22.8	23	23.1	23.6
1.5 hour	22.2	22.2	22.2	22.3	23.2
2 hour	22.4	22.6	22.7	22.9	22.7
3 hour	22.8	22.7	22.5	22.4	20.6
12 hour	23.7	23	22.6	22.1	21.3
18 hour	24.9	24.1	23.6	23.1	21.7
24 hour	25	24.7	24.6	24.4	23.7
30 hour	25	25	24.9	24.9	24.8
36 hour	25	25	25	25	25
48 hour	25	25	25	25	25
72 hour	25	25	25	25	25



5.2.2 Design Routing Parameters

The routing parameters adopted for the design modelling are shown in Table 5-4. These values have been based on sitting within a range of values derived from the event based calibration and then fitted to the Flood Frequency Analysis discussed in Section 5.1. The variable continuing loss values per AEP are provided in Table 5-5. Note the losses discussed in the design validation are for baseline assessment.

Table 5-4 Design Event - Routing Parameters

Interstation	k_c	m	Initial Loss (mm)
Creswick Ck US Cosgrave Reservoir	12.00	0.8	25.0
Adekate Ck at Creswick	3.23	0.80	25.0
Nuggetty Gully	1.63	0.80	25.0
Bald Hills Road	1.48	0.80	25.0
Creswick Ck at Clunes	24.60	0.80	25.0

Table 5-5 Design continuing loss values

AEP	50%	20%	10%	5%	2%	1%- 0.1%	0.5%- 0.1%
CL (mm/hr)	2.50	3.00	3.25	3.50	4.00	4.30	4.50

5.2.3 Validation to FFA

The peak flows derived in RORB were validated to the FFA flows. Given the key focus of this study was to provide design flood mapping, the validation approach was focussed on the 1% AEP flows. The peak flows estimated with GP and LP-III for the 1% AEP and 2% AEP events are similar to those obtained from the analysis with the RORB model (within the confidence bounds). When comparing the 1% AEP event, the RORB flow (223 m³/s) sits between the LP-III and GP value (Figure 5-2). When adopting a constant continuing loss for each AEP, flows produced by the RORB model were too low compared with the FFA at frequent AEPs. The continuing loss was therefore varied by AEP, with the loss increasing as AEP increased. Conceptually, this is similar to a proportional loss model (i.e. runoff coefficient) where the amount of rainfall lost to infiltration and other mechanisms increases with the volume of rainfall.

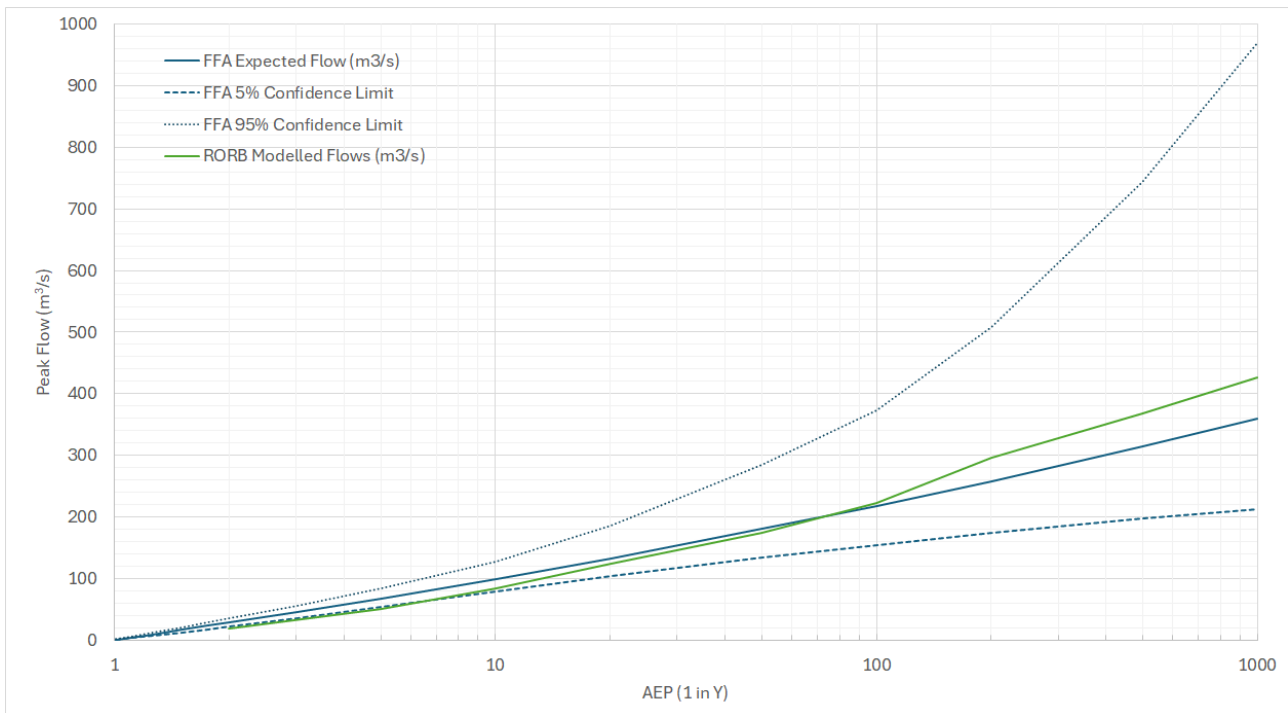


Figure 5-2 RORB and FFA Results

The model results shown in Table 5-6 indicate that the 1% AEP flows under an SSP5-8.5, 2100 scenario are increased 61% at Creswick and 55% at Clunes compared to current day/near-term (2024) conditions. These Long-Term (2100) climate projections highlight the increasing flood risk that many of our flood prone communities across Australia are facing.

Table 5-6 Comparison of peak design flows with baseline period (1961-1990), current day/near-term (2024) and climate change (2100) scenario

AEP%	Creswick Creek at Creswick			Creswick Creek at Clunes		
	Baseline period 1961-1990 Flow (m³/s)	Current day/near-term (2024) Flow (m³/s)	Climate Change (2100) Flow (m³/s)	Baseline period 1961-1990 Flow (m³/s)	Current day/near-term (2024) Flow (m³/s)	Climate Change (2100) Flow (m³/s)
20%	28.1	38.9	70.4	51.1	68.2	122.8
10%	48.9	61.3	95.7	77.9	98.4	165.9
5%	64.3	78.4	133.4	113.8	138.9	235.1
2%	93.2	117.7	188.9	174.5	218.8	354.6
1%	119.2	146.5	236.7	228.1	279.8	432.9
0.5%	150.2	179.1	293.7	302.5	360.8	539.8
0.2%	178.7	214.0	342.8	373.0	440.3	651.9
0.1%	208.7	249.4	388.6	431.7	504.0	747.9



6 DESIGN HYDROLOGY PARAMETER SUMMARY

A thorough investigation into appropriate design hydrology model parameters was completed, following the latest ARR4.2 design estimation guidelines and climate change advice. A summary of the adopted design parameters for the riverine model are outlined below:

- Formal storages within the model were set at full as initial conditions at the start of the modelling.
- Using the baseline IFD rainfall data, the hydrology model was reconciled to the Creswick Creek at Clunes streamflow gauge using FFA. Key design parameters were:
 - Initial loss value of 25 mm.
 - Continuing loss value varied from 2.5mm/hour (50% AEP) up to 4.5mm/hour (0.1% AEP). 1% AEP was 4.3 mm/hour.
 - Kc parameters for each of the interstation areas were based on a range derived from the event based calibration and then fitted to the Flood Frequency Analysis discussed in Section 5.1. These values maintained a similar kc/Dav relationship from the previous flood study. The kc values are:
 - Creswick Ck (Us Cosgrave Res.) - 12.0
 - Adekate Ck at Creswick - 3.23
 - Nuggetty Gully - 1.63
 - Bald Hills Road - 1.48
 - Creswick Ck at Clunes - 24.60
 - The use of median percentile pre-burst rainfall depth inputs.
 - Areal Temporal Patterns were adopted for storm durations greater than 12-hour.
 - When reconciling flows at the Clunes streamflow gauge, an areal reduction factor based on a catchment size of 311 km² was adopted.
 - When extracting flows for use in the hydraulic model (at Creswick), an areal reduction factor based on respective catchment sizes was adopted.
 - Ensemble of 10 temporal patterns modelled, selecting the scenario that provided the median peak flow for each duration event for the critical durations at locations of interest.
- Climate change modelling was undertaken for SSP5-8.5 scenario for the current day/near-term (2024) and long term (2100) timeframe incorporating increased rainfall intensities and design losses.
- For the current day/near-term (2024) scenario, the flows at Creswick and Clunes have increased by around 23% for the 1% AEP flood event when compared to the baseline period design flows. For the 2100 climate change scenario we see a further 61% and 55% increase in peak flows at Creswick and Clunes respectively in the 1% AEP flood event when compared with the Current day/near-term (2024) timeframe.
 - The percentage increase in peak waterway flows associated with the climate change scenarios is larger than the percentage increase in rainfall. The relationship between event based rainfall and runoff increase is not linear due to factors like catchment characteristics including catchment size, storage capacity and hydrological response. These factors influence how much rainfall becomes runoff and how quickly it reaches the waterways. Increased rainfall intensity can also reduce the critical duration at locations within the catchment due to the changed timing response of the sub-catchments.



7 HYDRAULICS

A 1D-2D TUFLOW model was developed to be utilised for both riverine and stormwater modelling. The hydraulic model extent is shown in Figure 4-1. Five inflow boundaries representing the catchments of the key waterways upstream of the hydraulic model extent are included in the hydraulic model. The remaining area within the hydraulic model extent is represented using direct rain-on-grid to represent stormwater runoff in the area.

Topography

LiDAR data utilised in the model was verified against feature survey of road transects as described in R01 – Return Brief Report. The verification found the LiDAR data was suitable for use in the hydraulic modelling. The 0.5 metre resolution DEM was resampled within TUFLOW to 3 metre resolution.

Boundaries

Flows extracted from the RORB model were applied to the TUFLOW hydraulic model via 2d_sa boundaries. The catchment area inside the TUFLOW model extent is represented using a rain on grid methodology. The downstream boundary comprised of a height-flow (HQ) boundary.

Drainage Structures

Asset data for pits and pipes was obtained from Hepburn Shire Council and incorporated into the hydraulic model as 1D structures connected to the 2D model domain. Where pit and pipe information wasn't available in the GIS database, it was interpolated or approximated using judgement.

Hydraulic Structures

Survey was captured along a number of hydraulic controls and structures in the town. Several levees have been reinforced in the model with 2D-Zshapes.



Losses

Initial and continuing losses have been applied through the 2D Material layer and are shown in Table 7-1. Rainfall losses tend to be lower in rain-on-grid hydraulic models compared to the RORB losses discussed earlier due to runoff being generated at a fine spatial scale. This allows impervious and low-loss areas to contribute flow directly rather than being averaged across a larger sub-catchment. As a result, rain-on-grid models simulate more efficient runoff generation than lumped hydrology models, which incorporate higher conceptual losses to represent whole-catchment losses when compared to a rainfall-runoff model.

Land Use Roughness

Hydraulic roughness within the 2D model was expressed as a roughness coefficient Manning's 'n'. Manning's 'n' was estimated using aerial imagery and land use zones guided by the Hepburn Shire Council Planning Scheme layers. The adopted hydraulic roughness coefficients are summarised in Table 7-1.

During the initial development of the mitigation modelling, refined loss values for the rain on grid model were based on replicating the RORB model flows for Creswick Creek at Creswick. The majority of the catchment area modelled as rain on grid in the hydraulic model is within the urban area.

Table 7-1 Land use types, roughness values and baseline losses for rain on grid modelling

Land use / Topographic description	Roughness coefficient (Manning's n)	Initial Loss (mm)	Continuing Loss (mm/hr)
Residential: Urban Footprints	0.5	5	1
Residential: Urban (higher density) Remainder	0.1	5	1
Residential: Rural (medium density) Remainder	0.1	10	1.5
Residential: Rural (lower density) Remainder	0.05	12	1.5
Golf Course	0.05	12	2.5
Open Pervious Areas: Minimal Vegetation (grassed)	0.04	15	2.5
Open Pervious Areas: Moderate Vegetation (shrubs)	0.06	15	2.5
Open Pervious Areas: Thick Vegetation (trees)	0.095	15	3
Waterways/Channels: Minimal Vegetation	0.03	1	0
Waterways/Channels: Vegetated	0.07	1	0
Paved Roads/Carpark/Driveways	0.025	1	0
Lakes (no emergent vegetation)	0.03	1	0
Railway line	0.125	8	1
Industrial/Commercial	0.35	4	0.5

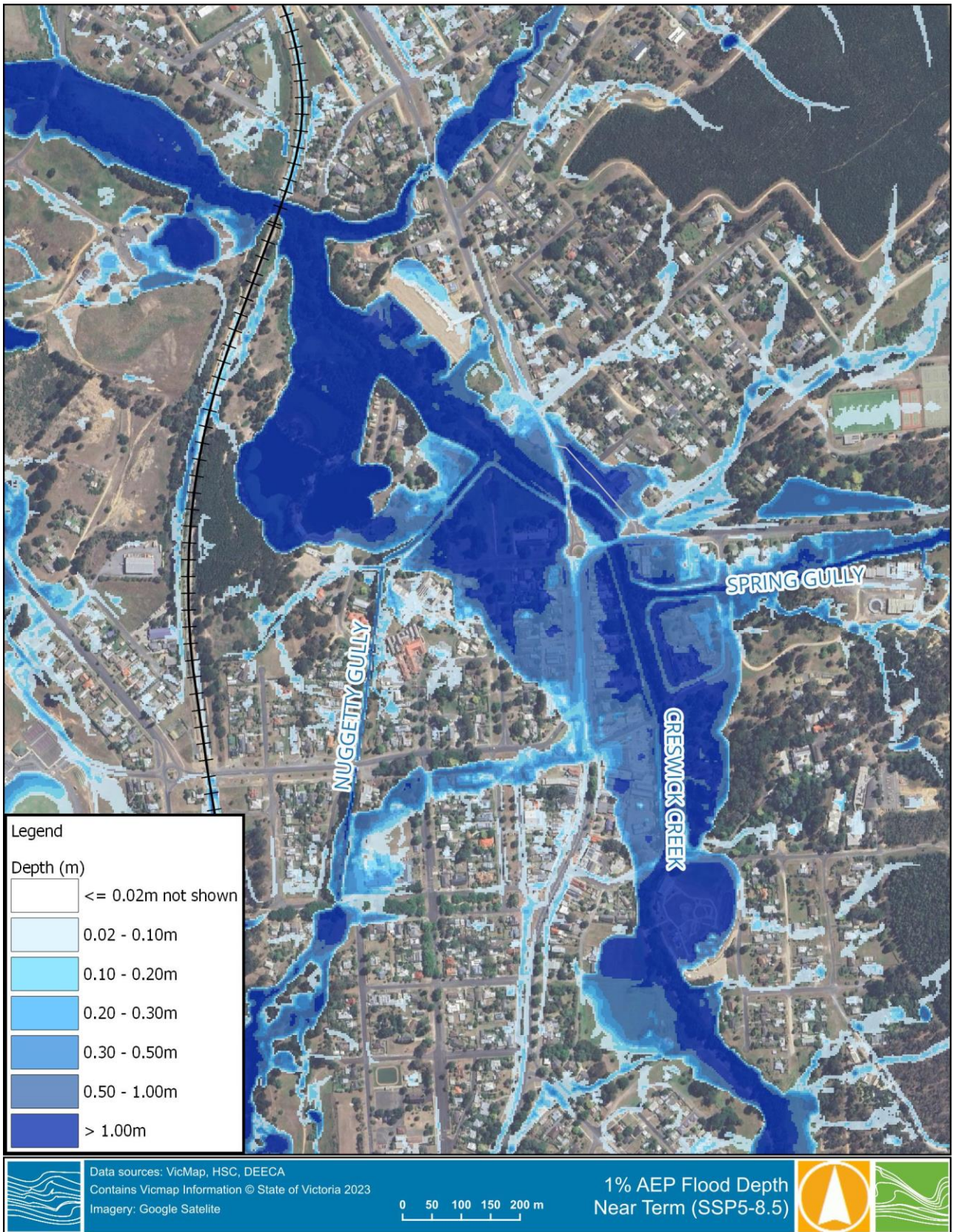


Figure 7-1 1% AEP Flood Depths in Creswick under short term (2024) SSP5 scenario



8 FLOOD MITIGATION

8.1.1 Overview

Six flooding hotspot locations were listed for investigation in the study brief. Each of these locations were reviewed and assessed during discussions with Council staff, inspected during the site visit along with a review of the rain-on-grid model results. Each of the six hotspot locations along with several other areas were assessed as part of a feasibility assessment to prioritise and rank the projects within each area and determine which of the mitigation options would proceed to the full feasibility assessment. All mitigation strategies were assessed based on a multi-criteria assessment. Modelling of each option was undertaken for the Near Term (2030), SSP5 climate scenario. A summary of the key investigation areas and proposed mitigation options tested as part of the prefeasibility assessment is provided below.

Location 1 – Pascoe Street/Broomfield Road

- Investigate formal retarding basin – utilising public land where available.
- Upgrade of pipe size from Clunes-Creswick Road to Railway.
- Pipe Diversion downstream of railway line along Davies Street.

Location 2 – Cambridge St/Cushing Avenue

- Improving overland flows along Cushing Avenue towards the basin.
- Formalise and expand basin in open space between Cushing Avenue and Creswick Creek.
- Incorporating pumping rates within the basin that maintain flood levels below floor level in a 10% AEP event.
- Construct piped outlet from the drain at Pearman Street through to the basin.
- Assess additional piped outlet from basin with one-way flap valve.

Location 3 - Nuggety Gully

- Identifying existing culvert and road crossing capacities and impacts of upgrades on downstream infrastructure.
- Construction of a levee along the Primary school boundary (increase height of existing blue stone wall).
- Construction of basin upstream of Raglan Street to restrict flow downstream of Raglan Street.
- Increase flow capacity at Hyde Park Road.

Location 4 - Bald Hills Road

- Construction of basin at Townsend Street.
- Upgrade Pipe along rear of Cassels Lane properties.
- Upgrade of pipe around Bald Hills Road and Elizabeth Road.
- Identify options for formalised easement downstream of Bald Hills Road.

Location 5 - Midland Highway/North Street

- Incorporate new pump station into model and assess flows in/pumping rate and available storage with the aim to maintain flood levels below floor level in a 10% AEP event.

Location 6 – Wright Court/Caddy Drive

- Upgrade drainage from Caddy Drive & Tait Drive
- Assess White Hills Road upgrade

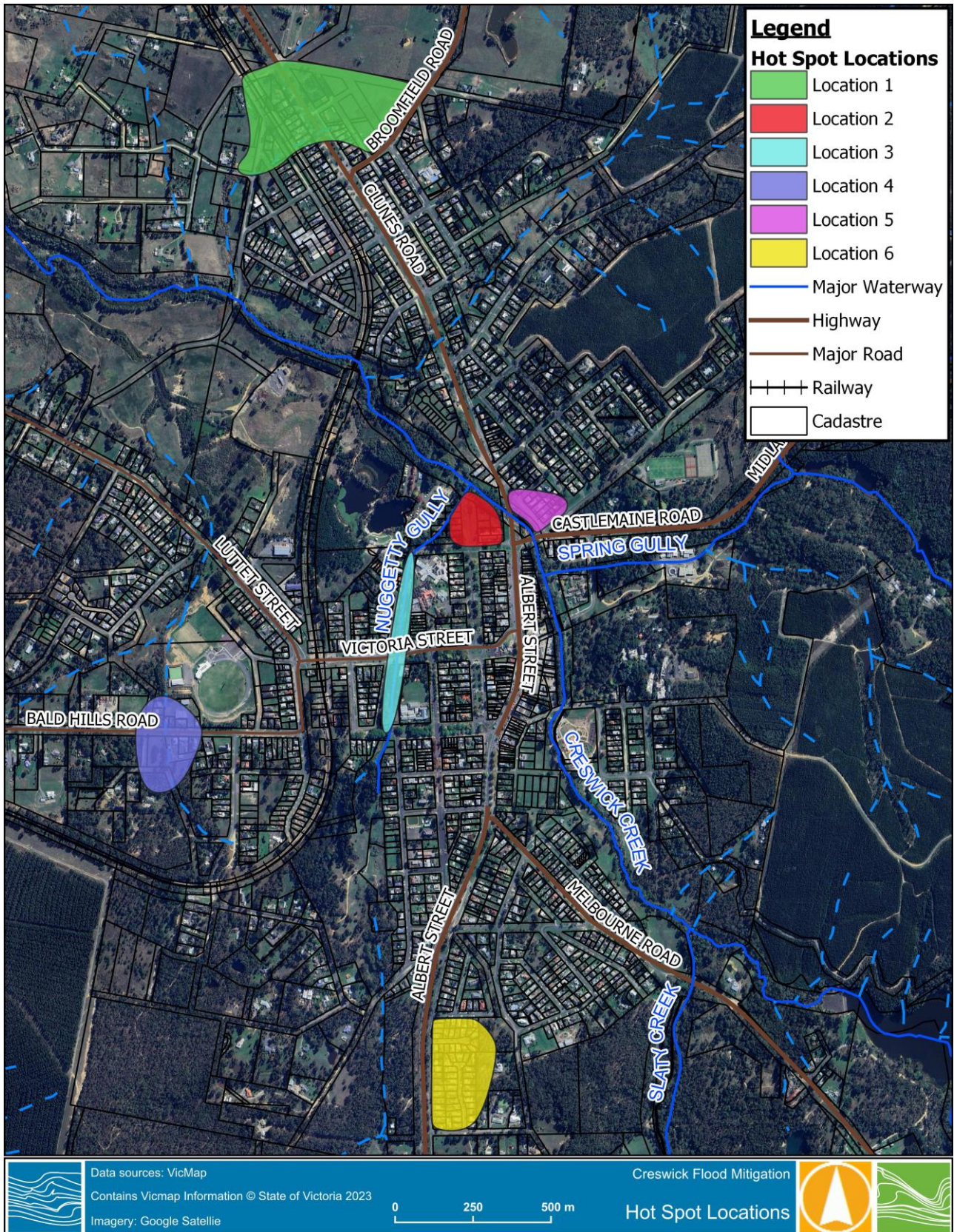


Figure 8-1 Hot Spot Locations - Overview



8.1.2 Location 1: Creswick North (Pasco Street/Davies Street)

The location 1 mitigation option consisted of four components listed below and shown in Figure 8-2:

- Construction of a 1.8 hectare retarding basin located in crown land upstream of Pasco Street
- Re-direction of overland flow along Johns Road (including culverts at Clunes Road and Railway) through to Carmody Drive. Including an additional levee limiting flows from Johns Rd to Clunes Road
- Upgrade of pipes from Clunes Road through to Davies Street (including Railway culvert)
- New Pipe between 1 and 1A Davies Street to convey flow downstream of Railway

When all four components were modelled together, the flood levels and number of properties impacted reduced significantly. Figure 8-3 and Figure 8-4 show the reduction in flood levels with the largest reduction at Clunes Road where water levels reduce by up to 500mm in both the 1% and 10% AEP flood events. Flood levels reduce between 100mm and 200mm between Clunes Road and the railway line with reductions around 100mm downstream of the railway.

Each of the four components was also modelled independently. Results showed the construction of the retarding basin alone had the greatest impact on flood levels. The combined mitigation option was then further refined and the pipe upgrade from Clunes Road through to Davies Street and the additional pipe from downstream of the railway line to west of Davies Street was removed with minimal changes to afflux.

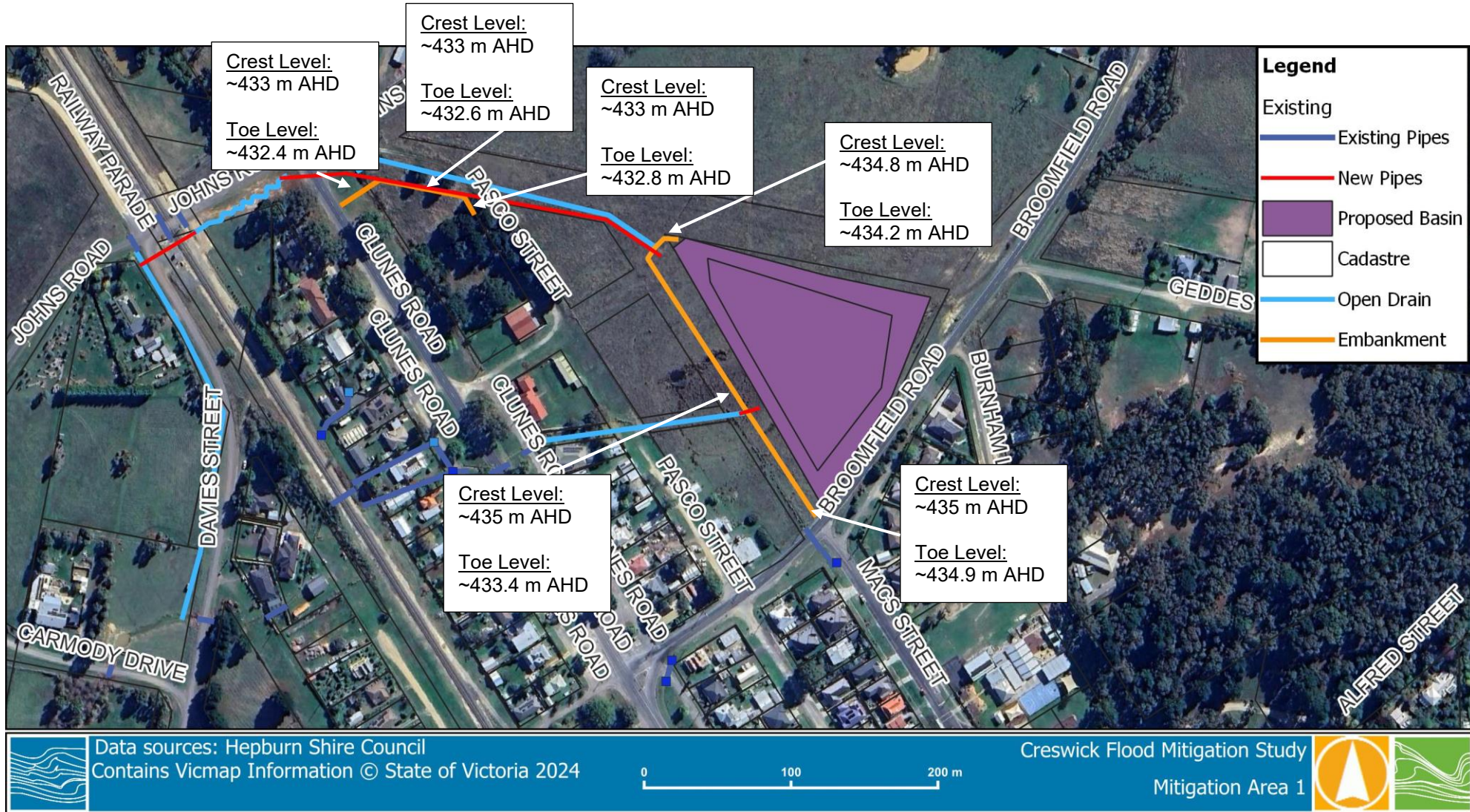


Figure 8-2 Mitigation Concept – Location 1



Figure 8-3 10% AEP Flood Level Difference Plot – Location 1

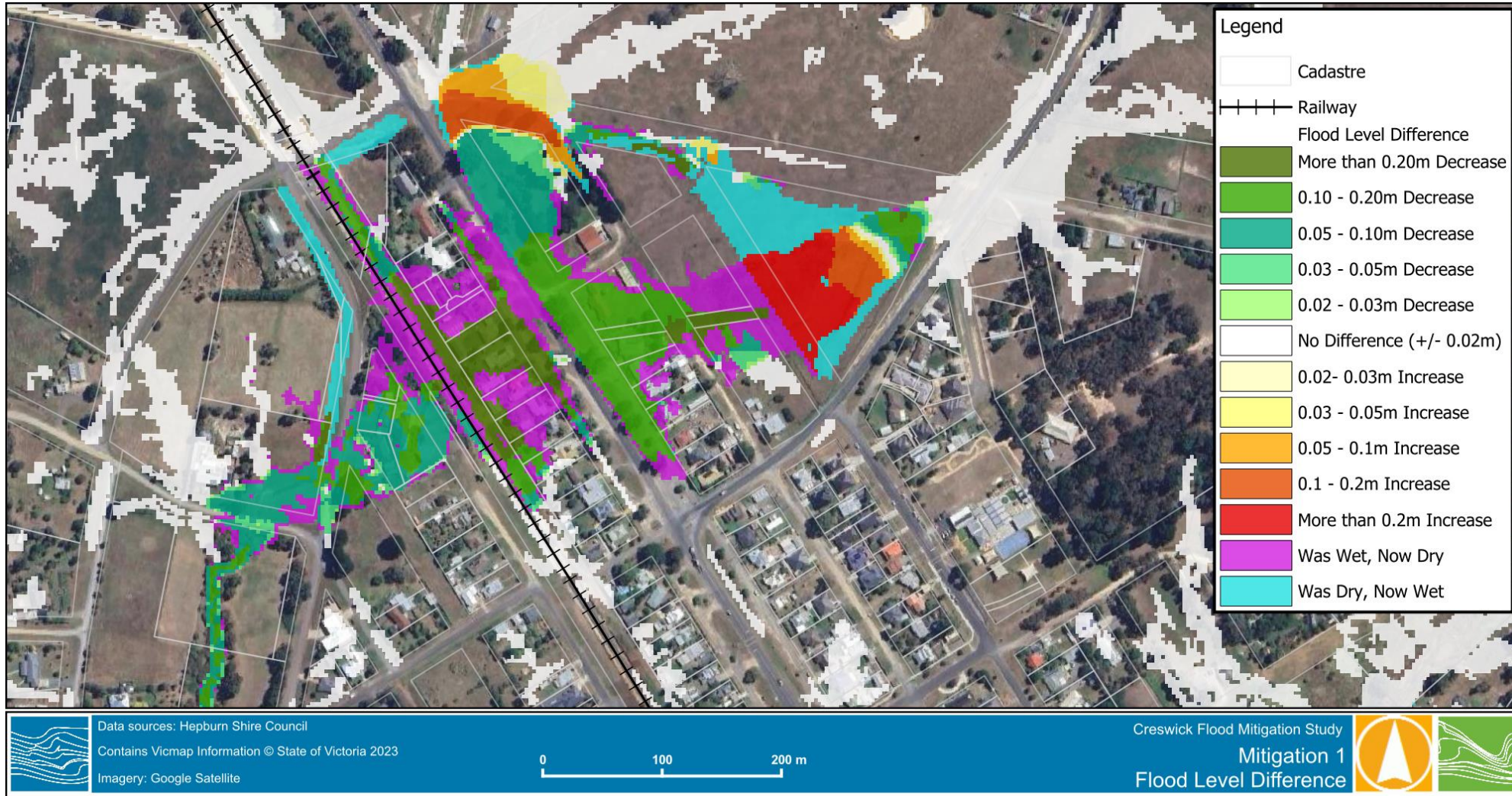


Figure 8-4 1% AEP Flood Level Difference Plot – Location 1



8.1.3 Location 2: Cambridge Street/Cushing Avenue Retarding Basin

A levee embankment was previously constructed to protect the low lying area between Creswick Creek, Cushing Avenue and Nuggety Gully. The creation of the levee along the high ground in this area created a retarding basin that currently has a 900mm diameter piped outlet. Anecdotal evidence indicates that the retarding basin fills prior to the peak flood water in Creswick Creek. Modelling indicates the max flood level is higher in Creswick Creek than the basin up to a 10% AEP flood event. Above a 10% AEP event, breakout of Creswick Creek upstream of the Midland Highway flows across Albert Street then fills the basin and overtops back into Creswick Creek. Modelling also shows flow into the basin is attributed to breakout flow from Nuggety Gully flowing through the Primary School and town along with local stormwater. Mitigation Location 3 looked at removing this breakout flow and is discussed in more detail in Section 8.1.4.

The current levee crest height results in the peak flood level within the basin being higher than that observed in the waterway during the 1% AEP (Figure 8-5). In events where the water level within the basin is higher than the Creswick Creek level, an additional gravity outlet would provide a far greater benefit than a pumped outlet. This outlet would require a one-way flap valve to prevent back flow from Creswick Creek.

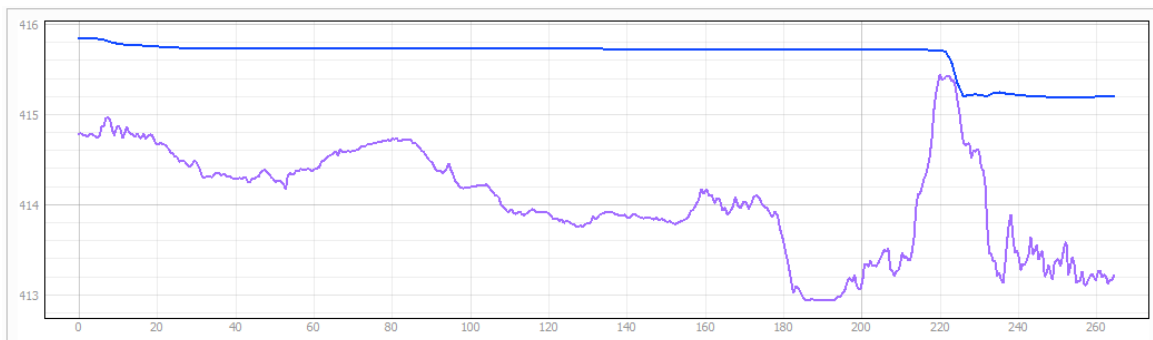
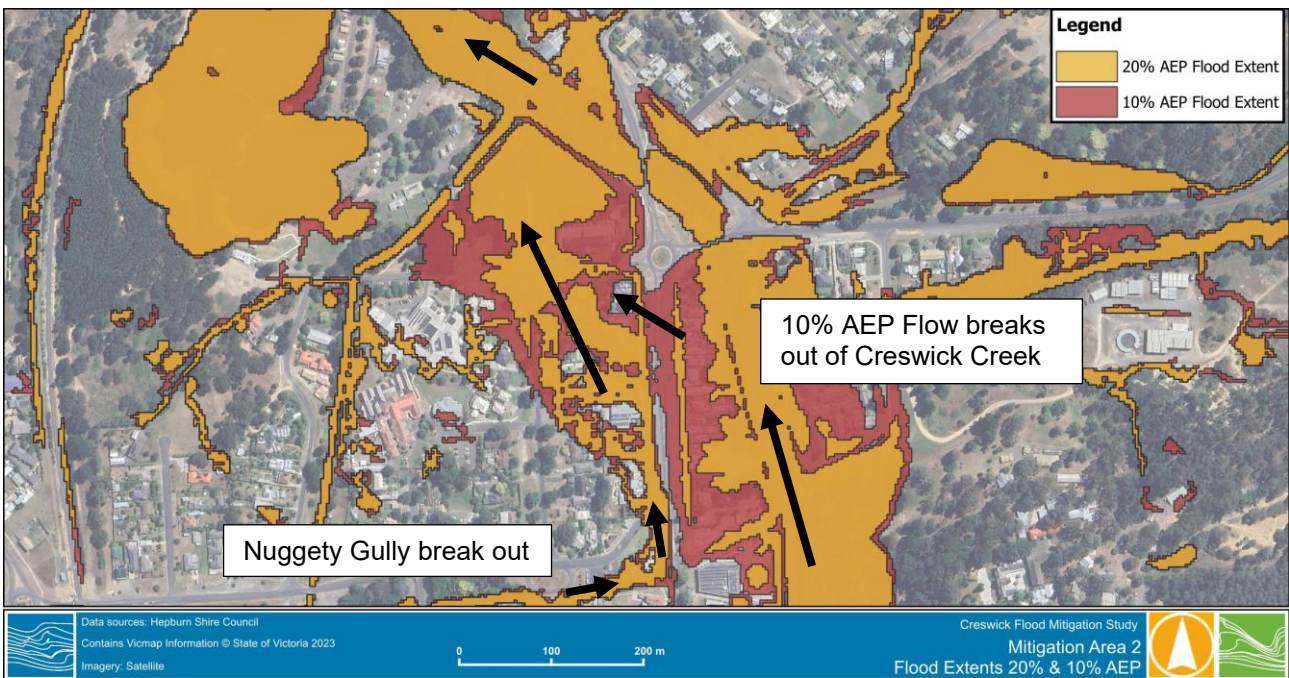


Figure 8-5 1% AEP Water Surface Elevation (blue line) and Topography (purple) plot



This mitigation option aims to reduce flood levels within the basin and area across Cushing Avenue as well as provide a separate drainage connection for the Pearman Street drain. The mitigation options tested included:

- Increasing existing basin volume (two volumes tested – 4ML and 6ML)
- Testing pumped outlet from basin in Creswick Creek (300L/s)
- An additional one-way outlet from the basin to Creswick Creek
- Connection of the Pearman Street drain to the basin

All four components were modelled separately and as a combined option for the feasibility assessment.

The increase in basin size is proposed to reduce the impact of stormwater runoff from the local Nuggetty Gully catchment. Anecdotal evidence identifies that even in large floods on Creswick Creek, the basin generally fills from local runoff prior to overtopping from the Creswick Creek.

Currently the basin holds around 50ML when full. The two volume basin sizes tested increased the volume by around 4ML and 6ML. Increasing the basin size by both 4ML and 6ML involves works on private property, it is possible to scale the basin according to the land available with benefits also being scalable. Even with increasing the basin size, the levee would still be overtopped from high water levels within Creswick Creek (in a 1% AEP event) and drainage from the basin would be limited due to the downstream water level.

The incorporation of a pump to increase the flow out of the basin when the Creswick Creek water level is higher than the basin was also assessed. An initial assessment found that the maximum feasible pump rates were inadequate in comparison to the volume within the basin and pumping would have minimal impact on the flood levels during the 1% AEP event, due to the overtopping of Albert Street in a high Creswick Creek flow event.



Figure 8-6 Mitigation 2 Layout



Flood modelling for the 20% AEP and 10% AEP found the proposed works reduced the flood level within the Pearman Street drain and Creswick Creek (upstream of the Midland Highway), however resulted in an increase in flood levels within the basin. Flood level difference plots for the 20% AEP event (Figure 8-8) and 10% AEP event (Figure 8-9) are shown below. This is due to the additional flow that is entering the basin via the new pipe (~1.4m³/s), however the additional piped outlet does not allow for flow to leave the basin at the same rate due to the Creswick Creek level is higher than the basin level. Figure 8-7 shows the additional pipe inflow in the 20% AEP compared with the combined outflow (which includes the existing outlet culvert). Where the flow difference (orange dashed line) is negative, this results in additional volume in the basin.

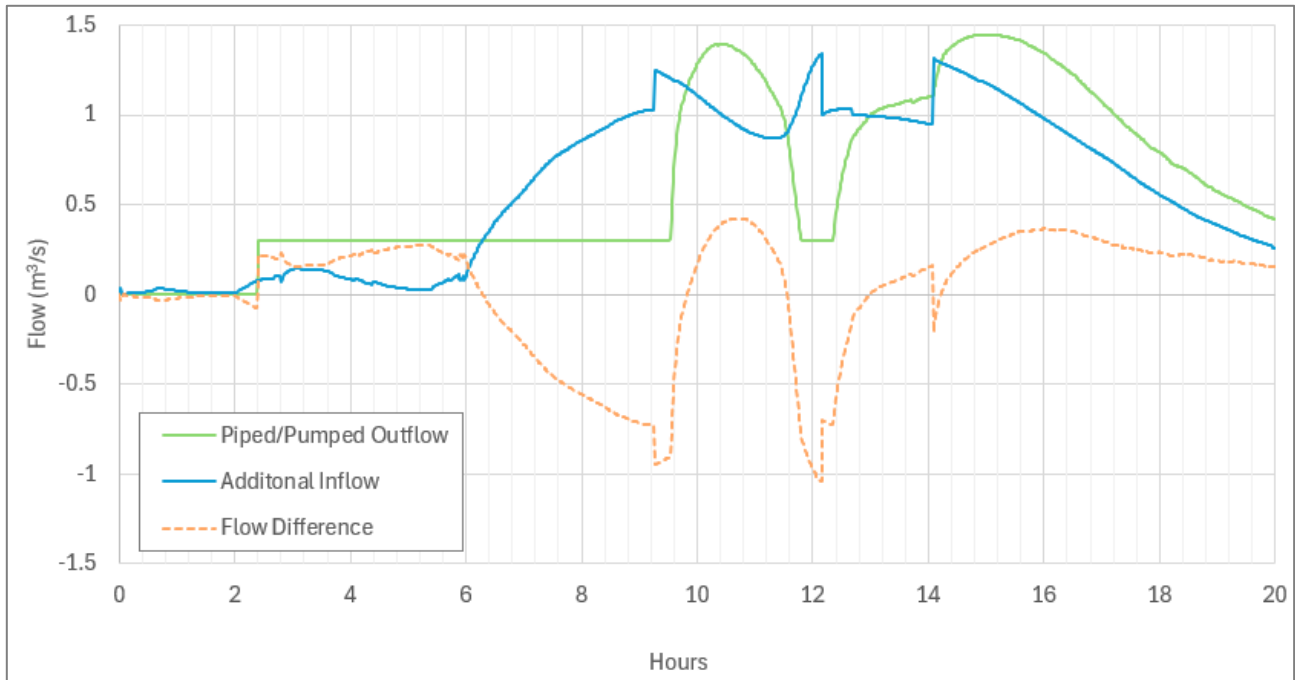


Figure 8-7 20% AEP 9 Hour (Mitigation 2) Basin Flows

As the event magnitude increases, the impact on flood levels within Creswick Creek and the Pearman Street drain decreases as overflow from Creswick Creek drowns out the drain and the basin itself. While there is not a significant reduction in larger flood events, i.e. in the 1% AEP event (Figure 8-11), this concept shows value for smaller events as well as events which may produce significant runoff from the local Nuggetty Gully catchment that peak prior to the Creswick Creek flow. For example, the 5% AEP event shows a reduction in the flood level in the basin and in Creswick Creek (Figure 8-10).

The inclusion of a new one-way outlet within the basin as well as formalising a spillway from the basin that includes a pumping station appear to provide the greatest benefit from the conceptual modelling in reducing the impact of stormwater levels within the basin. Additional investigation on the balance between flood protection from Creswick Creek, based on the levee crest height, and drainage outlets in the basin is warranted prior to detailed design in this area. Lowering of the embankment may offer an improved stormwater outcome but is potentially offset by a worsening in large Creswick Creek flooding. Further options to offset this option are discussed later in the report (Section 9.4 below).

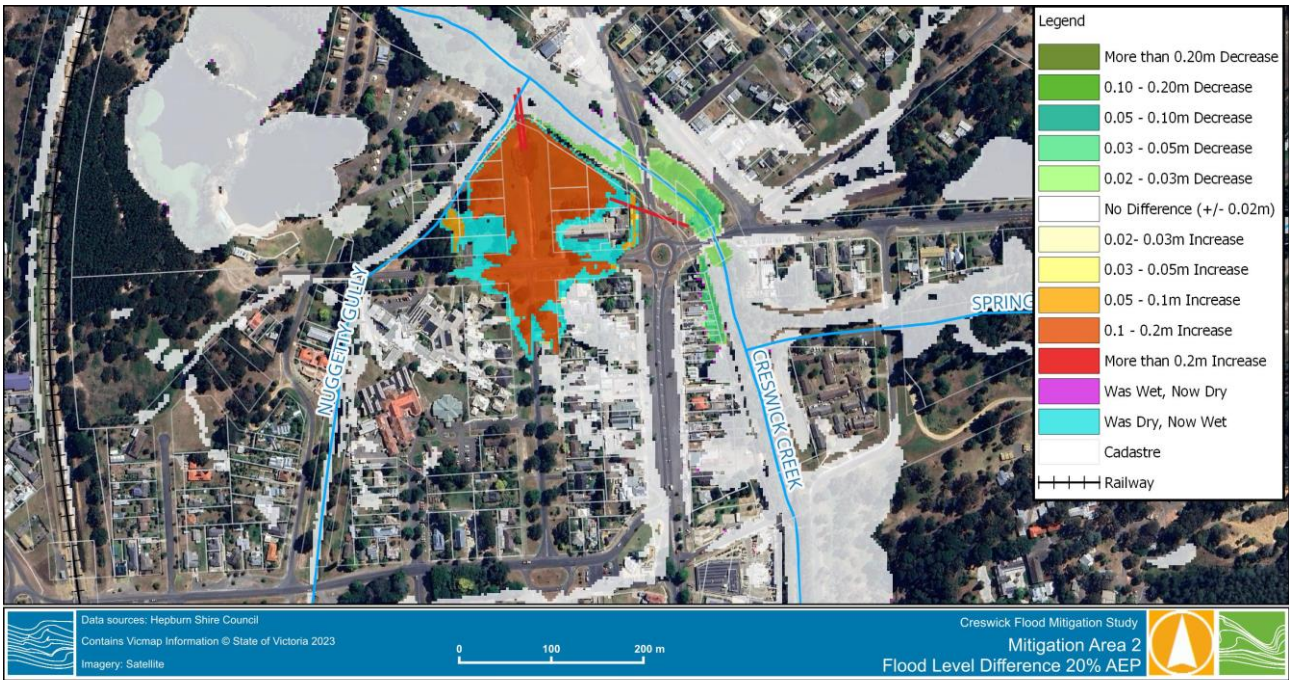


Figure 8-8 Mitigation 2 – 20% AEP Flood Level Difference



Figure 8-9 Mitigation 2 – 10% AEP Flood Level Difference



Figure 8-10 Mitigation 2 – 5% AEP Flood Level Difference



Figure 8-11 Mitigation 2 – 1% AEP Flood Level Difference



Additional Modelling

An additional scenario was modelled with a mitigation pipe running from the retention basin to Calembreen Park Lake. To avoid impacts on the Lake water quality and changed impacts within Creswick Creek through diverting regular flows, the overflow pipe has been set to flow only when the basin reaches the 20% AEP flood level in the basin. The modelled pipe has a diameter of 750mm with three inlet pits 0.9x0.9m (oversized the pits to assess the impact of the pipe itself). The mitigation scenario was simulated for the 20%, 10%, 2% and 1% AEP events. The modelling showed the greatest impact in the 10% AEP event with up to 100mm reduction. There was minimal to no change in the 20% AEP and 1% AEP events.



8.1.4 Location 3: Nuggetty Gully

This option involves raising the existing retaining wall on the right bank of the gully adjacent to Creswick Primary School. The option was initially identified in the 2012 Flood Study however was not addressed further beyond the study as other mitigation options were implemented throughout the town.

The purpose of the mitigation option is to prevent breakout flow from Nuggetty Gully travelling across the school ground down Victoria St towards Albert Street.

Previous investigation has identified concerns that the levee may result in an increase in flood levels upstream of Victoria St (where Nuggetty Gully is restricted) as well as unconfirmed potential heritage issues relating to the bluestone wall. Restricting breakout flows has the potential to increase the peak flow along Nuggetty Gully downstream of the school by around 5 m³/s in the 1% AEP event. To address this and further restrict flows along the waterway, an online retarding basin located upstream within Nuggetty Gully was also modelled.

Currently, the 1% AEP design flow rates can be summarised as:

- Nuggetty Gully (Upstream of Raglan St) ~22 m³/s (60 minute duration)
- Raglan St Culvert ~ 15 m³/s – overtopped in 1% AEP event
- Breakout flow through school ~16 m³/s – some flow going over Raglan St, east of Nuggetty Gully
- Victoria St – 4 m³/s top culvert not activated in 1% AEP event

The proposed embankment works at the school consist of:

- A 0.5m embankment/crest increase on top of the existing bluestone wall, 150 m long to prevent breakout flow up a 1% AEP event. Currently flow break outs through the school in events greater than a 10% AEP.

The mitigation works upstream of Raglan Street aim to restrict 1% AEP flows back to the capacity of the culverts at Victoria Street and Cushing Avenue. Works include:

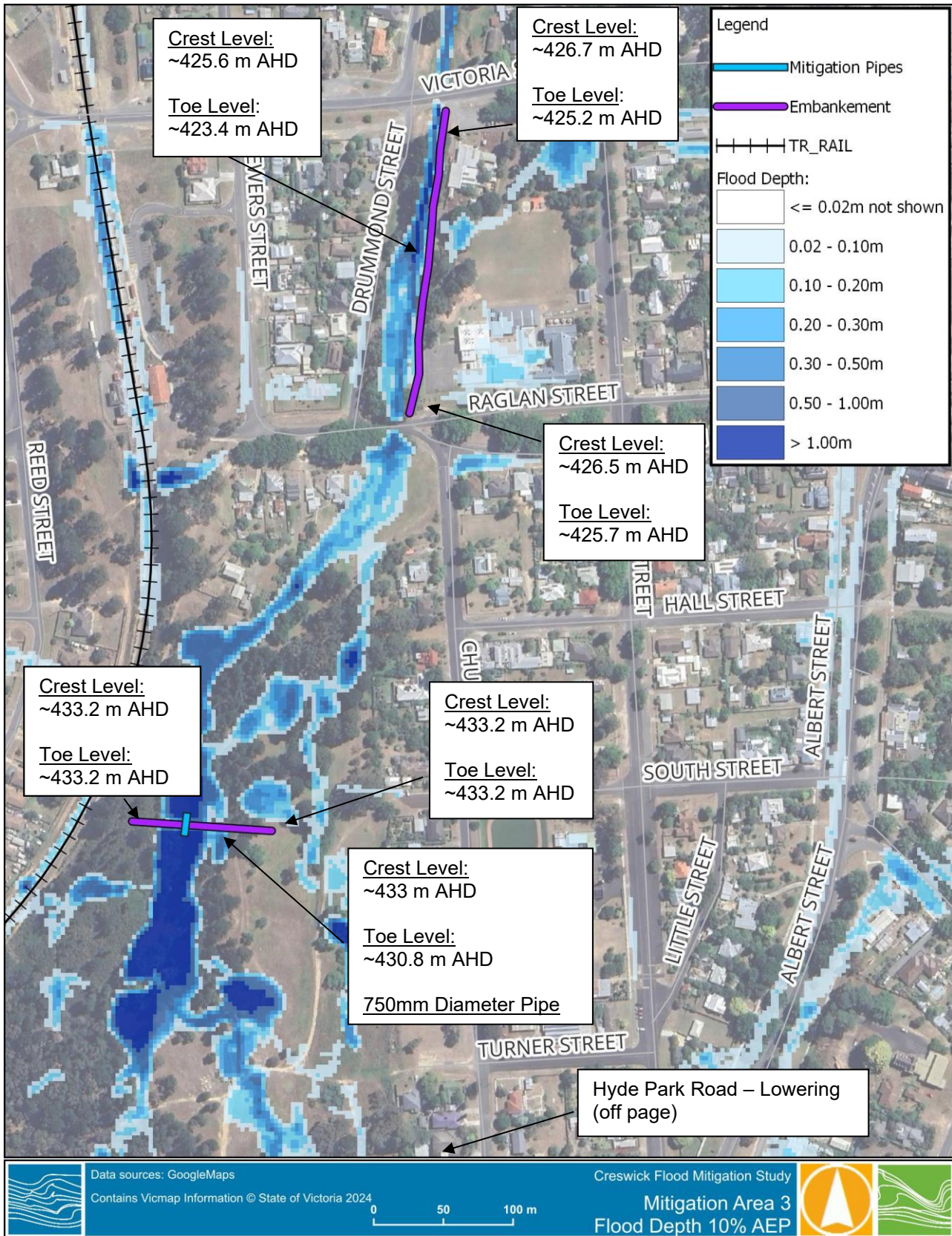
- A 0.5 m levee bank, 150 m long (across the gully)
- Twin 750 mm diameter piped outlets
- An alternative outfall option downstream at Cushing Avenue directing the increased flows to Creswick Creek via Calembeen Park rather continuing along Nuggetty Gully.
- Lowering of Hyde Park Road to allow additional flow over to weir over the road in large events.

The layout of the mitigation options is shown in Figure 8-12.

Flood modelling results shown in Figure 8-13 and Figure 8-14 indicate the significant reduction in flood levels through the school and across Napier and Albert Streets by reducing the peak flow and maintaining a higher portion of flow within Nuggetty Gully. There is a noted increase in flood levels along Nuggetty Gully, which will need to be managed further downstream at Victoria Street and Cushing Avenue. This option is not optimal with flooding occurring through the school from overtopping of Raglan St.

The lowered road level reduces the flood level at 5 and 7 Hyde Park Road. This does increase the flood hazard associated with the roadway by increasing the depth of flood water over the road. Increasing the capacity of culverts under the road is an option to offset the increase in flood hazard.

Minimal flow was conveyed along the additional outlet drain into Calembeen Park due to the control level at which water could escape the channel. Currently, the flow along Nuggetty Gully downstream of Victoria Street towards Calembeen Park in a 10% AEP event is around 2.5 m³/s and around 3.5 m³/s in a 1% AEP event. It is unlikely that piping the flow from Nuggetty Gully to the Lake would be cost effective. A broader open drain solution option from the drain to the lake may provide further scope for investigation and is discussed later in the report (Section 9.4 below).



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Figure 8-12 Mitigation Option 3 Features

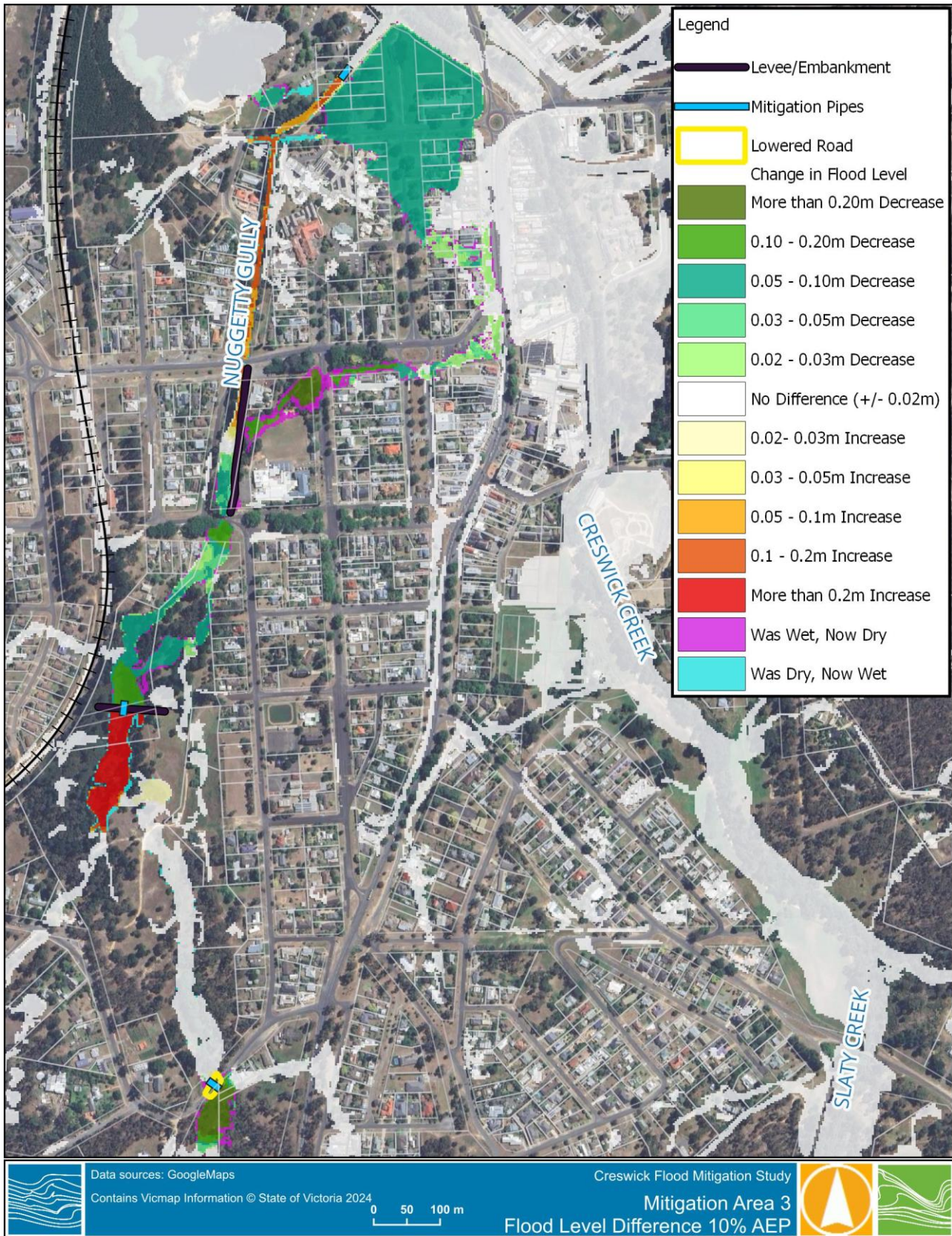
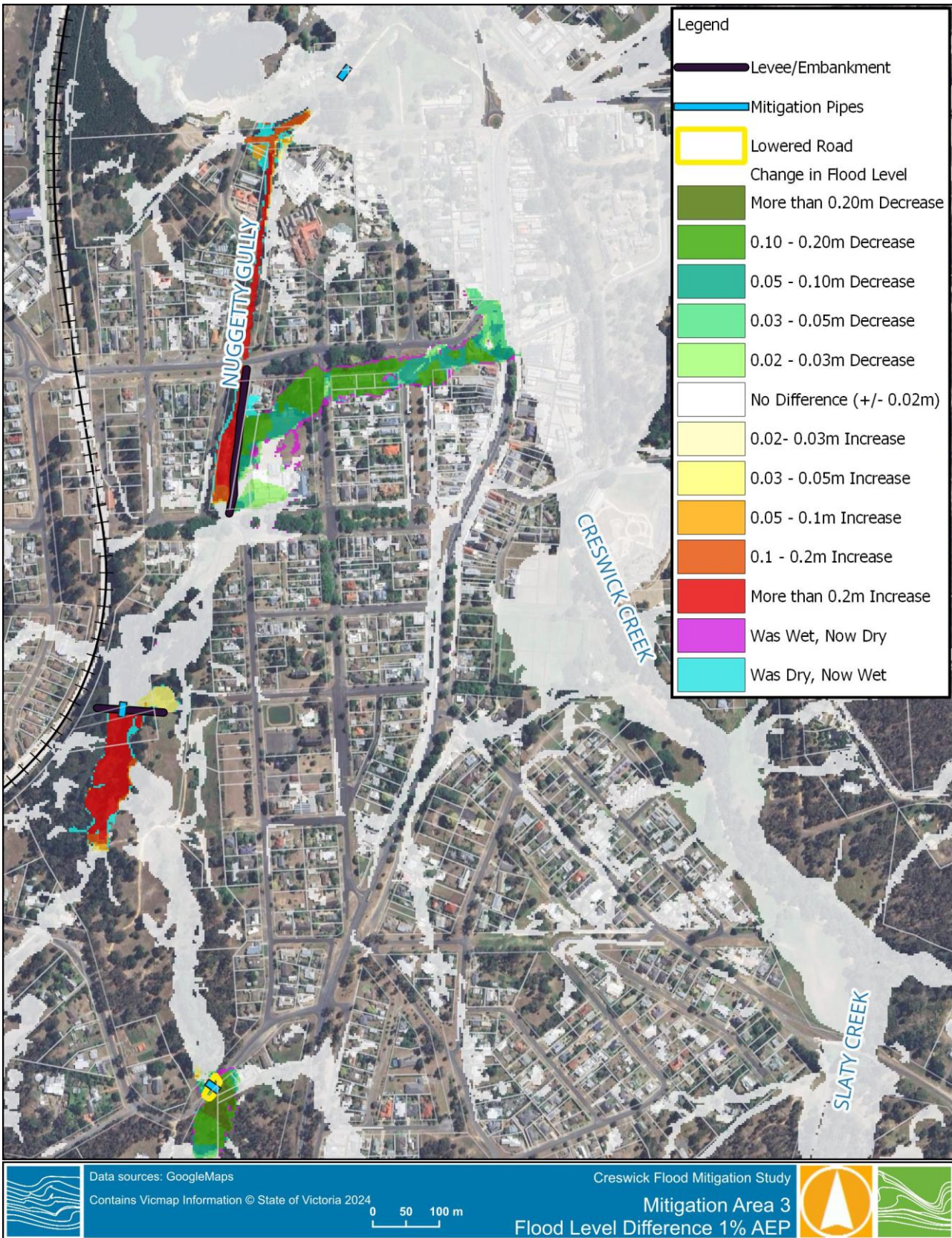


Figure 8-13 Mitigation 3 – 10% AEP Flood Level Difference Plot



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Figure 8-14 Mitigation 3 – 1% AEP Flood Level Difference Plot



Additional Assessment of Location 3

Following the completion of the hydraulic modelling, discussions around further improving the flood risk through this location were discussed with Council. The mitigation modelling indicates that the Raglan Street culvert capacity is exceeded prior to the 1% AEP event. With the modelled retarding basin and flood wall upgrade along the Bluestone wall, the Creswick Primary School and a number of residential properties along Victoria Street are still within the flood extent.

It is recommended that further investigation into removing the breakout flow completely be undertaken. This would likely involve limiting the 1% AEP flow rate along Nuggetty Gully to less than the capacity of the Raglan Street Culvert through additional detention upstream of the proposed retarding basin (in the order of 25 ML of storage).

8.1.5 Location 4: Bald Hills Road

This location was separated into two separate areas. Cassels Lane and Elizabeth Road. The Elizabeth Road works were assessed in the pre-feasibility mitigation works and included an additional culvert to convey flows south of Bald Hills Road to the drainage line which flows under Elizabeth Street. It has minimal impact in the 10% AEP event. This section of the works was not modelled in the final mitigation assessment.

Cassels Lane

This option aims to reduce the depth of flooding through the backyard of three properties along Cassels Lane. This involved an embankment upstream of the road to detain flows and an increase in the pipe size running north from Bald Hills Road to the open drain at the end of Cassels Lane. Works include:

- Installation of a twin 900x600 mm diameter box culvert (currently a 525 mm diameter culvert).
- An embankment to act as a retarding basin.

The embankment placed upstream of Bald Hills Road detains flows from the south eastern flow path. Flood level difference plots for the 10% AEP and 1% AEP show significant reductions in flood levels downstream of the works, however most of the reduction is located along the waterway/drainage corridor and not reducing flooding on houses aside from the three immediately downstream of Bald Hills Road and the proposed works.

Given these properties are not currently inundated above floor in a 1% AEP event, the cost to upgrade the pipe and install the retarding basin are not likely to provide a significant economic benefit when considering only flood damages. The opportunity to address drainage for these properties may be better suited to a co-contribution drainage project.

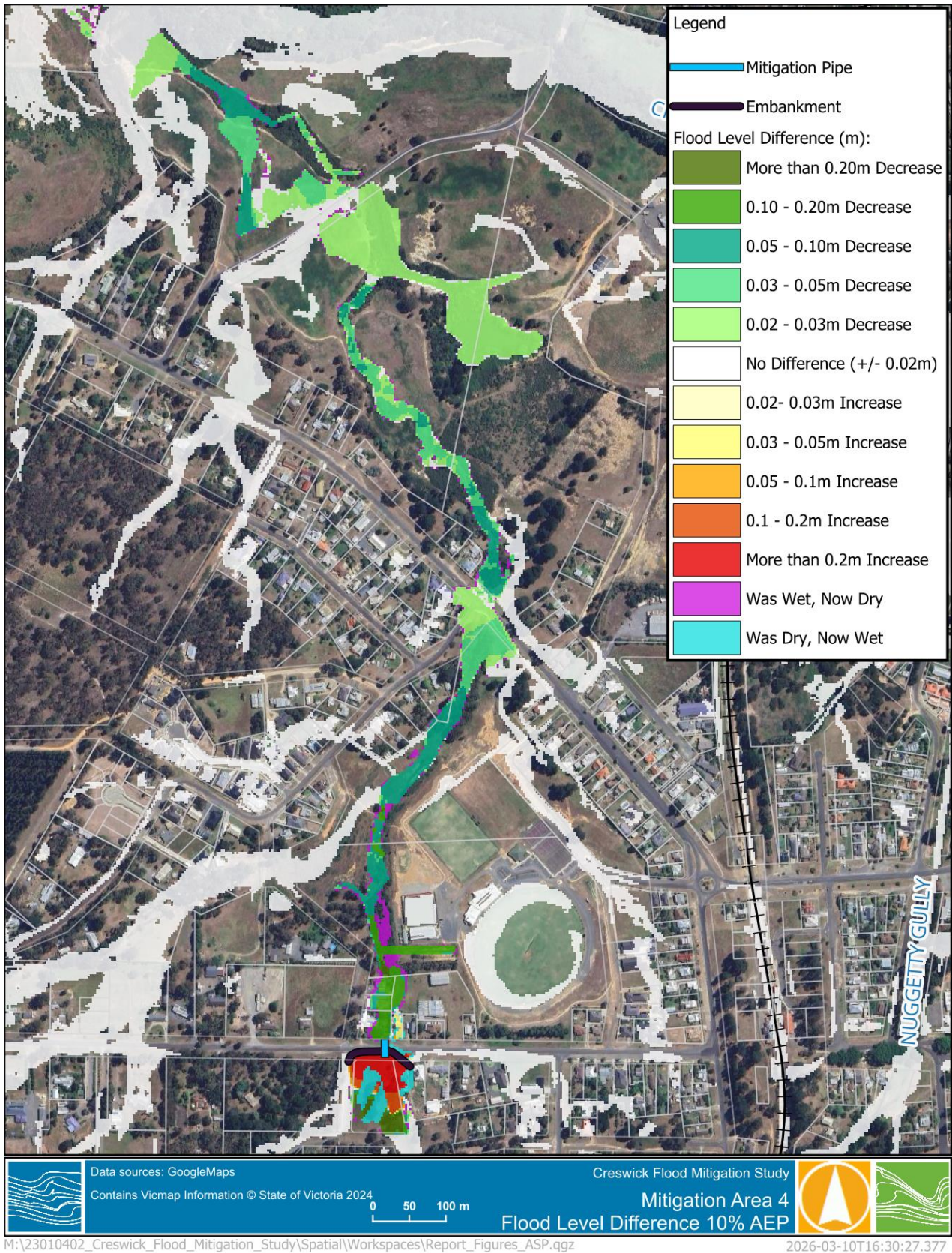


Figure 8-15 10% AEP Flood Level Difference Plot

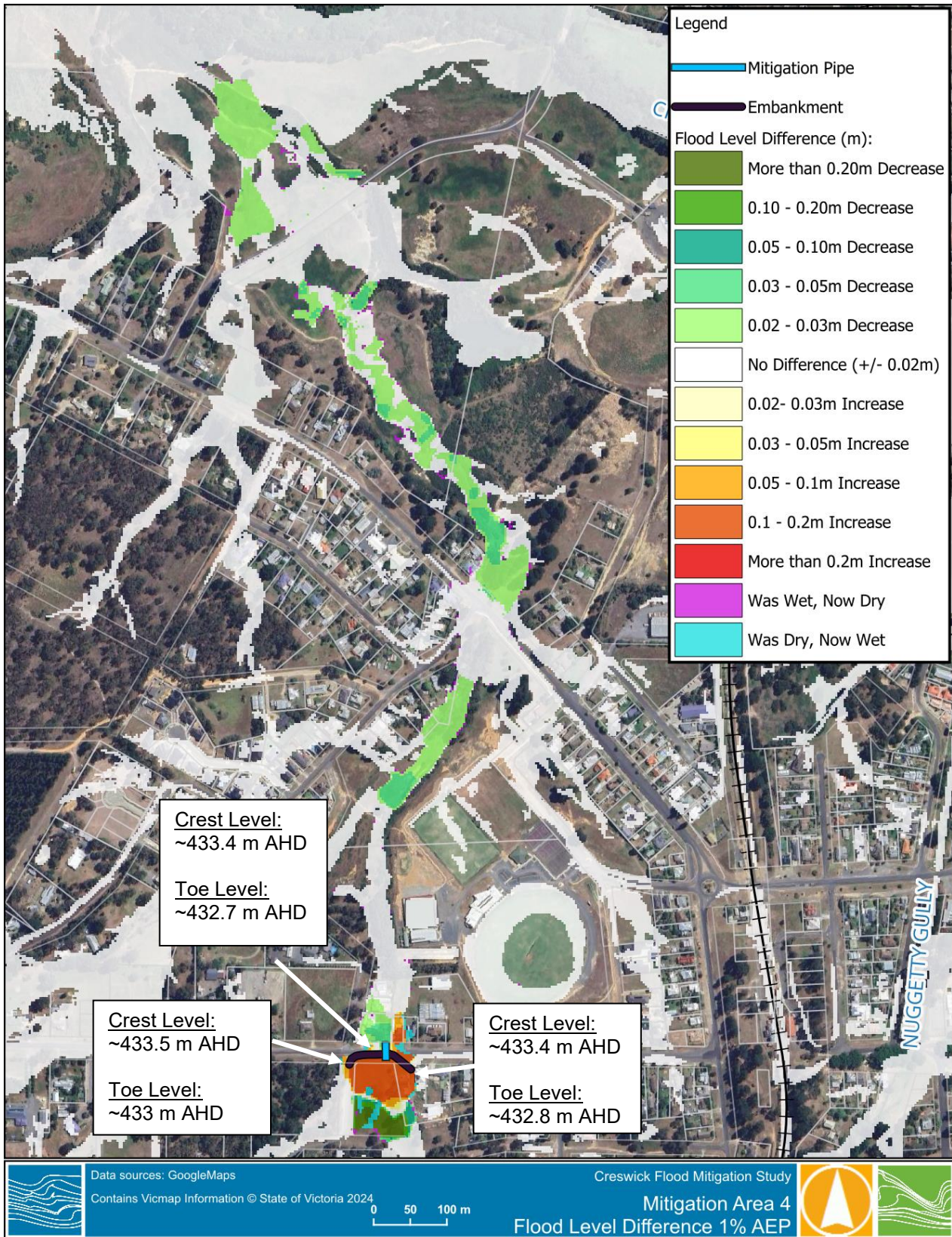


Figure 8-16 1% AEP Flood Level Difference Plot



8.1.6 Location 5: North Parade

North Parade sits adjacent to Creswick Creek immediately downstream of the Midland Highway on the fringe of the floodplain. The construction of the levee provides riverine flood protection up to a 5% AEP flood event, however limits the ability for stormwater from the local catchment to drain to Creswick Creek. The upstream catchment ~34 ha, drains west towards Creswick Creek and into the creek via a 900 mm diameter culvert adjacent to the Midland Highway, as shown in Figure 8-17.

Council have recently installed a hard stand area for a pumping station during storm events. The pump station is connected to a secondary one-way pipe valve which outfalls to Creswick Creek. Council pumping rates are understood to be in the order of 50-100 L/s driven by a tractor PTO.

The construction of the pump stand and associated pipe and pit connection allows for water trapped in the low lying area behind the levee along North Parade to be pumped into Creswick Creek. The ability to reduce the flooding below floor level in the 1% AEP event does not appear practical when investigating pumps in isolation. As a result, Council now seek to ensure that at minimum there is no above floor flooding in a 10% AEP event. There are two properties flooded above floor in the 10% AEP event.

Initial testing showed that a pump with at least a 300L/s capacity is able to reduce flood depths in North Parade by 50 mm in the 10% AEP event. Increasing the pump capacity to 600 L/s only slightly reduces the flood level by several centimetres.

This size pump does not result in a decrease in the 1% AEP flood event when looking at all durations due to the levee being overtopped in this event. Decreases for shorter duration events where the levee isn't overtopped by Creswick Creek show decreases of around 20 mm (Figure 8-19). Similar to the Location 2 mitigation strategy, the opportunity to implement a pump-based strategy is reliant upon:

- The timing of the pump being mobilised and in place prior to inundation beginning.
- The volume of water the pump can move, noting that it is relatively low in comparison to the overall volume detained behind the levee.

The success of the proposed option is reliant on the size of the pump available and the installation of the pump during the flood event. Overall, the 300 L/s pump incorporated into the system provides benefit to the above floor flooding depths at the 3 properties along North Parade as shown in Figure 8-18.

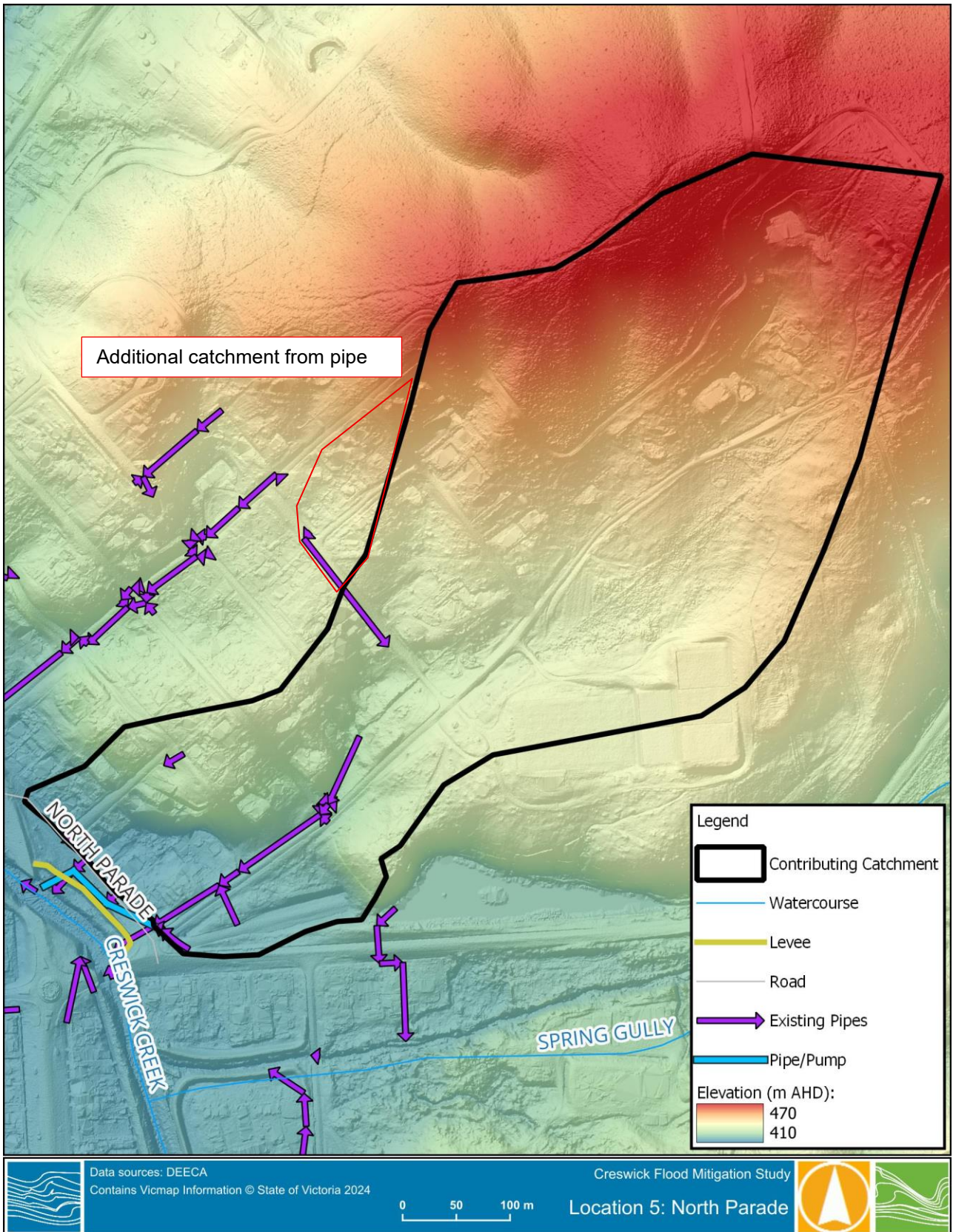


Figure 8-17 Location 5: North Parade

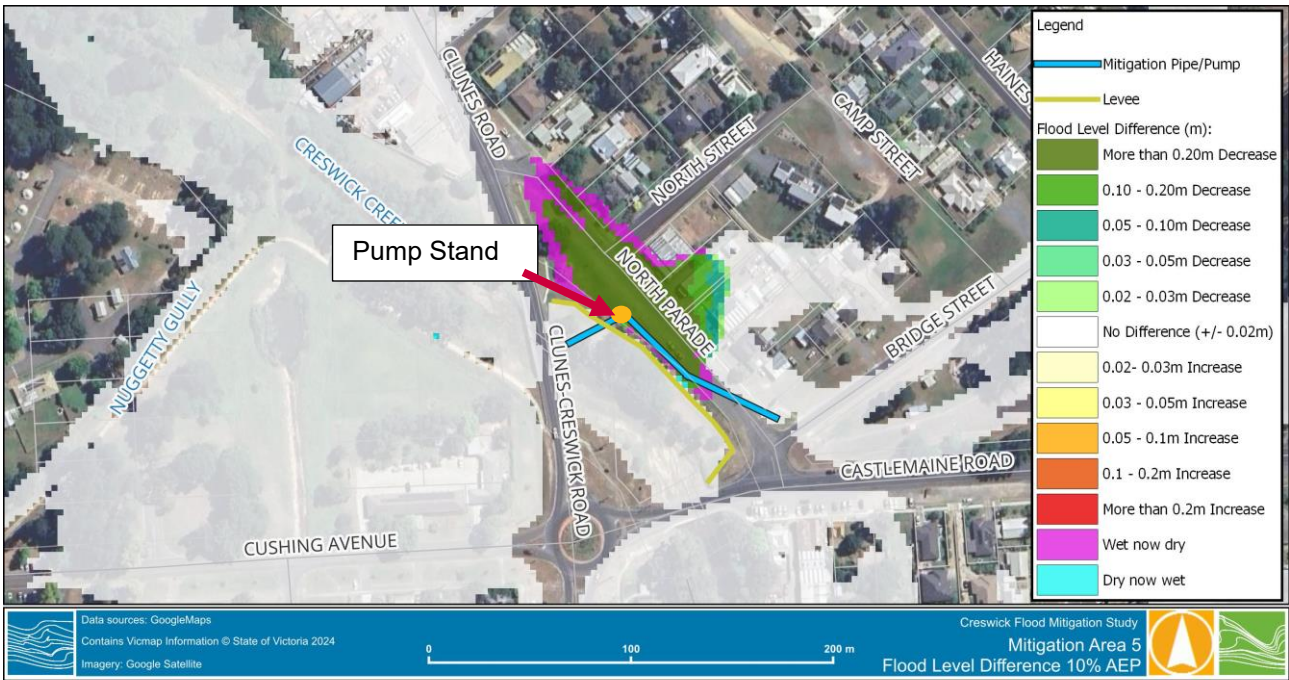


Figure 8-18 Mitigation 5: 10% AEP Flood Difference Plot



Figure 8-19 Mitigation 5: 1% AEP Flood Difference Plot (60 min duration when Creek not overtopped)



8.1.7 Location 6: Creswick South

The Location 6 mitigation area is located south of the Creswick township. The area around Wright Court, Tait Drive and Caddy Drive receives significant flows from the catchment south of White Hills Road (~18ha). This area was significantly impacted in the January 2022 storm event. The proposed mitigation incorporates four key components consisting of the following:

- A 375 mm diameter pipe, 135 m in length along White Hills Road, an additional pit and a 375 mm pipe under Albert St flowing to a 600 mm diameter pipe under Midland Highway to Nuggety Gully.
- An additional capture pit located at the end of Caddy Drive connected to a 300 mm diameter pipe and a 600 mm diameter outfall under Albert Street and the Midland Highway.
- A 600 mm diameter pipe from within Wright Court out falling to Nuggety Gully
- A cutoff drain and embankment at the rear of 31 Gardiner Street to capture and convey runoff towards Tait Drive with a 300 mm diameter pipe conveying flow into the drainage network.

A new pipe to convey flows from White Hills Road west towards the Midland Highway intercepts flow and reduces the volume of water getting to Caddy Drive and eventually Wright Court. This results in a decrease in flood level in the 10% and 1% AEP events up to 100 mm as a result of these proposed works. Within Wright Court the model shows decreases in flood level of around 400 mm along the overland flow path with 150-200 mm through several properties between Wright Court and Tait Drive. Blocking the overland flow path from Gardiner Street reduces flood levels by up to 100mm across three properties at the eastern end of Wright Court.

Increases in flood levels are found in Nuggety Gully (Council land) as well as in private property in Gardiner Street upstream of the embankment/cut off drain which is located on private property.

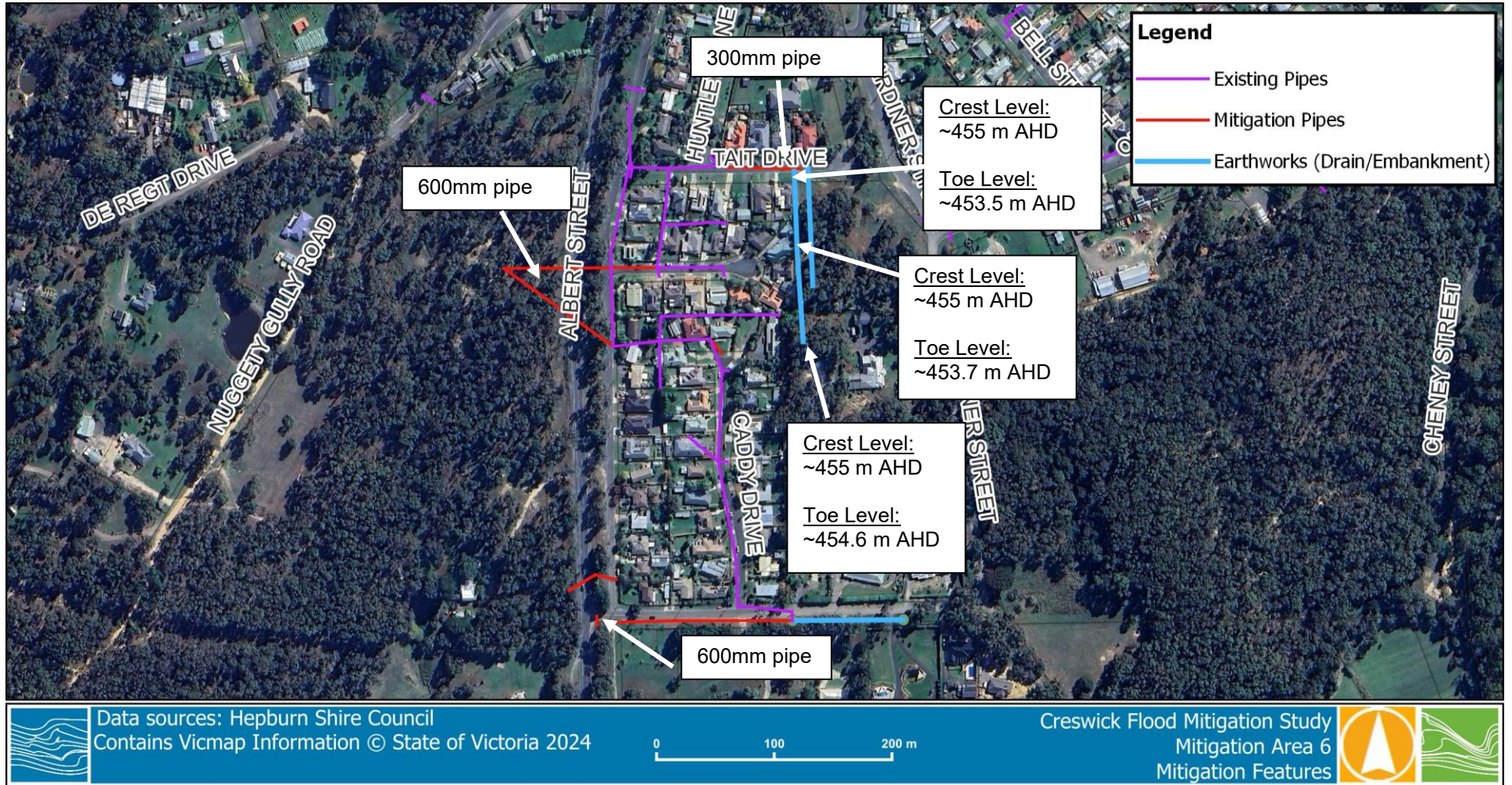


Figure 8-20 Mitigation 6 Layout

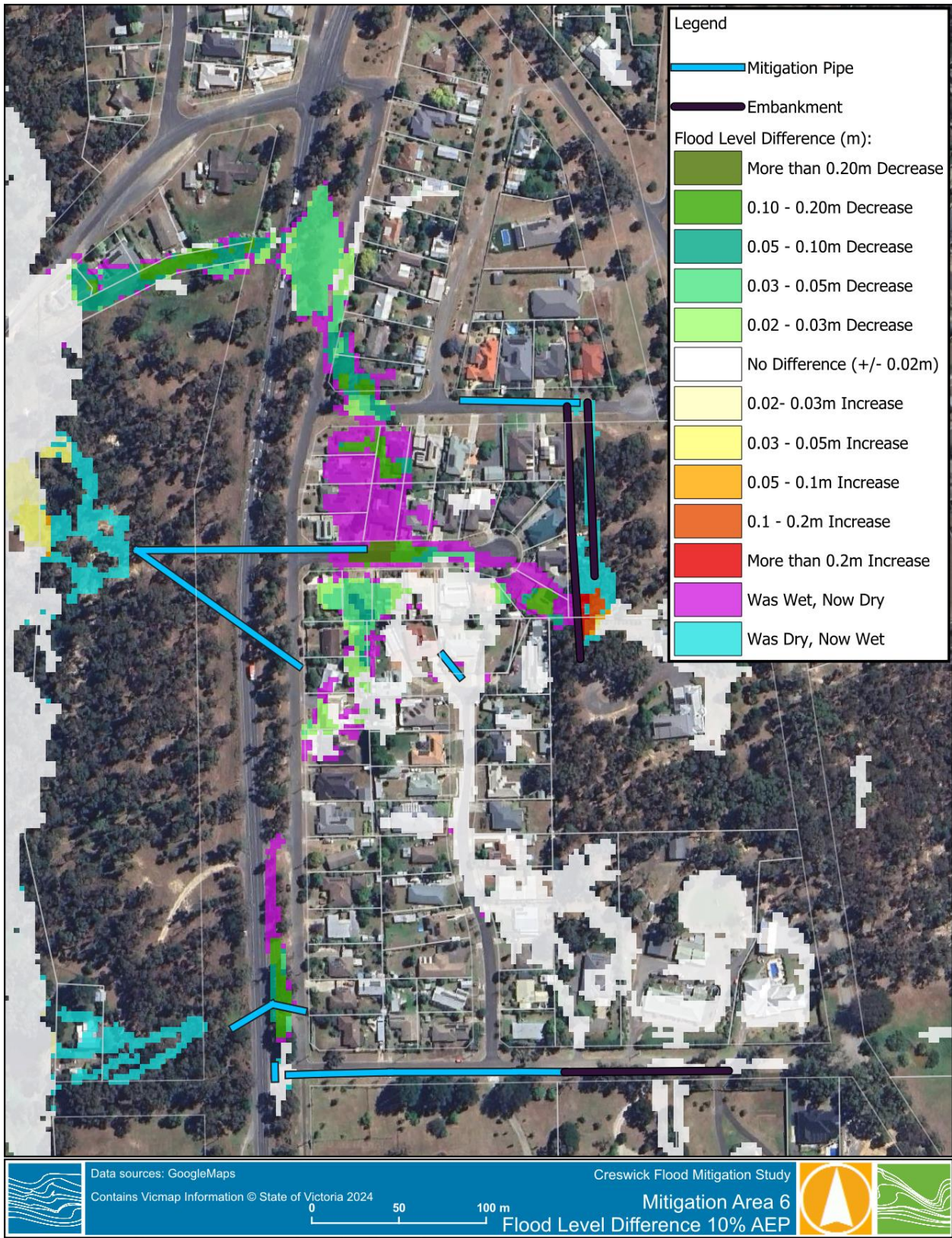


Figure 8-21 Mitigation 6 – 10% AEP Flood Level Difference Plot

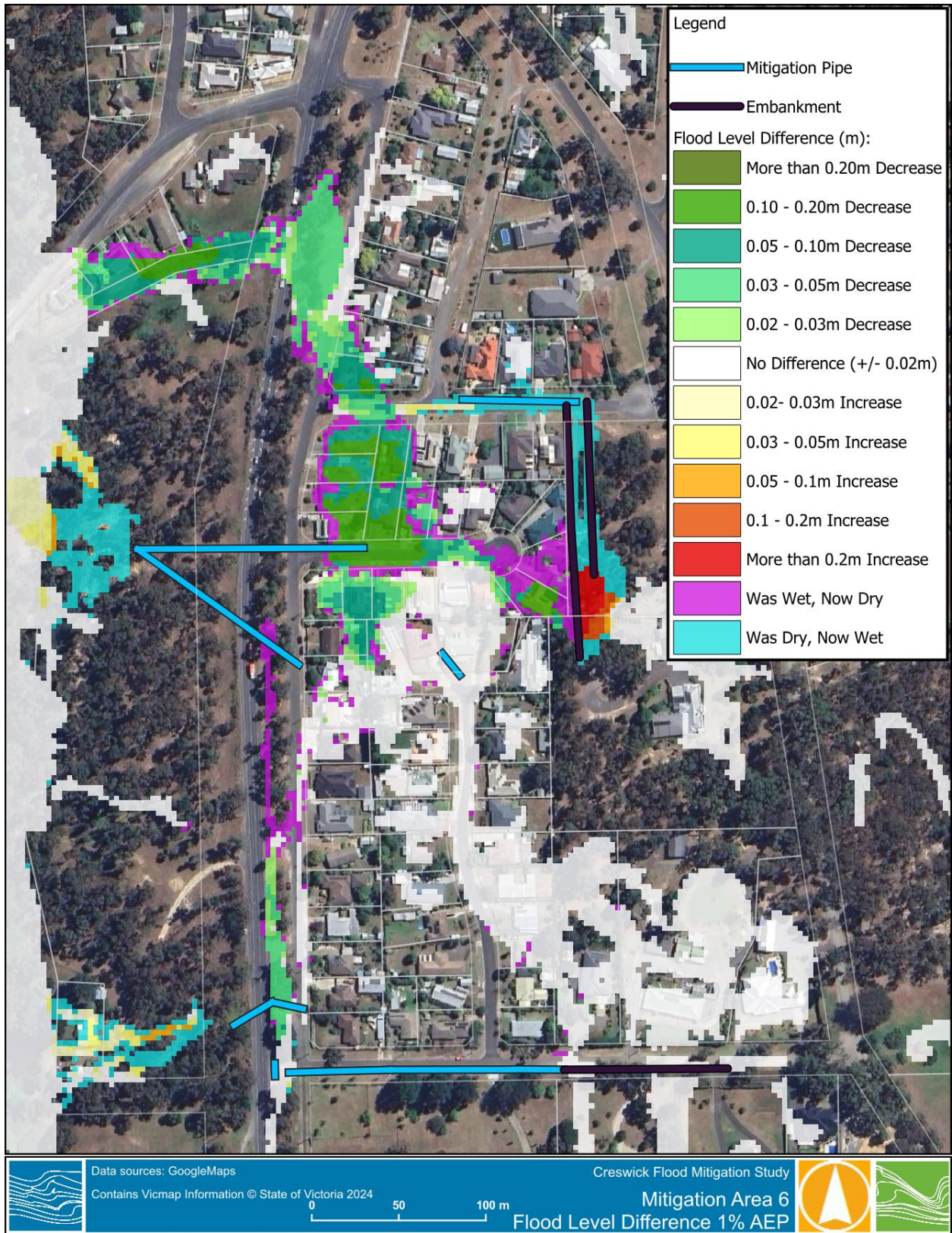


Figure 8-22 Mitigation 6 – 1% AEP Flood Level Difference Plot



8.1.8 Pipe & Bridge Blockage Sensitivity

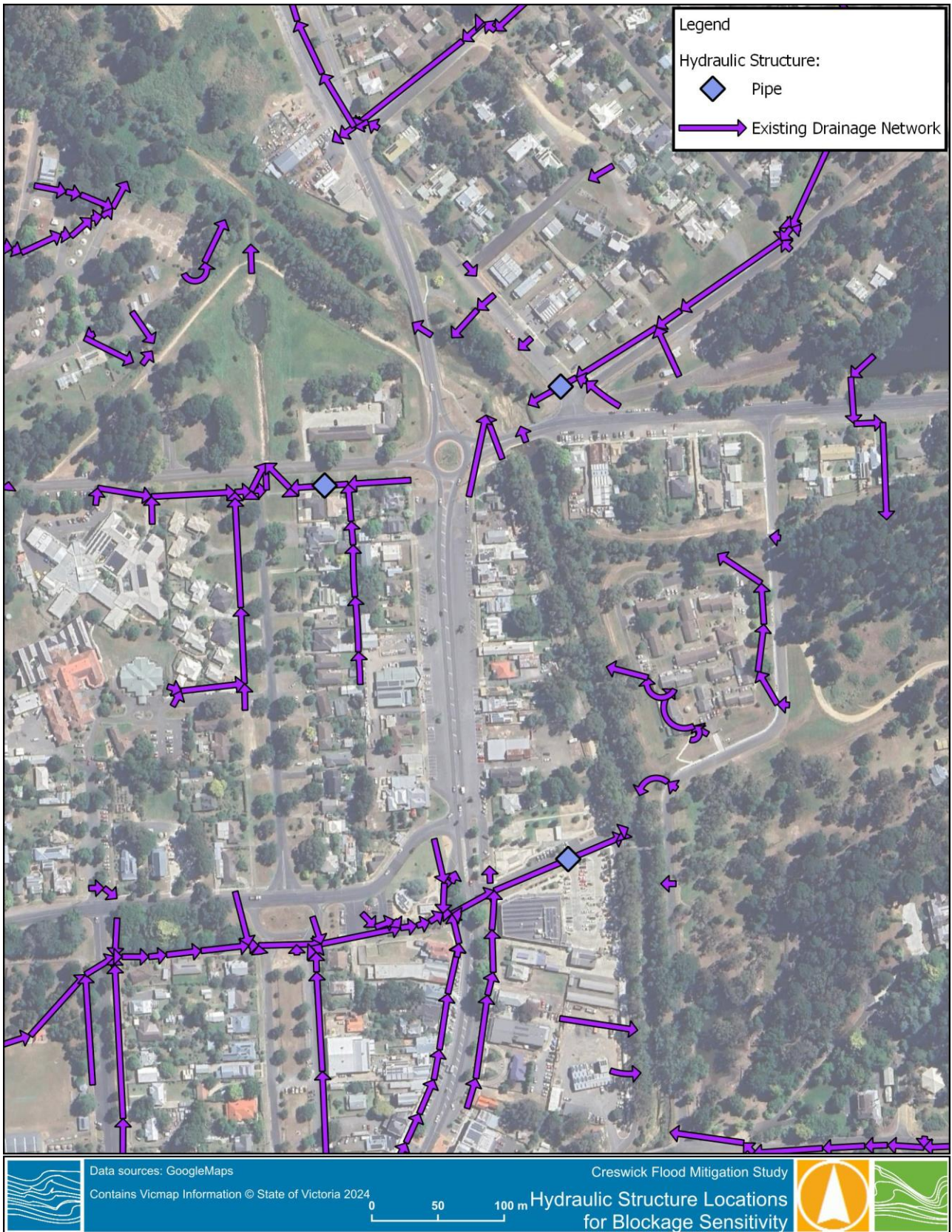
A sensitivity test was conducted to determine the debris blockage impact on the flood extents and levels. This was done by applying a 100% blockage factor on three hydraulic pipes (see Figure 8-23). These modifications were applied simultaneously under the 10% and 2% AEP critical duration event along Creswick Creek.

Figure 8-24 shows the flood level difference (compared against a no blockage scenario) for the 10% AEP event, respectively. In two of the three areas where the blockage was applied, no significant flood level difference is observed (except for one location during the 10% AEP event), as these areas are primarily influenced by floodwaters that overtopped the banks of Creswick Creek in the modelling.

Along North Parade, flood level increases of up to 0.24 m are observed. This is due to water discharging from the pit upstream of the blocked pipe, rather than flowing directly to Creswick Creek.

No change is observed in the maximum flood level for the 2% AEP event as the main waterway structures are overtopped.

These blockage sensitivity results highlight the importance of regular maintenance and debris management for pipe structures, particularly during localised stormwater flooding associated with frequent AEP events.



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Figure 8-23 Hydraulic Structure Locations for Blockage Sensitivity

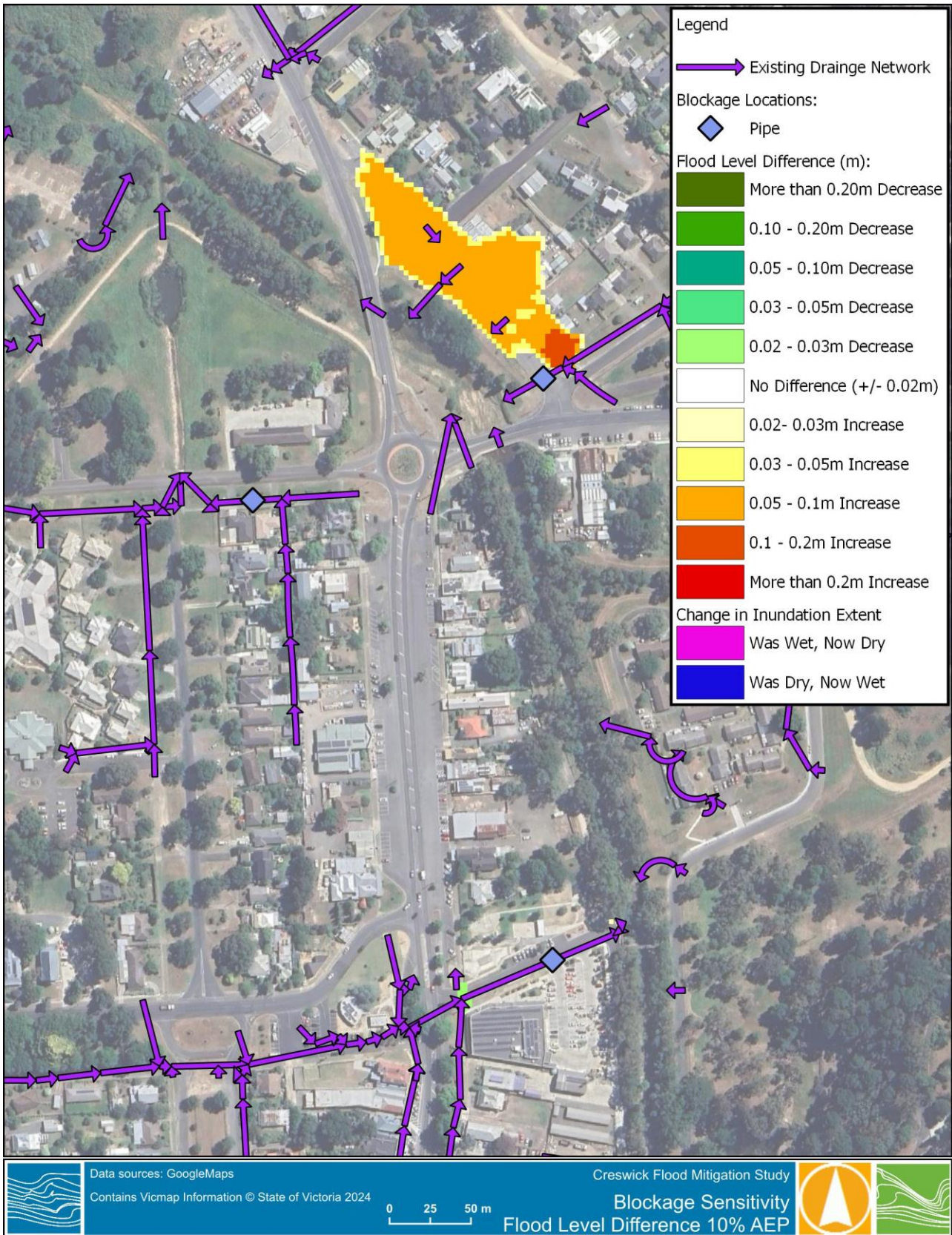


Figure 8-24 Blockage Sensitivity Scenario – Flood Level Difference 10% AEP



9 FEASIBILITY ASSESSMENT

The weighted pre-feasibility assessment is an approach developed by Water Technology and has been used across numerous flood studies to compare mitigation options prior to detailed modelling to determine which options to recommend for conceptual modelling and investigation. The score for each criterion is based on a ranking system of 1 to 5, with 1 being the worst score and 5 the best. Each criteria score is weighted according to the weighting shown in Table 9-1. Note that the impact to the environment is subjective and can involve impacts such as but not limited to vegetation loss, erosion risk, contamination and carbon footprint. These can, for example, range from minimal earthworks and minor native vegetation loss to significant earthworks, native vegetation removal and potential triggers of the Flora Fauna Guarantee and EPBC Act. The reduction in flood damage is the most heavily weighted criteria as this is the main objective for all flood mitigation.

A detailed flood damage assessment was not undertaken, however a simplified assessment based on the flood level difference grids, surveyed floor levels and building footprint was used to identify any likely changes to above and below floor flooding. It was noted that the stormwater mitigation options aim to reduce the frequency and damage of below floor level which is a major cost the community in both storm and riverine flood events.

Table 9-2 reviews and scores for each mitigation option against the four criteria and calculates a total score for each option by totalling each weighted criteria score. The options with the higher scores indicate the mitigation options for Creswick that should be pursued in more detail.



Table 9-1 Ranking score for mitigation criteria

Score	Reduction in Flood Damages	Cost (\$)	Technical Difficulty and Deliverability	Environmental Impact
	Weighting			
	2	1	0.5	0.5
5	Major reduction in flood damage (>20 houses above floor flooding)	Less than \$100,000	Excellent (Easy to construct)	None (No earthworks)
4	Moderate reduction in flood damage (10-20 houses above floor flooding)	\$100,000 - \$250,000	Good	Low (Minimal Earth works and no removal of native vegetation)
3	Minor reduction in flood damage (1-10 houses above floor flooding)	\$250,000- \$500,000	Average	Medium (Significant Earth works and minor removal of native vegetation)
2	(Reduction in external property damage)	\$500,000 - \$1,000,000	Below Average	High (Major earth works or significant removal of native vegetation)
1	No reduction in flood damage	Greater than \$1,000,000	Poor (No access to site and/or highly unfeasible)	Extreme (Trigger for Flora and Fauna Guarantee (FFG) or Environment Protection and Biodiversity Conservation (EPBC) Act)

9.1 Costing

Costing of the mitigation options was undertaken by Hepburn Shire Council, with some additional costing of minor projects undertaken by Water Technology. The costing and weighted ranking of each combined option for the mitigation areas is shown in Table 9-2, while the breakdown of individual components within option is shown in Table 9-3. Table 9-3 also highlights (with an asterisk) which options were combined for the modelling and full evaluation in Table 9-2.



Table 9-2 Combined Mitigation options prefeasibility result

Location	Mitigation Option	Properties with Reduced Risk (Raw Score)	Cost (Raw Score)	Technical Difficulty (Raw Score)	Environmental Impact (Raw Score)	Total Weighted Score (Raw x Weighted)	Rank
1	Pasco St RB + Overland Flow Path Upgrade	15 (4)	\$1.5M (1)	Poor (1)	High (2)	10.5	4
2	Cambridge St RB & Pearman St Outfall	5 (3)	\$1.7M (1)	Average (3)	High (2)	9.5	5
3	School Levee, Nuggetty Gully RB & Hyde Park Rd Lowering	40 (5)	\$1.3M (1)	Below Average (2)	Extreme (1)	12.5	1
4	Townsend Rd RB, Cassels Ln upgrade & Bald Hills Rd / Elizabeth St Culvert	3 (1)	\$0.5M (3)	Good (4)	Low (if no excavation) (4)	9	6
					Medium (with excavation) (3)	8.5	7
5	Pump Capacity 600L/s	5 (3)	\$0.6M (2)	Poor (1)	None (5)	11	3
6	White Hills Rd, Caddy Drive, Wright Ct Upgrades	15 (4)	\$0.9M (2)	Average (3)	High (2)	12.5	1



Table 9-3 Mitigation option prefeasibility results

No.	Mitigation Option	Damage Reduction	Cost	Technical and Deliverability	Environment Impact	Ranking (within each Location)
1A	Pasco St Detention Basin	18	\$630,000	4	High (2)	2
1B*	Upgrade existing flow paths	6	\$620,000	1	Medium (3)	3
1C*	Pasco St Detention Basin (northern outfall)	22	\$910,000	2	High (2)	1
1D	New pipe DS Railway	4	\$590,000	5	Medium (3)	4
2A*	Detention Basin ~3.8ML	6	\$260,000	5	High (2)	2
2B*	Detention Basin ~6ML	8	\$1,060,000	4	High (2)	1
2C	Pump Capacity 300L/s	4	\$300,000	1	None (5)	4
2D	New Outfall	6	\$60,000	4	Low (4)	3
2E*	Pearman St Connection	3	\$360,000	2	Medium (3)	5
3A*	Lower Hyde Park Road	4	\$580,000	3	Medium (3)	3
3B*	Nuggetty Gully Basin	4	\$600,000	2	Extreme (1)	4
3C*	School Levee	78	\$160,000	5	Low (4)	1
3D	Overflow to Calemben Park	6	\$480,000	4	Low (4)	2
4A*	Townsend Rd Detention Basin	3	\$160,000	5	Medium (3)	2
4B	Cassels Lane Pipe Upgrade	3	\$260,000	4	Low (4)	2
4C*	Culvert at Elizabeth St/Bald Hills Rd	5	\$70,000	5	Medium (3)	1
5A	Pump Capacity 300L/s	4	\$300,000	1	None (5)	2
5B*	Pump Capacity 600L/s	4	\$600,000	1	None (5)	1
6A*	Caddy Drive + outlet Pipe	10	\$450,000	3	Medium (3)	3



No.	Mitigation Option	Damage Reduction	Cost	Technical and Deliverability	Environment Impact	Ranking (within each Location)
6B*	Gardiner St - Tait Dr Cutoff Drain	8	\$290,000	4	Medium (3)	4
6C*	White Hills Rd Pipe	10	\$110,000	5	Medium (3)	2
6D*	Wright Ct Drive + outlet Pipe	12	\$520,000	3	Medium (3)	1

9.2 Benefits

The mitigation options assessed are shown to not significantly reduce the number of properties with above floor flooding. This reduces the effectiveness of assessing only flood level reductions in significant flood events as there may be viable mitigation options that address nuisance flooding and improves protection during more frequent storm events, including improvements to the local drainage network.

Because the proposed mitigation options are likely to achieve relatively small measurable reductions in damages, the CBA does not return a value greater than one, as would normally be expected for traditional flood mitigation projects. This is primarily because the benefits of these options relate to reducing risk from low-frequency, high-consequence flood events, whereas the CBA method focuses on more frequent events where the tangible, quantifiable benefits are limited.

The benefits being assumed as part of this assessment reflect direct costs related to reduction in flood damages which accounts for damage to private property and public road infrastructure. Additional intangible costs that are not currently accounted for, but which should be considered include:

- Temporary Accommodation
- Relocation
- Disruption to local services or good supply
- Lost income
- Mental health / Trauma
- Vulnerability (including school children)
- Death or Injury
- Clean Up



9.3 Mitigation Summary and Next Steps

The results of the prefeasibility modelling have identified that four of the six flooding hotspots have mitigation options that have the potential to have a significant reduction in flood risk through reduced frequency of flooding and damage. The options assessed were ranked in the following order:

- 1. Location 3 – Nuggety Gully (Raglan/Victoria St) & Location 6 – Creswick South (Wright Ct/Caddy Dr)
- 3. Location 1 – Creswick North (Pasco St/Davies St)
- 4. Location 5 – North Parade Pump Station
- 5. Location 4 – Townsend Rd, Bald Hills Rd
- 6. Location 2 – Cambridge St Retarding Basin (deepening, one-way outlet and crest configuration)

Despite ranking lowest, location 2 is recommended for further investigation in conjunction with location 3 to achieve combined beneficial outcomes as detailed in Section 9.4.

Each of the projects appear to warrant further investigation to refine and apply detailed design consideration. It is noted that the options assessed may also provide an integrated water management benefits including improved water quality and amenity/liveability which was not considered as part of this assessment.

9.4 Future Mitigation Options

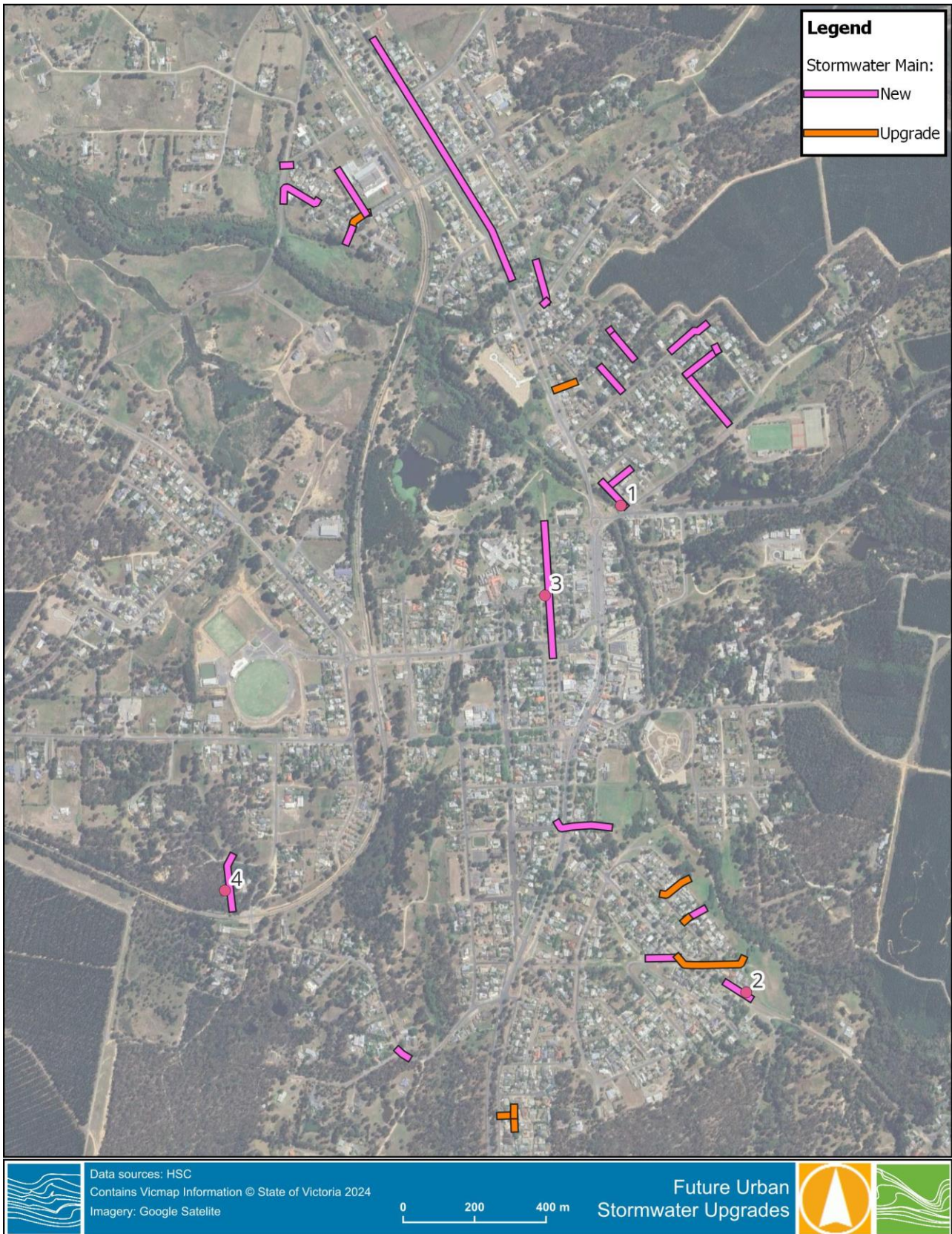
A broader combined option which incorporates components of Location 2 and 3 in conjunction may offer additional benefits to those discussed above. The creation of an open drain solution option from the drain to the lake may provide a further scope for investigation that would include an open drainage outlet from the Cambridge Street basin that acts as a spillway out towards Calembeen Park in events larger than a 20% AEP flood event. Further testing following the complete mitigation package found that the inclusion of an outlet from Nuggety Gully through to Calembeen Park by widening and deepening what had been modelled could convey the Nuggety Gully flow as well as lower levels within the basin by up to 50cm in a 10% AEP event and around 15 cm in a 1% AEP. It is expected that this along with the construction of the levee at the school would provide further reductions in flood levels.

9.4.1 Urban Stormwater Upgrades

Other stormwater upgrades that Council have identified that may improve capacity and mitigate flooding (see Figure 9-1 and Figure 9-2) have been noted below. They aim to help existing residential areas adapt to the impacts of climate change and should be evaluated in a future study.

The proposed upgrades include:

1. Pipe at North Parade so that overflow travels to the lowest point, (pump stand) rather than overflowing from the pit opposite. This occurs when one-way valves to creek are closed.
2. New kerb and reconstruct swale along Melbourne Road.
3. A new stormwater main along Cambridge Street bypassing the township and older sections of pipe along Victoria Street.
4. New stormwater main to take flow from under railway line around private property (32 Armstrong Street). Further work to identify the alignment and orientation will need to take into account access and existing dam.



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Figure 9-1 Future Urban Stormwater Upgrades



Data sources: HSC
Contains Vicmap Information © State of Victoria 2024
Imagery: Google Satellite

Future Urban Stormwater Upgrades

Figure 9-2 Future Urban Stormwater Upgrades (Zoomed In)



9.4.2 Railway embankment cutback

An option investigated as a sensitivity check, as part of this study involved partial removal of the railway embankment on the southern side of Creswick Creek to improve flood conveyance. The embankment, originally constructed in the 19th century across the natural floodplain, is known to impede overbank flows (Figure 9-4) and has long been a source of anecdotal frustration and community attribution of flooding impacts in Creswick. Despite this perception, the full removal of the structure is likely to be constrained by significant engineering, operational, and cost considerations. The asset, which is managed by VicTrack to require complete replacement with a bridge structure is considered unfeasible in practice.

To assess the potential hydraulic benefits of a more limited intervention, modelling was undertaken for the 1% AEP critical duration event, with the surface level locally reduced to approximate pre-development ground conditions across the southern floodplain. Existing topography indicates minimal functional floodplain on the northern side of the channel.

The comparison between baseline conditions and the partial-removal scenario indicates that the embankment does influence upstream flood behaviour, extending towards the embankment of the basin north of Cushing Avenue (Figure 9-5). Reductions in flood levels were mainly observed within the Creswick Creek Channel and Lake Calembreen of up to 0.40 m, with up to 0.20 m reduction at a portion of the Creswick Holiday Park. Some increases in flood levels occur downstream as a consequence of more efficient upstream conveyance; however, these are predominantly confined within the Creswick Creek channel.

Modelling suggests that to achieve measurable benefit in events up to the 1% AEP magnitude, more than 50 m of the embankment (chainage ~130–180 m) would require removal. Given the impracticality and cost of replacing this section of railway with a new bridge, full or substantial removal is not recommended. However, a modified option involving the installation of additional culverts through this section of the embankment and reshaping of the floodplain upstream of the railway may warrant further investigation in future studies. While such an approach would provide less benefit than the simulated pre-development scenario, it may assist in offsetting increased flows and water levels at the existing railway bridge associated with other mitigation measures designed to improve conveyance through the township.

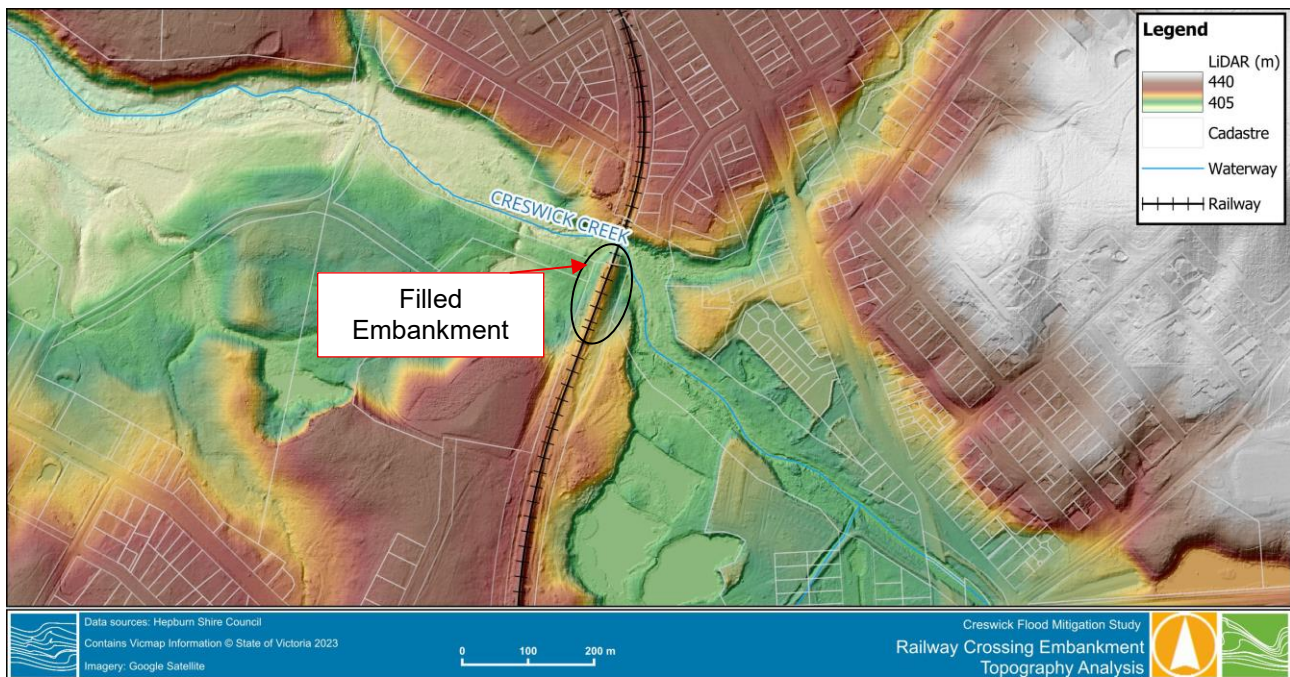


Figure 9-3 Railway Embankment Topography

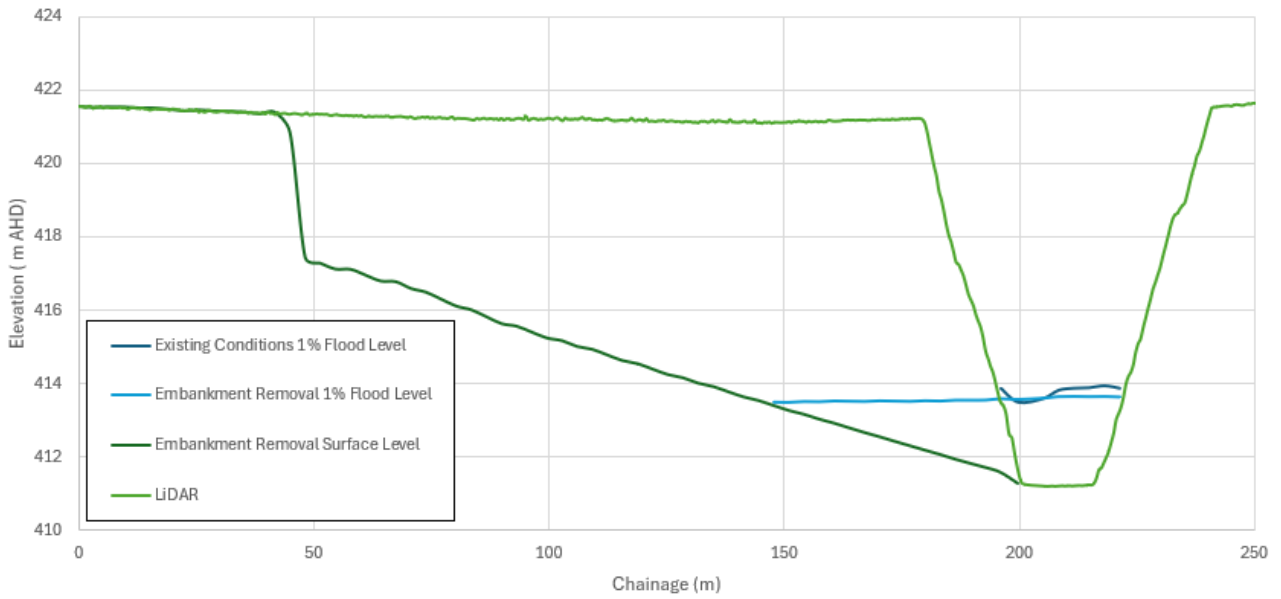


Figure 9-4 Terrain profile of the modelled railway embankment and existing conditions level and flood levels

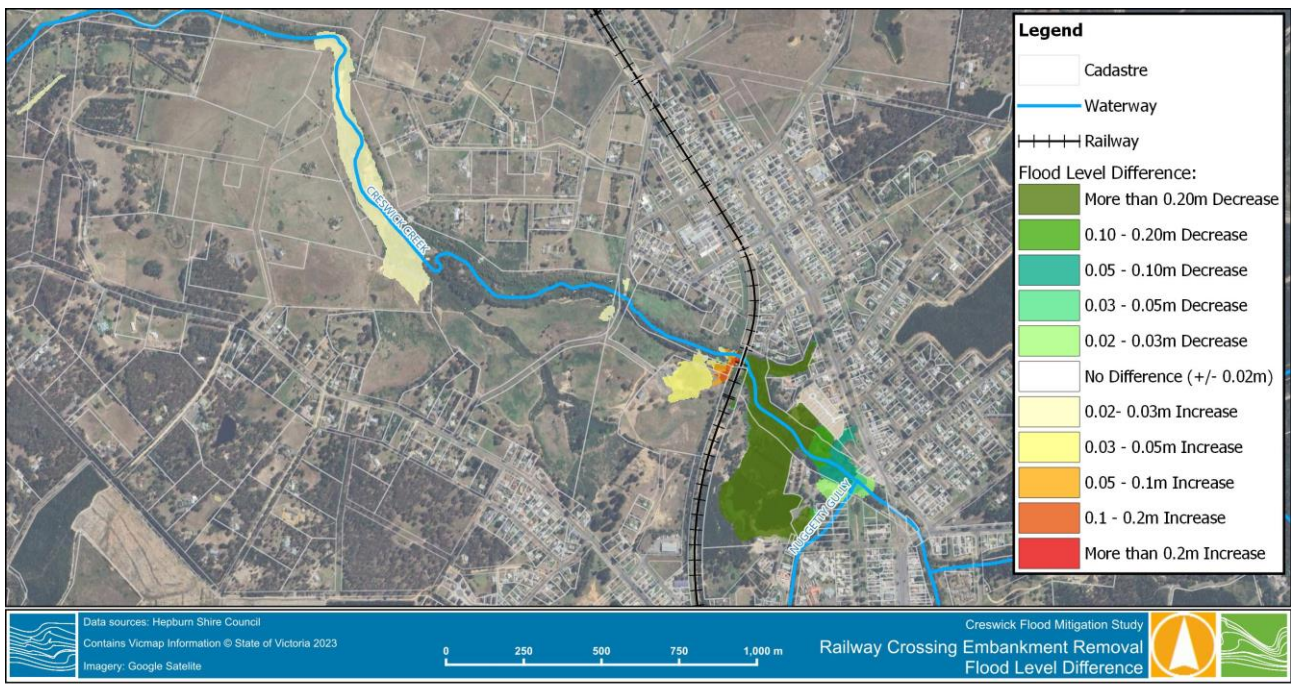


Figure 9-5 Preliminary flood level difference (cutback minus existing scenario)



9.5 Creswick Creek Vegetation Management

9.5.1 Background

Similar to the railway embankment described above, riparian vegetation within Creswick Creek through the township is often cited by the community as a major cause of flooding. Requests to “clear out the creek” from the community frequently arise following high-flow events, reflecting a long-standing perception that vegetation significantly restricts flow and increases flood levels. While these concerns are understandable, technical assessments and Victorian waterway management guidance indicate that vegetation is rarely the dominant factor influencing flooding during large events.

It is noted that after the January 2011 flood event significant works were undertaken to remove exotic species from the creek between Water Street and downstream of the Midland Highway. The creek was incredibly choked by exotic species which had also resulted in significant sediment build up. Today’s creek profile downstream of Water Street represents a significant improvement on the past, and it remains quite open with good conveyance. Exotic species will continue to regrow and will require ongoing maintenance.

Again in 2024 following the 2022 floods, further vegetation removal was undertaken by Council and DEECA. The vegetation management works resulted in a very large tonnage of wood removed along Nugetty Gully and Creswick Creek. This included delivering six truckloads of reusable wood to the Djaara Sawmill in Sailors Falls. As well as living trees and branches removed, the works included the removal and sometime realignment of dead timber in the waterway.

9.5.2 Establishing Guidelines

Vegetation within Creswick Creek and other waterways plays a critical role in stabilising the bed and banks, reducing erosion, supporting habitat, and maintaining ecological function. Removal of large areas of vegetation can increase channel velocities, promote bed scour, and destabilise banks, ultimately shifting flooding or erosion problems downstream. These effects are well-documented in Victorian waterway management guidance and are acknowledged in the NCCMA’s regional waterway strategy and statewide river health policies. As such, vegetation management must prioritise the long-term physical stability and ecological integrity of Creswick Creek, particularly through the Creswick township where hydraulic, environmental, and social values intersect.

To guide future decision-making, a set of vegetation management standards should be developed for Creswick Creek that provide benefit for maintaining flow conveyance through Creswick, align with NCCMA expectations and healthy waterways principles, ensure regulatory frameworks are upheld (i.e. Water Act, FFG triggers) and provides clear roles and responsibilities. These standards should:

- **Identify vegetation zones** (e.g., low-flow channel, benches, riparian margins) and define acceptable vegetation density within each.
- **Prioritise removal only where vegetation presents a measurable hydraulic constraint**, such as localised blockages at structures, debris-forming species, or introduced species that impede conveyance.
- **Avoid removal that would expose bare soils or destabilise banks**, unless accompanied by engineered or bioengineering treatments.
- **Adopt a targeted, minimal-intervention approach**, maintaining ecological values while addressing genuine maintenance needs.
- **Use monitoring to support adaptive management**, particularly where maintenance activities could influence bed stability or downstream conditions.



9.5.3 Removal Works in Practice

Table 4 below shows a side by side comparison of the waterway condition pre and post vegetation management works. The order of the photos from Google Streetview starts at Water Street and includes views of both upstream and downstream at the Midland Highway as well as Nugetty Gully viewed from Victoria Street.

The vegetation management works are no doubt significant works, and have removed a very large tonnage of wood, both exotic and native. It is very obvious from a visual inspection how much the creek conveyance has been improved from the bed of the channel right through to above bank full.

Table 4 Photo Comparison Pre and Post Vegetation Management Works

Pre Works – January 2010	Post Works – August 2023



9.5.4 Effectiveness of Vegetation Management Works

The following section discusses the likely effectiveness of the vegetation management works in achieving a reduction in hydraulic roughness. This is a relatively difficult task to quantify as the roughness value in any hydraulic modelling exercise is generally a parameter that represents a number of processes such as density of vegetation, sinuosity of the waterway, changes in the channel and floodplain geometry not captured by the model resolution, obstructions to flow not modelled by the topography, etc. The roughness parameter is therefore a lumped parameter that attempts to represent a number of characteristics of the waterway and floodplain.



Brisbane City Council's Natural Channel Design Guidelines (2003), provides a concise summary of various hydraulic roughness references. The major texts that are often used in the industry include Cowan (1956), Chow (1959), Hicks and Mason (1991), and Coon (1995).

Using the above literature, we could expect a roughness value for Creswick Creek through Creswick in its current condition of between 0.04-0.08. The examples of the waterway prior to the works with heavily vegetated riparian zone are likely to be of a value between 0.08-0.12.

The modelling for this study adopted 0.06 within the waterway channel and 0.07 for the riparian zone of Creswick Creek based on calibration to observed flood heights. This provides a sanity check that the adopted roughness for the design modelling was appropriate. This demonstrates that without vegetation management through the township, an increase in hydraulic roughness of around 0.02. This change in hydraulic roughness aligns with the Brisbane City Council's Natural Channel Design Guideline (2003) document which provides a method for completing this assessment. [Table C.5](#) in the Guideline provides roughness values for various vegetation density to guide revegetation works.

This change in roughness was simulated for the October 2022 event which showed that without the works, the flood levels could increase along Creswick Creek up to 100mm in some locations.

In contrast, further modification of riparian or in-stream vegetation beyond what has already been conducted, would not result in significant reductions in flood levels for Creswick Creek during a flood event. There is limited ability to generate meaningful reductions in hydraulic roughness beyond its current state.

9.5.5 Summary

Implementing vegetation standards grounded in these principles will allow Council and land managers to respond consistently to community concerns, maintain an evidence-based approach to flood risk management, and protect the long-term health and function of Creswick Creek. It is recommended that Council and NCCMA work together with the community to develop a Creswick Creek vegetation management plan.

The plan should clearly outline roles and responsibilities, funding opportunities, objectives of vegetation management, agreed works areas, limits on vegetation clearance, recommended frequency of works, and the process for applying for and receiving approval for a works on waterways permit



10 FLOOD INTELLIGENCE, WARNING AND DRAFT OVERLAYS

10.1 Overview

In line with the project brief, components of the Total Flood Warning System were assessed, and additional components recommended with the aim of improving flood warning and monitoring capability for Creswick. This project was also completed in parallel with the NCCMA Loddon Flood Warning Project with information fed from this investigation into the broader Loddon project. The following flood intelligence products were produced:

- A rating curve for the current gauge board located downstream of the Water Street bridge on Creswick Creek.
- Summary table of flood behaviour, impacts and roads inundated (Table 10-1), noting that the values in the table include stormwater/overland flow inundation as well as riverine inundation.
- Average flood peak travel time estimations from the start of rainfall to the rise and peak of riverine flooding in Creswick Creek at Creswick. Flood levels will typically begin to rise 2-5 hours after the onset of heavy rainfall. Peak flooding generally occurs between 7-30 hours after the onset of heavy rainfall.
- “Flood/No Flood” tool, providing a rough link between observed rainfall and flood magnitude (assuming rainfall IFDs representing SSP5 2030 climate scenario) Figure 10-1.
- Recommended Flood Class Levels for Creswick based on the potential gauging station, noting that the lead time to predict flooding in Creswick is not sufficient for the Bureau to offer a quantitative flood forecasting service.

The majority of the products were included in a draft update to the Hepburn MFSEP in addition to the Flood Intelligence and Warning Report (R04). The flood impacts summary table, has been reproduced herein for reference. This section also contains information on the draft overlays generated from the study along with a summary of the flood warning recommendations.



Table 10-1 Flood Impacts Summary

Flood Event	Characteristics – Flood Behaviour	Roadways Inundated
<p>20% AEP (SSP5 -8.5 2024) 27mm in 1 hr 32mm in 2hr 45mm in 6hr 57mm in 12hr</p> <p>Water St Gauge Board 418.03 m AHD (approx. January 2022 level in Creswick Creek)</p> <p>Peak Flow ~53 m³/s ~4,550 ML/d</p>	<p>Creswick Creek overtops into low-lying areas such as Calembreen Park and Hammon Park Oval. The Creswick CFA Station, Primary School, Scout Hall may also be affected.</p> <p>Pearman Street Levee Freeboard: < 0.1 m (lowest at Creswick Community Park) Semmens Court Levee Freeboard: 0.24 m (South Corner Moore Street)</p> <p>20 Properties experience below floor inundation from riverine flooding. <i>No properties experience above floor inundation from riverine flooding.</i></p> <p>280 properties in total are likely to experience overland flow. <i>8 residential and 4 commercial buildings flooded above floor level from stormwater inundation and not riverine flooding.</i></p> <p>Properties along North Parade begin to be impacted with 5 North Parade being the first residential building to be flooded above floor from stormwater inundation.</p>	<p>Castlemaine Road Cushing Avenue North Parade Cambridge Street Moore Street</p>



Flood Event	Characteristics – Flood Behaviour	Roadways Inundated
<p>10% AEP (SSP5 -8.5 2024) 33mm in 1 hr 39mm in 2hr 53mm in 6hr 67mm in 12hr</p> <p>Water St Gauge Board 418.33 m AHD</p> <p>Peak Flow ~75 m³/s ~6,400 ML/d</p>	<p>Floodwaters overtop levees along Creswick Creek between Water Street and Castlemaine Road. This will result in below floor flooding and may lead to above floor flooding at properties on Albert Street.</p> <p>The Creswick Motel and within Semmens Village flooded above floor level. The CFA and Hepburn Shire Council Depot experience flooding at rear lot. IGA Supermarket isolated</p> <p>Pearman Street Levee Freeboard: Overtopped Semmens Court Levee Freeboard: Overtopped</p> <p>446 properties in total likely impacted. 51 residential and 12 commercial buildings flooded above floor level. 383 properties flooded below floor level. Of these, approximately 10 are riverine flooding.</p> <p>This event is slightly higher than October 2022 level in Creswick Creek. Properties along Clunes Road near Pasco St begin to be impacted above floor level.</p>	<p>Albert Street Water Street Bridge Street Hyde Park Road Pearman Street Cushing Avenue Moore Street</p>
<p>5% AEP (SSP5 -8.5 2024) 40mm in 1 hr 47mm in 2hr 62mm in 6hr 78mm in 12hr</p> <p>Water St Gauge Board 418.52 m AHD</p> <p>Peak Flow ~93 m³/s ~8,000 ML/d</p>	<p>Nuggetty Gully may overtop bluestone wall at northern end of school grounds. This is not likely to impact the school buildings at the initial breakout.</p> <p>Pearman Street Levee Freeboard: Overtopped Semmens Court Levee Freeboard: Overtopped</p> <p>584 properties in total likely impacted. 69 residential and 19 commercial buildings flooded above floor level. 496 properties flooded below floor level.</p> <p>Approximate September 2010 flow rate (~90m³/s) Approximate January 2011 flow rate (~100m³/s)</p>	<p>St Georges Lake Road Carmody Drive Kennedy Lane Johns Road Creswick-Lawrence Road Davies Street</p>



Flood Event	Characteristics – Flood Behaviour	Roadways Inundated
<p>2% AEP (SSP5 -8.5 2024) 49mm in 1 hr 57mm in 2hr 75mm in 6hr 93mm in 12hr</p> <p>Water St Gauge Board 418.79 m AHD Peak Flow ~130 m³/s ~11,300 ML/d</p>	<p>632 properties in total likely impacted. 91 residential and 24 commercial buildings flooded above floor level. 517 properties flooded below floor level.</p> <p>Pearman Street Levee Freeboard: Overtopped Semmens Court Levee Freeboard: Overtopped</p> <p>Creswick Caravan Park is isolated. Creswick Primary School buildings flooded above floor from Nuggetty Gully overtopping Raglan Street. IGA Supermarket flooded above floor level.</p>	<p>Water Street Castlemain Road Raglan Street Clunes Road Melbourne Road (Slaty Creek)</p>
<p>1% AEP (SSP5 -8.5 2024) 47mm in 30min 57mm in 1 hr 66mm in 2hr 85mm in 6hr 105mm in 12hr</p> <p>Water St Gauge Board 418.93 m AHD Peak Flow ~150 m³/s ~13,000 ML/d</p>	<p>711 properties in total likely impacted. 99 residential and 26 commercial buildings flooded above floor level. 586 properties flooded below floor level.</p> <p>Pearman Street Levee Freeboard: Overtopped Semmens Court Levee Freeboard: Overtopped</p> <p>Railway overtopped (north of town – between Williams Street and Johns Road)</p>	<p>No new roadways inundated</p>



Flood Event	Characteristics – Flood Behaviour	Roadways Inundated
<p>0.5% AEP (SSP5 -8.5 2024)</p> <p>66mm in 1 hr 76mm in 2hr 97mm in 6hr 119mm in 12hr</p> <p>Water St Gauge Board 419.11 m AHD Peak Flow ~225 m³/s ~19,000 ML/d</p>	<p>766 properties in total likely impacted. 108 residential and 30 commercial buildings flooded above floor level. 628 properties flooded below floor level.</p> <p>Pearman Street Levee Freeboard: Overtopped Semmens Court Levee Freeboard: Overtopped</p>	<p>No new roadways inundated</p>
<p>0.2% AEP (SSP5 -8.5 2024)</p> <p>74mm in 1 hr 85mm in 2hr 109mm in 6hr 134mm in 12hr</p> <p>Water St Gauge Board 419.25 m AHD Peak Flow ~269 m³/s ~23,250 ML/d</p>	<p>Flood levels and depths increase from the 0.5% AEP, however no additional community, tourism/recreation areas will likely be impacted as much of the riverine and low-lying parts of the town already flooded.</p> <p>Pearman Street Levee Freeboard: Overtopped Semmens Court Levee Freeboard: Overtopped</p>	<p>No new roadways inundated</p>

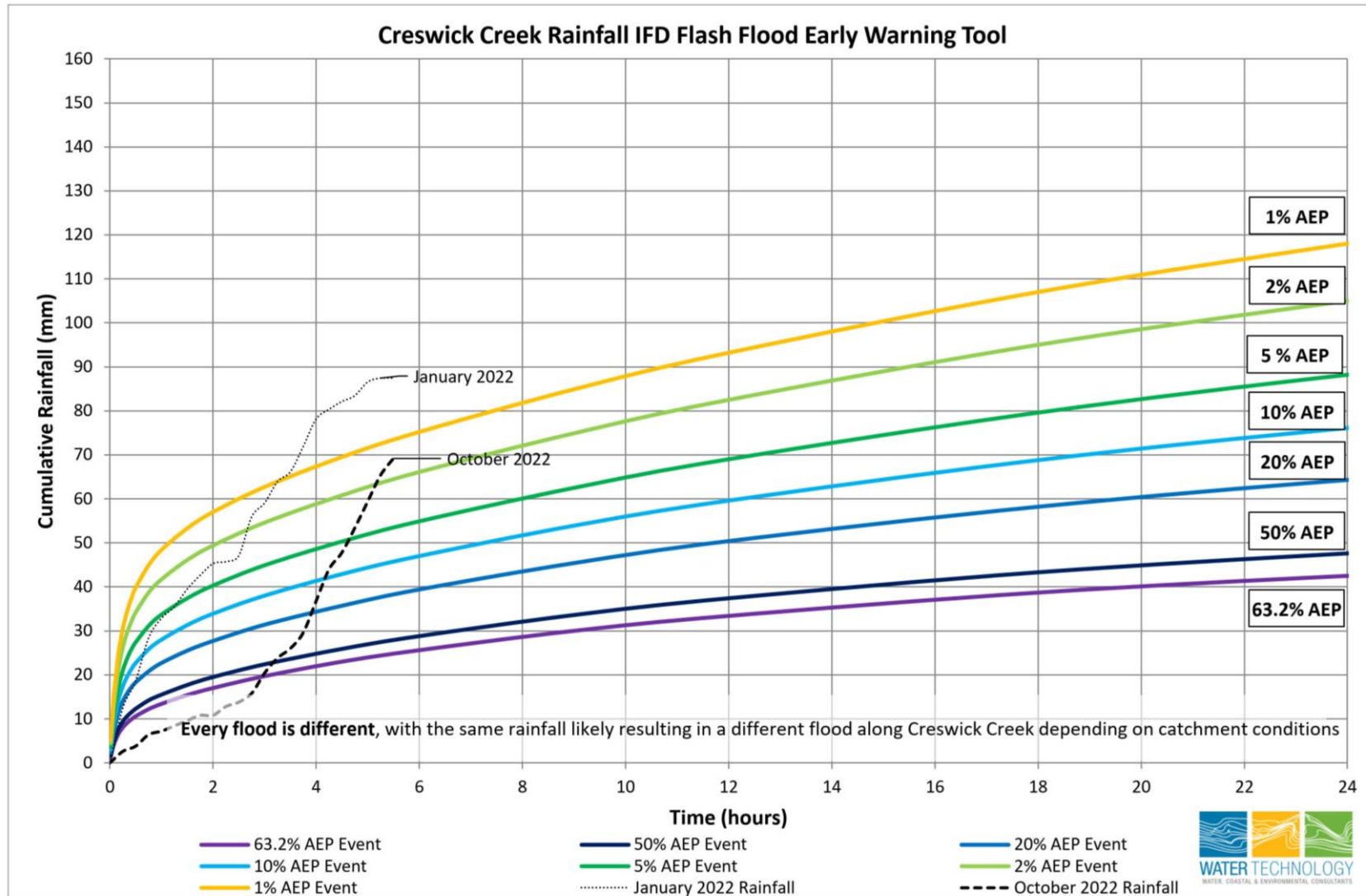


Figure 10-1 Creswick Flood/No Flood Tool (SSP5-8.5 2024 Rainfall)



10.2 Draft Planning Scheme Mapping

Inclusion of contemporary flood mapping in the planning scheme is a key non-structural mitigation measure to prevent flood risk from increasing into the future. The project has produced draft flood mapping suitable for use in a planning scheme amendment.

The mapping has been based on the 2100, SSP5 1% AEP event.

The specific details have been provided in a separate memo to council and CMA.

10.3 Flood Warning

A sub-daily rain gauge at Creswick and in the upper Creswick Creek catchment along with a stream gauge on Slaty Creek at the RACV golf course (Gardiner Road) would improve flood monitoring and data gathering capabilities in Creswick significantly. The rain gauge would play a direct role in warning of impending floods and flash flooding while the stream gauge would provide flow data for over 70% of the catchment upstream of Creswick.

Stream gauging at Creswick is not expected to provide additional warning time to the Creswick township due to the catchment shape and size producing fast response times. A telemetered stream gauge on Creswick Creek at the current Water St manual gauge would however provide the following benefits:

- Improve monitoring and data gathering for the township more detailed catchment analysis and calibration of models to improve confidence in the flood intelligence products.
- Reduce the reliance upon having manual readings captured during future flood events.
- Provide additional lead time for Clunes, Carisbrook and townships located further down the Loddon River catchment.

The development of a flow/height relationship for the existing gauges located upstream of Cosgrave Reservoir (Adekate Creek and Creswick Creek US Cosgrave Reservoir) would provide an indication of flows entering the Reservoir and may help in the development of a relationship between the existing streamflow gauge heights and the expected flood level at the manually read gauge at Creswick. Noting the catchment upstream of Cosgrave Reservoir is around 30% of the catchment upstream of Creswick.

In heavy rainfall events where Creswick Creek rises quickly, a stream gauge may only provide warning time sufficient to enact response actions other than evacuation. A more cost effective option may therefore be to install a gauge without telemetry, or to have the site ready for deployment of a Portable Automatic Logging System (PALS) to monitor levels in Creswick Creek during expected flow events.

Flood data monitoring for Creswick Creek would benefit from inclusion of a sub-daily rainfall gauge within the catchment and a streamflow gauge along Slaty Creek upstream of the confluence with Creswick Creek to provide a more comprehensive understanding of flows reaching Creswick.



11 SUMMARY

The Creswick Flood Mitigation Study has produced detailed flood modelling of Creswick Creek and other tributaries as well as stormwater runoff generated within Creswick. The mapping produced is fit for the purposes of flood emergency planning and response, statutory and strategic planning in the town having been developed in line with the latest ARR guidance (V4.2). The study has also investigated the current flood impacts and investigated structural mitigation to reduce the frequency and damage associated with riverine and stormwater flooding. Flood intelligence products have been produced and included in a draft update to the Hepburn MFSEP. Options for improving flood warning and intelligence gathering have been recommended, with additional sub-daily rainfall gauges within the catchment upstream of Creswick along with a streamflow gauge along Slaty Creek suggested.

The following actions are recommended for consideration by Hepburn Shire and North Central Catchment Management Authority:

- That the findings of the study be considered by the relevant authorities;
- The additions to the draft version of Appendix C (Flood Intelligence Card) of the Municipal Flood and Storm Sub Plan are adopted into a working version of the plan;
- Flood mapping produced by the study is shared with the community;
- The draft planning scheme mapping is considered for adoption in the Hepburn Shire planning scheme;
- Community education regarding flood damage and risk is carried out;
- Council undertakes additional investigation and design of the mitigation options that showed a reduction in flood risk.
- Council investigates the development of a vegetation management framework for Creswick Creek through Creswick, clearly outlining roles and responsibilities, funding opportunities, objectives of vegetation management, agreed works areas, limits on vegetation clearance, recommended frequency of works, and the process for applying for and receiving approval for a works on waterways permit.
- The viability of a pluvio rainfall gauge within the catchment upstream of Creswick and a telemetered streamflow gauge in Creswick (at Water St) and at Slaty Creek as recommended in the Flood Warning assessment are investigated in partnership with NCCMA and the Bureau of Meteorology;
- The model files and other deliverables of the study are filed by both authorities for future use.

Future flood events in Creswick Creek should be monitored carefully and compared to the results of this study, with flood levels marked and surveyed where possible. Where flood behaviour appears to disagree with the findings of the study, the reason for the discrepancy should be investigated and an update to the study should be considered.

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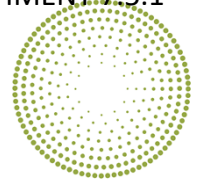
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watertech.com.au



Algerian Oak (*Quercus canariensis*), Bullarook Creek Streamside Reserve, Kingston

Prepared by: Plan Heritage

Address: 1A~A\PP3495 and 1A1~A\PP3495, Werona – Kingston Road, Kingston

Place Type: Parks, Gardens and Trees: Specimen tree

Grading: Significant

Planting date: c.1907

Recommendation: Include in the Heritage Overlay

Additional Schedule Controls? Yes – Tree Controls Apply

Extent of Heritage Overlay: Refer to map



History

The land on which the Bullarook Creek Streamside Reserve Algerian Oak (*Quercus canariensis*) is located is part of the lands of the Dja Dja Wurrung people. The Dja Dja Wurrung successfully lived on and managed country for tens of thousands of years prior to the arrival of European settlers in the 1830s, whose arrival changed the landscape and waterways, the availability of resources and traditional management practices and systems. The Dja Dja Wurrung people have a continuing connection to the land, sky, plants, animals and waterways of their country.

Contextual History

John Hepburn and Hepburn's Mill

Captain John Hepburn was in the first party of overlanders who took sheep from Sydney to the Port Phillip district in 1836. He was accompanied by fellow Scot, John Gardiner and Englishman Joseph Hawden. In 1837, Hepburn partnered with William Coghill in a plan to overland a significant number of sheep to central Victoria, with a view to taking up land and settling in the country he had passed through in 1836 (Quinlan, 1967).

He eventually settled on land (now the township of Smeaton) in 1838 and established Smeaton Hill Station (named after the small hamlet near his birthplace in Scotland). Smeaton Hill Station was located on Bullarook Creek, now known as Birch's Creek (named after another of the overlanders who took up Seven Hills run adjacent to Smeaton Hill) which formed the eastern boundary of the 25,000 acre holding (Run File Smeaton Hill Mount Prospect Boorlarook [sic], 1858).¹

In 1840, Hepburn established a water powered flour mill on the opposite bank of Bullarook Creek (now Birch's Creek) near a naturally forming lagoon (Hepburn Lagoon). The first mill was a simple structure built of stone and clay taken from the nearby creek (Quinlan, 1967). In order to provide water to the mill, water-races were cut from the Hepburn Lagoon through to the mill site, and a mill dam constructed. (Hermes Database VHI 7623-0354).

Hepburn initially established the mill to process grain produced on Smeaton Hill. He soon offered milling services to nearby squatters for ninepence a bushel and provided almost all the flour and oatmeal to the stations in the area (Joyce, 1949).

¹ Run file Smeaton Hill, PROV - RUN325; SMEATON HILL MOUNT PROSPECT BOORLAROOK; BULLAROOK SPRING HILL VPRS 8168/P0002



Figure 1 Extract from 'Plan of Country Lots, Smeaton and Seven Hills in the Parish of Smeaton' 1856. Source: State Library of Victoria.

In order to deliver grain from the outlying stations (some being over 2 days travel) heavy, slow moving bullock wagons took the most direct route through the landscape, creating routes between the stations to the south to the Mill. The heavy wagons cut deep tracks in places, particularly where the soil was softer, around waterways. Within the area where the Algerian Oak (*Quercus canariensis*) is located, evidence of the early track is present in maps and plans from the early 1850, following the basalt escarpment above the creek down to the natural ford over Birch's Creek (figure 2). This early track ran directly adjacent (west) of the row of Algerian Oaks (*Quercus canariensis*) within the Bullarook Creek Streamside Reserve.

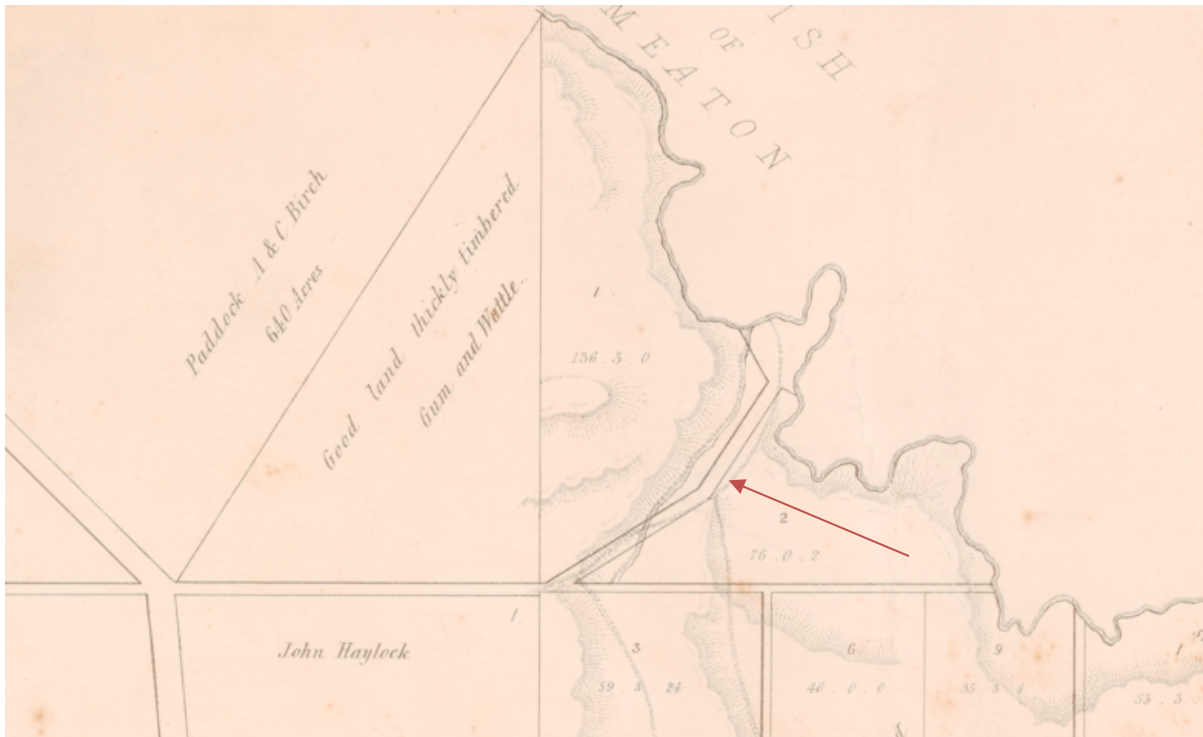


Figure 2 Extract from Special country lots near Creswick, Parish of Spring Hill, County of Talbot (1854) showing the early track from Creswick along the escarpment and over the Bullarook Creek to the mill and beyond.

A substantial three storey mill was soon constructed to meet the volume of grain required to be milled each harvest (Joyce, 1949). The Argus (31 December 1938:10) stated:

One of the best-known features at Smeaton Hill was the watermill on Birch's Creek erected by Captain Hepburn about 1841. Hither came drays with grain from neighbouring stations; from Captain Langdon at Bullarook, from Mr. Hunter at Tarrigower, from Mr. D. C. Simson at Charlotte Plains.

Although the first crossing of the Bullarook Creek at the simple stone ford was satisfactory for Bullock wagons in dry times of year, less robust traffic could not access the route year-round. A timber bridge over the creek was soon established by Hepburn to allow access to the mill all year round, and to allow free passage for carriages, carts and other modes of transport throughout the year (Quinlan, 1967). The early abutments (earthworks) still exist on the southern side of Birch Creek.

The early bullock track shown in (figure 2) became the principal route from the area through to Jim Crow (now Daylesford) and Castlemaine, taken by those living on pastoral runs south of Birch's Creek. Eventually, this became the main route taken by the mail coaches travelling between Creswick and Daylesford in the goldrush era.

Several timber bridges were erected at the Birch's Creek crossing adjacent to the early ford, and numerous reporting of the bridges being washed away are reported between 1858-1880 in local newspapers. The flour mill continued to operate under Hepburn's ownership until his death in 1860 and ceased operation 1871 (The Ballarat Star, 31/05/1871:3).

By 1882, the old bullock-wagon track formed part of the established road, following the same alignment along the creek bank described as a 'metalled track' which led to the bridge across the creek (figure 2).

Water Reserve and public use

As early as 1854 the southern portion of what is now known as the Bullarook Creek Streamside Reserve (where the Algerian Oak (*Quercus canariensis*) is located) was set aside as Crown Land for the purpose of providing public access to fresh water outside of privately held land (see figure 1). This was one of a number of small water reserves established along Birch's Creek in the 1850s which were gazetted formally in the 1860s. The water could be used by those travelling through the area to water horses and bullocks, to provide a water source to stock being moved through the area and as a place to 'overnight'.

There is documentary evidence from as early as 1860 this reserve was used for recreation and public purposes, although there is no evidence of any beautification schemes or planting during the nineteenth century. Quinlan (1967:88) notes that the first Agricultural Society of Smeaton, Spring Hill and Bullarook Show was held in the Reserve on 1st March 1860, and describes it thus:

There was a happy family atmosphere about the whole proceedings ... The steep Road leading down to the creek from Kangaroo Hill on the east and Kingston on the west was jammed with every sort of vehicle, from carriages to common carts common, while horsemen and women threaded away in between. Family parties picnic [sic] along the Creek or round the arena beyond the Creek. James Whatherly, of the Smeaton Hotel opposite the mill undertook to have dinner on the table in the mill itself by 4:0'clock.²

However, it appears that the annual show soon moved to the Kingston Show grounds within a few years.

During the 1860s, local newspapers reported numerous cases of illegal occupation within the reserve, with individuals establishing huts, and in some cases cultivating parts of the reserve. This led to the gazettal of the reserve as 'as 'Lands excepted from occupation for mining, residence or business purposes' (Victoria Government Gazette, 13 August 1869). Despite the gazettal, the Creswick Mining Registrar continued to issue Miner's Rights for occupation of land within the reserve into the 1870s and 1880s. The Crown Lands Commissioner A. A. Bannerman noted in 1886 that several parties had settled within the reserve, but that the reserve on "...the eastern side of the creek is much used as a camping ground by teamsters and waggoners and should be kept open for such conveniences" (Creswick Shire Council minutes, 6 February 1886).

The illegal residential settlement established within the reserve in the nineteenth century were generally located on the north west part of the reserve. Given this, the Algerian Oak (*Quercus canariensis*) is unlikely to be associated with one of these settlements.

² The Smeaton Hotel was located on the west side of what is now the Werona-Kingston Road, on the north side of the bridge, above the reserved land.

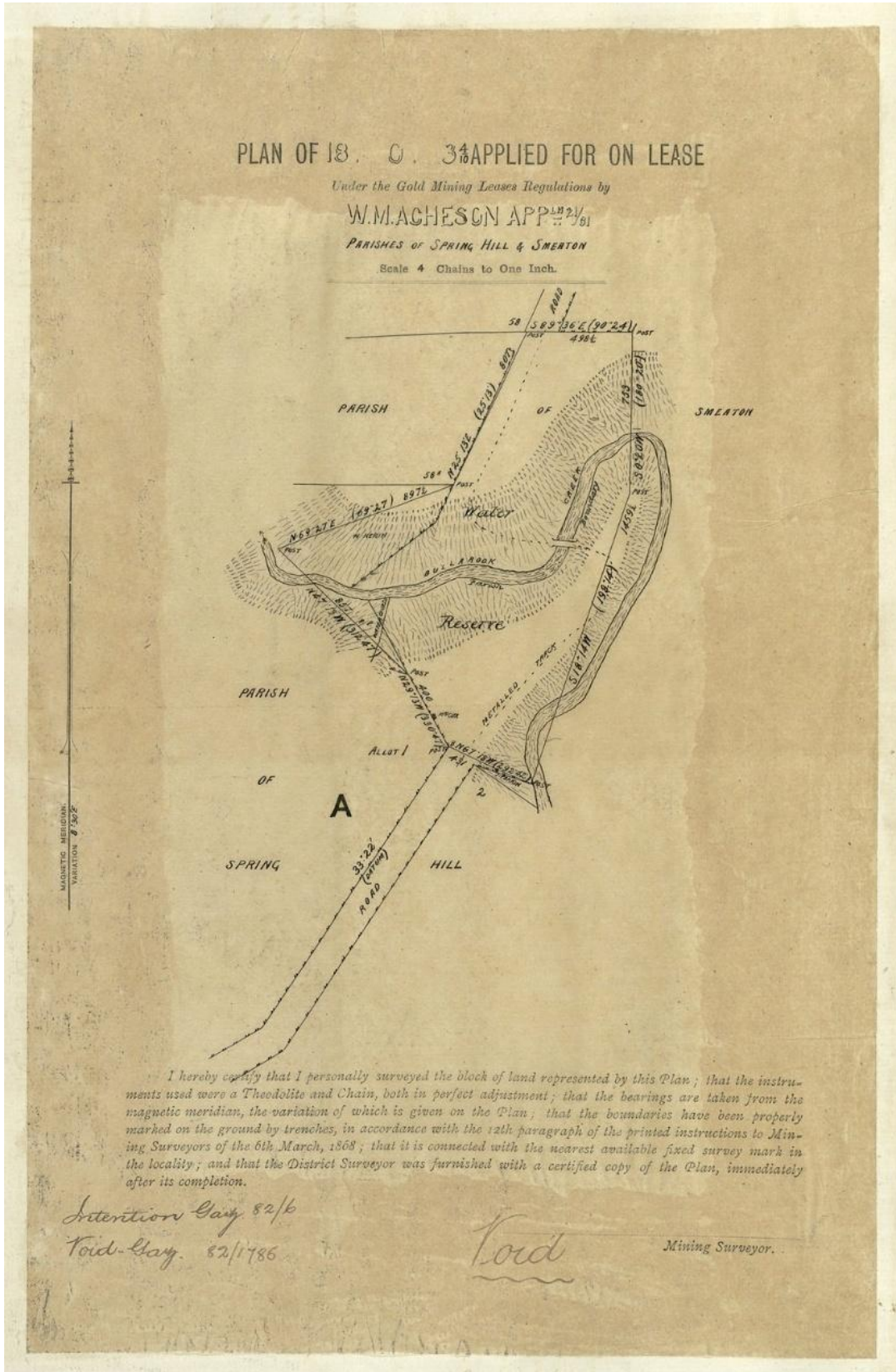


Figure 3 Victoria. Mines Department, issuing body. (1889). Plan of 13. 3. 26 4/5 applied for on lease under the Mining on Private Property Act 1884 by William Morrin Acheson App 1/89. Melbourne? [Mines Department?].

Planting and improvements to the Reserve

The track leading past the Algerian Oak (*Quercus canariensis*) to the timber bridge across Birch's Creek was still in use in 1887, when a request was made to establish a residence within the reserve 'between the old and new roads to the bridges across the creek', indicating that the track and bridge were still in use at that time.

There is no evidence of specific improvements or maintenance to the reserve until 1907 when the Kingston branch of the Australian Natives Association (A.N.A) applied to Creswick Shire Council for permission to plant trees and generally beautify the reserve as a recreation reserve stating that:

It was at present a wilderness, and with proper planting and protection of trees planted, it could be turned into a beauty spot. (The Ballarat Star, 06/04/1907)

A grant was received and trees were planted under the supervision of the ANA in 1907. The row of three Algerian Oak (*Quercus canariensis*)s which mark the line of the 'old' road are likely to be what remains of either a row or avenue planting along the old track down to the creek.

Newspaper reports of Creswick Shire Council in the following years through to c. 1912 indicate that modest amounts (10-25 pounds) were annually allocated for the maintenance of the reserve in the following years.

Gates were agreed to be erected at the Bullarook Reserve in 1914 and renew earlier (1907) tree plantings which had failed (Creswick Advertiser, 8/12/1914:2).

The Creswick Shire invested in timber plantations from the late nineteenth century as a source of revenue. Three areas in the 'Bullarook Creek Reserve at Smeaton' were identified as suitable for the establishment of plantations of *Pinus radiata* (Monterey Pine) for future sale. Plantations were established in 1915 and 1917 (Creswick Advertiser 05/10/1917) the plantations being fenced with post and wire fencing.

The Creswick Shire Council took over the management of the Reserve in 1930 as the Committee of management for both reserves (Government Gazette 14/05/1930).

The reserve was largely under-utilised in the post war period, until the Land Conservation Council (1982) identified it as a place which should be protected as a Streamside Reserve, to provide passive recreation, provide a buffer zone for the protection of water quality, conserve flora and fauna, maintain the local quality and character of the landscape, provide grazing (at the discretion of the management authority).

Community members from the Kingston District prepared a booklet in 1986 advocating for the community to take an interest in the management of this reserve and others along Birch's Creek. This was perhaps the beginning of the community's ongoing interest in and advocacy for the conservation of the reserve.

The Kingston Primary School Board integrated into its curriculum work to understand the history of the place and participated with students in minor works to conserve the place in the early 1990s.

The proposed removal of the Algerian Oak (*Quercus canariensis*) to allow for the creation of a large transmission tower in the area raised significant community outrage. The tree became a symbol of community resistance against a major State Government infrastructure project and saw residents actively protesting its removal. Petition, rallies and signs seeking the protection

of the tree demonstrated the importance of the reserve, and particularly the Algerian Oak (*Quercus canariensis*) to the community. Significant community advocacy resulted in the tree being successfully nominated for the National Trust Significant Tree Register culminating in its award as the National Trust Significant Tree of the Year in 2025. The significant community opposition, and the inclusion of the tree as National Trust Significant Tree of the Year resulted in the WRL transmission line route being modified to allow its retention (ABC News, 29/10/2025).

Community connections (Assessment of social significance)

This assessment of social significance uses the Heritage Council of Victoria's 'Guidance on identifying places and objects of state-level social value in Victoria'. This sets out the criteria for evaluating whether a place or object has social significance, noting that the following four elements should be present, but not essential to demonstrate social significance:

- **Community:** The existence of a present-day community group (or groups) by whom the place or object is valued. (In the case of local social significance, this community would have local reach, rather than state)
- **Attachment:** The existence of a strong attachment of the community or cultural group to the place/object.
- **Time-depth:** Where a place or object has had special importance to a particular community over a period of time. Generally, a period of time equivalent to one generation (25-30 years) or longer is considered a reasonable length of time.
- **Resonance:** The reasons why the above characteristics exert an influence that resonates across the broader community as part of a story that contributes to the broader community's identity.

These four elements in relation to the Algerian Oak (*Quercus canariensis*) at the Bullarook Creek Streamside Reserve are discussed and evaluated below.

Community:

The identification of an associated community often relates to a community that has an existing association with the place in question by way of its social function or purpose.

The Algerian Oak (*Quercus canariensis*) is admired and valued by a great many in the local Kingston community as a local landmark, associated with the use of the Bullarook Creek Streamside Reserve as a place of gathering, celebration and informal social activities. There is much community affection for this tree, and recollections of playing around, picnicking and socialising under its wide canopy over many generations have been broadly shared through the campaign undertaken by the community to prevent its removal.

The long attachment of the Kingston community to the place has been formalised in the last decade through the establishment of the 'Kingston and District Power Alliance' which as a group have lobbied strongly for the retention of the tree, and identified the Algerian Oak (*Quercus canariensis*) as an important local landmark to the community

More recently, a largely on-line community comprised of people from the broader surrounding areas of Creswick, Ballarat and Daylesford, as well as others from across Victoria has been established through the efforts of the Kingston community to publicise through print, visual and

social media the significance of the tree and the community's desire to protect it. The nomination and subsequent award of the National Trust of Australia (Victoria) 'Tree of the Year 2025' has attracted further online followers, as well as many visitors in person to the tree, who have expressed an attachment to, and interest in protecting and saving the tree from removal.

Attachment:

The attachment of the local community to the Algerian Oak (*Quercus canariensis*) is evident in community efforts to prevent the tree from being removed. The active and organised advocacy, including rallies, petitions, signage and coordinated engagement with formal assessment processes are evidence of this attachment.

The tree has become a symbolic focal point, representing community values of stewardship, protection of public land, and resistance to the perceived loss of valued local places.

The attachment of the online community is evident in the many followers of social media pages and posts relates to the significance and protection of the tree, and the large numbers of people across Victoria who voted for it to be the Victorian Tree of the Year 2025.

Time depth:

The Kingston community has a demonstrated long and deep attachment to the reserve and the Algerian Oak (*Quercus canariensis*).

The reserve has functioned as public land since the mid-nineteenth century, creating a long-established tradition of communal access and use. The Algerian Oak (*Quercus canariensis*) dates to the early twentieth century, with well over a century of physical presence and community interaction. The attachment spans multiple generations, evidenced oral histories and long-term family associations with the large Algerian Oak (*Quercus canariensis*) as a place to gather, camp, picnic and play within the Reserve.

The written history of the development of the Bullarook Creek Streamside Reserve and its plantings by the Kingston Primary School in 1986, along with the pupils and their families undertaking work to conserve and maintain the Reserve is clear evidence of the local community's attachment to and desire to care for the Reserve and its plantings.

In 2025, this demonstrates a time depth of at least 40 years.

Resonance:

The importance of the Algerian Oak (*Quercus canariensis*) to the Kingston community is strongly evident in community activity, including advocating for the preservation of the tree. The tree is recognised for its community value, landmark status and size on a number of social media pages and websites. Furthermore, the community's attachment and efforts to save the tree have been recognised through news stories from all major television stations, through interviews and stories produced by ABC local radio and other commercial radio stations, and through local and state print media.

In addition, community voices contribute to the many letters to local newspapers and digital media about the value of the Algerian Oak (*Quercus canariensis*). The potential loss of the tree, which has been in the news since 2023, has promoted significant response by the local community.

A Google search using the search terms 'Algerian Oak Kingston' yields a first page with at least five separate online news stories by television and radio stations (three local television stations,

ABC News Australia and ABC local radio) as well as numerous facebook posts reporting on the efforts to save the tree.

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Maps and Plans

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'Special country lots near Creswick, Parish of Spring Hill, County of Talbot' (1854) showing land reserved around the subject site. Source: State Library of Victoria

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'Plan of Country Lots, Smeaton and Seven Hills in the Parish of Smeaton' 1856.

Victorian Heritage Database – Heritage Citations

- VHR H1425 Bridge, over Birch (formerly Bullarook) Creek, Newstead-Creswick Road Smeaton
- HO109 Kerrins Bridge, Werona-Kingston Road, Smeaton
- HO107 Site of Hepburn's Mill, Werona Kingston Road, Kingston
- VHI H7623-0354 The Captain's Mill Site, Charlesons Lane, Kingston

Run Files accessed from Public Records Office Victoria

Run file Smeaton Hill, PROV - RUN325; SMEATON HILL MOUNT PROSPECT BOORLAROOK; BULLAROOK SPRING HILL VPRS 8168/P0002

Newspapers and Magazines

Creswick Advertiser, 8 December 1914

Creswick Advertiser 05 October 1917

The Argus 31 December 1938

The Ballarat Star 31 May 1871

The Ballarat Star 06 April 907

Description

The Algerian Oak (*Quercus canariensis*) is located within the Bullarook Creek Streamside Reserve, on the southern side of Birch's Creek. The tree is part of a short row of three Algerian Oaks (*Quercus canariensis*) which are planted immediately adjacent to a track established in the 1840s which led to Hepburn's Mill, located on the north side of Birch's Creek.

The Algerian Oak (*Quercus canariensis*) is located on the escarpment above the course of Birch's Creek (see figure 4).



Figure 4 Algerian Oak (*Quercus canariensis*), Bullarook Creek Streamside Reserve (shown in blue circle). Source: NearMap

The tree is of considerable size. The record for the tree included in the National Trust of Australia (Victoria) Significant Tree Register (measured 2021) record a canopy spread of 31 x 29.2m, a Diameter at Breast Height (DBM) of 112cm and a height of 16.4m

The lack of maintenance of the tree over most of its life has led to the development of a 'natural' form which leads to an appearance of it being broader and more horizontal in form than upright. The large branches reach the ground and extend horizontally along the ground plan providing an aesthetic domed appearance from a distance, and experientially, a sense of enclosure when beneath the tree.



Figure 5 Algerian Oak (*Quercus canariensis*) at Bullarook Creek Streamside Reserve viewed from Kerrins Bridge. Note that conifers visible to the left and right foreground are part of the plantation established in the reserve in 1915-17 Source: Hepburn Shire Council

The tree appears to be in good condition for its age, although it does require some attention to remove dead wood and hyper-extended limbs to avoid future damage.

The tree is significantly larger in size than the other two specimens of Algerian Oak (*Quercus canariensis*) located in the short 'row' of three lining the early track. The other two specimens were also recorded in 2021, and while they have comparative heights (17.6m and 16.2m) the DBH was significantly smaller, being 0.98m and 0.84m. This has led to supposition that the two other trees in the row may have been planted at a later date.

There is no evidence to suggest that this is the case in the historical record. Algerian Oaks (*Quercus canariensis*) are relatively quick to mature to their maximum height and can adapt to most soils and are drought tolerant. Given that these trees are located adjacent to the early

track, which in parts is bedrock, it is likely that the availability of moisture and nutrients may have varied between the three specimens.

Comparative Analysis

Algerian Oaks (*Quercus canariensis*) were broadly available in Victoria from around 1860, with some of the earliest specimens being planted in the Royal Melbourne Botanic Gardens, regional Botanic Gardens and the grounds of government run institutions.

The trees have long been valued for their aesthetic characteristics, which tend to have a broad domed canopy with a shorter trunk and overall height than some other species. The tendency to semi-evergreen nature, with leaves remaining well into winter, and for the branches to extend to the ground if left un-pruned provides a unique shape to the canopy when mature.

Algerian Oaks (*Quercus canariensis*) are generally expected to reach a height of 20-30 metres with a canopy spread of similar dimensions. There are no comparative examples included within the Heritage Overlay of the Hepburn Planning Scheme.

There are a number of examples of individual trees included within the Heritage Overlay of the Planning Schemes of the Cities of Maroondah, Manningham and Dandenong. The National Trust Significant Tree Register includes other examples across Victoria which it identifies as being of Local, Regional or State significance.

The most comparable examples included within the Heritage Overlay of other Planning Schemes are set out below. It is important to note that very few of these examples exhibit the 'natural' form of the Algerian Oak (*Quercus canariensis*), as they have all been maintained as trees within an urban context over time, unlike the Algerian Oak (*Quercus canariensis*) in the Bullarook Creek Streamside Reserve. None of the examples are located within a 'reserve' although some are located within public parks.

Dandenong Planning Scheme HO60 (174E Lonsdale Street, Dandenong)

Planted in 1873, this specimen is slightly larger in its canopy spread (22m) and height (147m) than the subject tree. However, given the context, located in Dandenong Park with the associated watering and nutrient regime over 130 years, this is not unusual. This specimen in terms of form is not comparable as it does not demonstrate the typical 'natural' form due to repeated maintenance and pruning and canopy uplift.



Figure 6 Algerian Oak, 174E Lonsdale Street, Dandenong Source: VHD

Manningham Planning Scheme HO52 (41 Dudley Road, Wonga Park)
 This group of trees, planted around 1890 associated with the Wonga Park School are smaller in terms of height, canopy spread and girth, all have lost most of their lower branches and demonstrate compromised canopies due to the surrounding buildings.



Figure 7 Algerian Oak (*Quercus canariensis*) - Wonga Park Primary School. Source: VHD

Manningham Planning Scheme HO45 (2-12 Council Street Doncaster)
 Planted in association with the Doncaster Primary School c.1886, these two specimens are substantially smaller than the subject specimen, with a canopy spread of 14x12m, a height of 14m and a girth of .80cm. Similar to other examples found in schools, the canopy has been greatly altered through pruning and uplifting.



Figure 8 Algerian Oak (*Quercus canariensis*), Doncaster Primary School. Source: VHD

Manningham Planning Scheme HO160 – VHR H0667 (Heide – 7 Templestowe Road Bulleen)
These two trees are outstanding examples of the species, being larger than almost any others included as individual specimens within the Heritage Overlay. Planted in c 1930, they have been well maintained over time, have minimal canopy lift (although some is evident) and have substantial height at 27cm and a canopy spread of 27x24m, although the DBH is comparable to the Bullarook Creek Streamside Reserve example at 1.08cm



Figure 9 Algerian Oak (*Quercus canariensis*), Heide. Source: VHD

Manningham Planning Scheme HO118 (123-127 Mitcham Road Donvale)

This example is relatively small compared to other examples included in the Heritage Overlay of local planning schemes, with a height of 12.8m, canopy spread of 13.5 x 14.5 and a DBH of 0.87m.

Discussion

On review, it is considered that the specimen of Algerian Oak (*Quercus canariensis*) at the Bullarook Creek Streamside Reserve has no local comparative examples within the Heritage Overlay of the Hepburn Planning Scheme. When compared to other examples included in the Heritage Overlay of other municipalities, the tree is comparative, or larger than most other examples of the species, and is able to demonstrate the unique 'natural' domed form with branches extending to the ground better than any other example. The closest example comparatively is that at Heide, which is included on the VHR, and has its 'natural' canopy and a substantial size, a little larger in height and canopy spread than the subject example.

In conclusion, application of Heritage Overlay is therefore considered the most appropriate planning mechanism to recognise and manage the heritage significance of the Algerian Oak (*Quercus canariensis*) and to ensure any future works in association with the tree consider its heritage value.

Statement of Significance

What is Significant?

The Algerian Oak (*Quercus canariensis*) at the Bullarook Creek Streamside Reserve is significant.

How is it Significant?

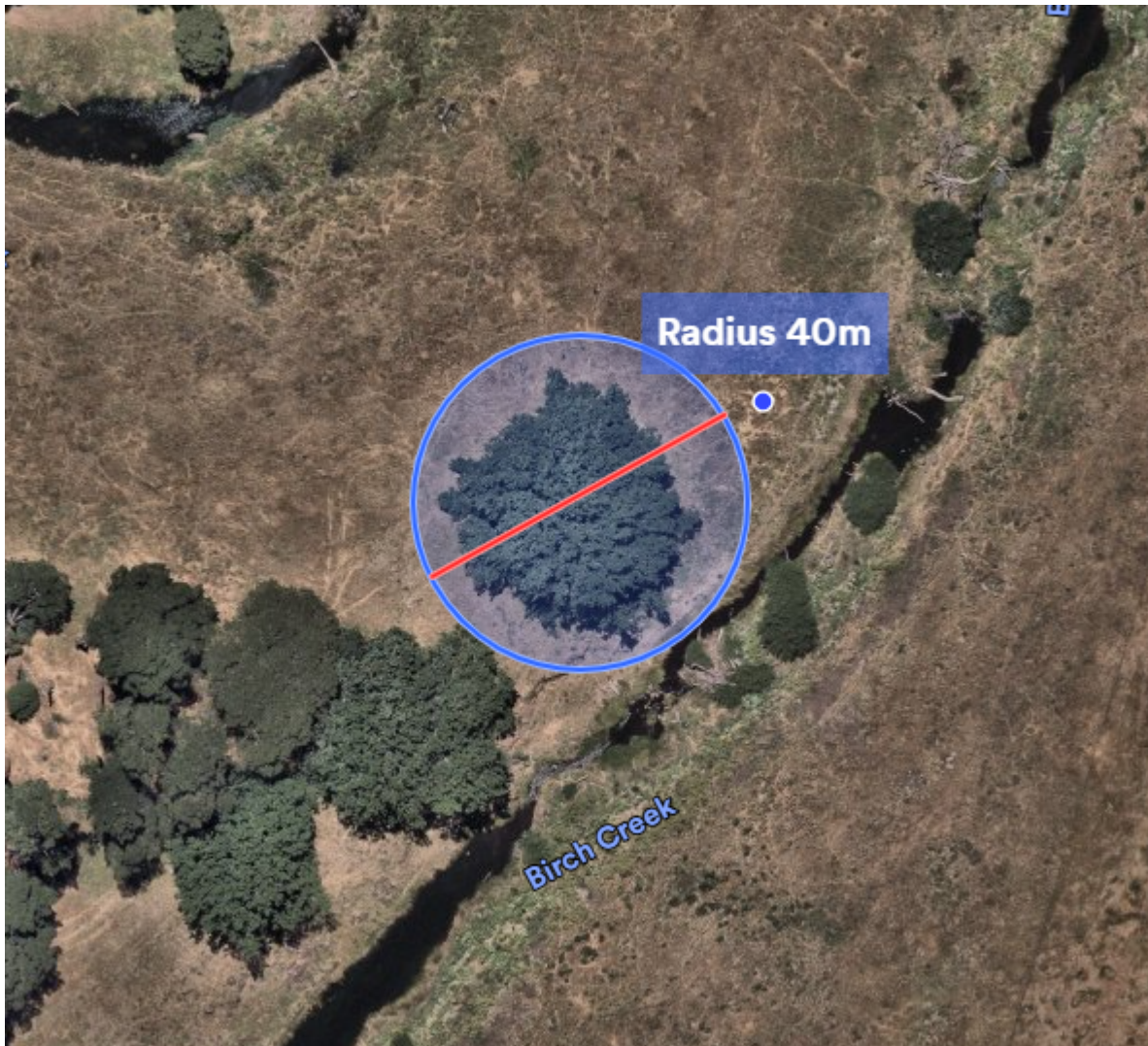
The Algerian Oak (*Quercus canariensis*) has local aesthetic and social significance to the Shire of Hepburn.

Why is it Significant?

The Algerian Oak (*Quercus canariensis*) is at the Bullarook Creek Streamside Reserve, Kingston of aesthetic significance due to its visual and physical qualities which provide it with an uncommonly attractive form. This is through the broad domed spreading form of the canopy which extends to the ground in its natural state but is rarely seen due to maintenance regimes which remove lower limbs and prevent the development of the form. These qualities are relatively uncommon in other examples included within the Heritage Overlay. The width of the canopy is substantial and larger than most other examples, and the height less, providing a particularly large, wide and low example tree within the landscape context. Of additional aesthetic significance is the status of the tree within the community as a local landmark, given its outstanding size and prominence. (Criterion E)

The Algerian Oak (*Quercus canariensis*) at the Bullarook Creek Streamside Reserve, Kingston is of social significance to the community of Kingston and to the Hepburn Shire for its strong, enduring and demonstrable association with the Kingston community as a valued landmark and place of recreation over forty years at least. Community attachment is clearly evidenced through the use, interest and care for the place over time, as well as the more recent sustained and organised advocacy to prevent its removal, including rallies, petitions and media engagement. The importance of the tree resonates strongly within the broader community, as shown by widespread media coverage, letters, digital commentary and social media engagement since 2023 confirming its role in Kingston's shared identity and its capacity to prompt collective local response. The many visitors to the tree itself, and its entry on the National Trust Significant Tree register evidences the broad appreciation and knowledge of the tree, and its importance to the local community. (Criterion G)

Proposed HO extent



The recommended extent for the Heritage Overlay is centered on the middle of the canopy with a radius of 40m. This will protect the canopy as well as tree protection zone to provide several metres of buffer from any future works within the area.

Algerian Oak (*Quercus canariensis*), Bullarook Creek Streamside Reserve, Kingston Statement of Significance

Heritage Place: Bullarook Creek Streamside Reserve, Kingston

PS ref no: HO989



What is significant?

The *Quercus canariensis* (Algerian Oak) at the Bullarook Creek Streamside Reserve is significant.

How is it significant?

The Algerian Oak has local aesthetic and social significance to the Shire of Hepburn.

Why is it significant?

The Algerian Oak is at the Bullarook Creek Streamside Reserve, Kingston of aesthetic significance due to its visual and physical qualities which provide it with an uncommonly attractive form. This is through the broad domed spreading form of the canopy which extends to the ground in its natural state but is rarely seen due to maintenance regimes which remove lower limbs and prevent the development of the form. These qualities are relatively uncommon in other examples included within the Heritage Overlay. The width of the canopy is substantial and larger than most other examples, and the height less, providing a particularly large, wide and low example tree within the landscape context. Of additional aesthetic significance is the status of the tree within the community as a local landmark, given its outstanding size and prominence. (Criterion E)

The Algerian Oak at the Bullarook Creek Streamside Reserve, Kingston is of social significance to the community of Kingston and to the Hepburn Shire for its strong, enduring and demonstrable association with the Kingston community as a valued landmark and place of recreation over forty years at least. Community attachment is clearly evidenced through the use, interest and care for the place over time, as well as the more recent sustained and organised advocacy to prevent its removal, including rallies, petitions and media engagement. The importance of the tree resonates strongly within the broader community, as shown by widespread media coverage, letters, digital commentary and social media engagement since 2023 confirming its role in Kingston's shared identity and its capacity to prompt collective local response. The many visitors to the tree itself, and its entry on the National Trust Significant Tree register evidences the broad appreciation and knowledge of the tree, and its importance to the local community. (Criterion G)

Primary source

Algerian Oak Tree, Bullarook Creek Streamside Reserve Heritage Citation (Plan Heritage, March 2026)

This document is an incorporated document in the Hepburn Planning Scheme pursuant to section 6(2)(j) of the *Planning and Environment Act 1987*

Planning and Environment Act 1987

Hepburn Shire Planning Scheme

Amendment C91hepb

Explanatory Report

Overview

This amendment proposes to implement Statement of Significance Algerian Oak – Bullarook Creek Streamside Reserve Heritage Citation (Plan Heritage, March 2026) and apply Heritage Overlay (HO989) to protect heritage significant tree at the Bullarook Creek Streamside Reserve.

The Algerian Oak is under direct threat due to Western Renewables Link project (major State Government project) resulting in significant community interest as well as subsequent advocacy to protect the tree. The tree, a *Quercus canariensis* (Algerian Oak), is also of recognised aesthetic and social significance, including its acknowledgement as the National Trust's Significant Tree of the Year (2025).

Where you may inspect this amendment

The amendment can be inspected free of charge at Hepburn Shire Council's website at <https://www.hepburn.vic.gov.au/Home>

The amendment is available for public inspection, free of charge, during office hours at the following places:

Hepburn Shire Community Hubs:

- Clunes – The Warehouse, 36 Fraser Street
- Creswick – Creswick Hub, 68 Albert Street
- Daylesford – Corner Duke and Albert Street
- Trentham – The Mechanics, 66 High Street

The amendment can also be inspected free of charge at the Department of Transport and Planning website at planning.vic.gov.au/public-inspection or by contacting the office on 1800 789 386 to arrange a time to view the amendment documentation.

Submissions

Any person may make a submission to the planning authority about the amendment. Submissions about the amendment must be received by **[insert submissions due date]**.

A submission must be sent to:

Strategic Planning, Hepburn Shire Council

By post: PO Box 21, Daylesford VIC 3460

In person: Corner Duke and Albert Street

By email: strategicplanning@hepburn.vic.gov.au

Panel hearing dates

In accordance with clause 4(2) of Ministerial Direction No.15 the following panel hearing dates have been set for this amendment:

- Directions hearing: [insert directions hearing date]
- Panel hearing: [insert panel hearing date]

Details of the amendment

Who is the planning authority?

This amendment has been prepared by Hepburn Shire Council.

Land affected by the amendment

The amendment applies to the Bullarook Creek Streamside Reserve on Werona-Kingston Road, Kingston (-37.368896, 143.975142).



Figure 1 - Algerian Oak, Bullarook Creek Streamside Reserve (shown in blue circle) with planning zoning context.
Source: VicPlan.

What the amendment does

Amendment C91hepb implements the *Statement of Significance Algerian Oak – Bullarook Creek Streamside Reserve Heritage Citation* (Plan Heritage, March 2026) by:

Overlay Maps

- Amends the Planning Scheme Map number 24 HO – Heritage Overlay to apply the Heritage Overlay (HO989) to the Algerian Oak (Werona-Kingston Road, Kingston)

Planning Scheme Ordinance

- Amends the Schedule to Clause 43.01 (Heritage Overlay) to include HO989 and specifies relevant tree protection permit requirements.
- Amends the Schedule to Clause 72.04 (Incorporated Documents) to include the *Algerian Oak Tree, Bullarook Creek Streamside Reserve, Kingston Statement of Significance* (Plan Heritage, April 2026)
- Amends the Schedule to Clause 72.08 (Background Documents) to include the *Algerian Oak Tree, Bullarook Creek Streamside Reserve, Kingston Heritage Citation* (Plan Heritage, March 2026) as a background document.

Strategic assessment of the amendment

Why is the amendment required?

Council seeks to protect the tree via this amendment by proposing to apply the Heritage Overlay (HO989), on a permanent basis, to part of Bullarook Creek Streamside Reserve to implement the recommendations of the *Algerian Oak – Bullarook Creek Streamside Reserve Heritage Citation* (Plan Heritage, March 2026).

In recent times, community has advocated for the Algerian Oak when a major State Government infrastructure project threatened the retention and protection of the tree. Community advocacy for the tree has included lobbying Local councillors and State government politicians and agencies to intervene to prevent the tree's removal. Additionally, in 2025 the Algerian Oak was publicly voted (receiving more than forty percent of the vote) as the National Trust's Significant Tree of the Year. The community advocacy and consequential award evidence the notoriety of the tree and its social significance.

The Algerian Oak is of significant aesthetic value recording a canopy spread of 31 meters and a height of 16.4 metres, creating an aesthetic form where the tree branches reach the ground and extend horizontally forming a dome like appearance.

The Algerian Oak meets the requirements and thresholds for local protection, in

accordance with *Planning Practice Note 1: Applying the Heritage Overlay* (PPN01), particular under criterion E and G.

How does the amendment implement the objectives of planning in Victoria?

The amendment is consistent with the objectives of planning in Victoria by implementing the objectives detailed in Section 4(1) of the *Planning and Environment Act 1987* by:

- (b) providing for the protection of natural resources and the management of ecological processes and genetic diversity.*
- (d) To conserve and enhance those buildings, areas or other places which are of scientific, aesthetic, architectural or historical interest, or otherwise of special cultural value.*

The proposed amendment implements these objectives by applying the Heritage Overlay (HO989) to the Algerian Oak, where the associated heritage values are outlined in the heritage citation. Exceptional trees play a vital role as community assets, providing significant environmental and social benefits. These include mitigating urban heat island effects, contributing to local character and amenity, and enhancing the quality of public spaces.

How does the amendment address any environmental, social and economic effects?

Environmental Effects

The amendment will result in a positive environmental outcome through protection of a tree of recognised aesthetic and social significance.

Established canopy trees also provide broader environmental benefits including improved air quality, increased carbon storage and sequestration, stormwater interception, reduced energy demand during periods of extreme heat as well as mitigation of the urban heat island effect.

Social Effects

The amendment will deliver social benefits by protecting a valuable tree in Kingston, Victoria which contributes to a sense of place and actions the community's advocacy for protection. The Algerian Oak is highly valued by the community and holds strong social significance for both residents and visitors.

Economic Effects

The amendment is expected to support economic prosperity through positive environmental and social effects leading to a healthier and attractive township and reserve.

Does the amendment address climate change?

The subject amendment is not required to consider Ministerial Direction 22 – Climate Change Consideration under section 12A of the Act. The amendment does not:

- Rezone land from a non-urban zone to an urban zone; or
- Enable a significant change to, or intensification of the use and development of urban land; or a new use and development of land which may be exposed to a natural hazard that arises from or is likely to arise from the impacts of climate change.

Does the amendment address relevant bushfire risk?

The tree is located in a designated bushfire prone area identifying bushfire risk. In addition, Hepburn Shire has a presence of large amounts of native vegetation and a steadily increasing population contributing to bushfire risk. The Municipal Planning Strategy states that bushfire is a key environmental risk for Hepburn Shire.

The application of a Heritage Overlay is unlikely to result in any significant increase to the risk to life, property, community, infrastructure or the natural environment from bushfire in accordance with the objectives of Clause 13.02-1S (Bushfire planning) as it protects existing trees. The amendment does not seek to facilitate the intensification of development or vegetation in a bushfire risk area.

The amendment will not increase or result in any significant risk to life, property, community infrastructure or the natural environment from bushfire.

Does the amendment comply with the requirements of any other Minister's Direction applicable to the amendment?

The amendment complies with the requirements of the *Ministerial Direction on the Form and Content of Planning Schemes* as identified at Section 7(5) of the *Planning and Environment Act 1987*.

The amendment also addresses the requirements of *Ministerial Direction No. 11 – Strategic Assessment of Amendments*. As evidenced in this Explanatory Report, the amendment is consistent with this direction ensuring comprehensive strategic evaluation and the outcome it produces.

How does the amendment support or implement the Planning Policy Framework?

The amendment supports and implements the objective of Clause 15.03-1S (Heritage Conservation) by:

- Identifying and documenting a place of natural heritage significance; and
- Providing protection of a natural heritage site.

In addition, the amendment gives effect to Clause 15.03-1L (Heritage) by:

- Encouraging retention of significant trees in a heritage place; and
- Managing significant vegetation to preserve and enhance its contribution to the heritage place, including pruning, thinning and root control.

How does the amendment support or implement any relevant strategic plan or policy statement adopted by a Minister, government department or public authority?

There are no relevant strategic plans or policy statements associated with the land.

Is the amendment consistent with the delivery of the relevant housing target set out in the Planning Policy Framework?

The amendment does not impact land that could be available for reaching housing targets in the municipality.

How does the amendment support or implement the Municipal Planning Strategy?

The amendment specifically supports Clause 02.03-5 (Built environment and heritage) of the Municipal Planning Strategy by recognising and protecting an important heritage landscape feature. In particular, the amendment responds to the following points of Clause 02.03-5:

- There are significant (...) individual trees that have strong associations with and represent the Shire's post contact settlement, particularly its pastoral, gold rush, world wars, manufacturing and tourism history.
- The Shire's (...) natural heritage is fundamental to its sense of identity. Preserving and protecting these assets will give residents and visitors an opportunity to learn about the past and appreciate its role in the Shire's future.

How does the amendment balance any competing policy objectives or strategies?

There are no competing policy objectives or strategies associated with the amendment.

Does the amendment make proper use of the Victoria Planning Provisions?

The amendment makes appropriate use of the Victorian Planning Provisions. The Heritage Overlay, is considered to be the most appropriate mechanism for facilitating protecting the local heritage significance of the Algerian Oak.

The Vegetation Protection Overlay (VPO) was considered as a mechanism for protection of the Algerian Oak, as it aligns with the purpose of the control, to protect significant exotic vegetation. However, the VPO is most appropriate when vegetation

is contained on land where development and subdivision is not likely to occur. The Algerian Oak is known to be under threat from development due to the State Government's major infrastructure project.

The Algerian Oak demonstrates local heritage significance for aesthetic and social reasons and, in accordance with *Planning Practice Note 01 – Applying the Heritage Overlay*, the most appropriate mechanism is the HO. The application of the Heritage Overlay applies to a tree where the aesthetic and social significance can be managed and controlled. The Heritage Overlay requires a planning permit to be granted for any major lopping or pruning, removal or destruction works that could affect the significance of the tree.

In addition to PPN1, the application of the Heritage Overlay is also in accordance with Planning Practice Note 07 – *Vegetation protection in urban areas (PPN07)*. According with PPN07, the HO is applicable where development is able to adversely affect the heritage significance. In comparison to the VPO where development and subdivision should not be important considerations. In addition, the VPO had greater planning permit exemptions that, if exempt, could harm the trees significance.

How does the amendment address the views of any relevant agency?

The amendment was referred to the Department of Energy, Environment and Climate Action (DEECA) as the relevant landowner for the site. The land is managed by DEECA with maintenance agreements with Parks Victoria and Djaara.

Advice was also sought from DEECA to ensure their statutory responsibilities for the ongoing management and maintenance of the reserve are clearly outlined and considered. Parks Victoria have indicated that they are satisfied that Hepburn Shire Council, as the responsible authority, will decide on the most appropriate overlay for the Algerian Oak.

The Algerian Oak is located within the Public Conservation and Resource Zone and the application of the Heritage Overlay will require a permit to undertake works to the Algerian Oak or works that encroach on the curtilage of the Heritage Overlay and tree canopy.

What were the views of the relevant agencies and how were they addressed?

Exhibition stage

- Include which agencies were consulted prior to exhibition and, if appropriate their preliminary views.
- Provide details if views of agencies will also be sought during exhibition.

Approval stage

- How were the views of these agencies addressed after exhibition?

Does the amendment address relevant requirements of the

Transport Integration Act 2010?

The amendment will not impact the relevant requirements of the *Transport Integration Act 2010*, in particular the need for the transport system to provide for the effective integration of transport and land use.

How does the amendment have regard to the principles set out in the *Yarra River Protection (Wilip-gin Birrarung murrong) Act 2017* in relation to Yarra River land and other land, the use or development of which may affect Yarra River land?

The amendment does not affect Yarra River land under Part 3 of the *Yarra River Protection (Wilip-gin Birrarung murrong) Act 2017*.

Resource and administrative costs

What impact will the new planning provisions have on the resource and administrative costs of the responsible authority?

The amendment is not likely to have a significant impact on resources and administrative costs. It will result in minimal to no increase in circumstances where a planning permit will be required. Any potential circumstance for a planning permit can be accommodated within existing resources.

Attachment 1 – Mapping reference table

Location	Land /Area Affected	Mapping Reference	Address	Proposed Zone changes	Proposed Overlay changes	Proposed deletion changes
Kingston	Werona-Kingston Road	24	Werona-Kingston Road, Kingston		HO989	

The Schedule HO989 is recommended as follows:

External Paint Controls Apply?	Internal alteration controls apply?	Tree controls apply?	Solar energy system controls apply?	Outbuildings or fences not exempt under Clause 43.01-4?	Included on the VHR under the Heritage Act 2017	Prohibited uses permitted?	Aboriginal Heritage place?
No	No	Yes	No	No	No	No	No

Table 1 – Proposed change to the Schedule to Clause 43.01 (Heritage Overlay) - Excerpt

Planning and Environment Act 1987

Hepburn Shire Council Planning Scheme

Amendment C91hepb

Instruction sheet

The planning authority for this amendment is the Hepburn Shire Council

The Hepburn Shire Council Planning Scheme is amended as follows:

Planning Scheme Maps

The Planning Scheme Maps are amended by a total of 1 attached map sheet.

Overlay Maps

1. Amend Planning Scheme Map No24HO in the manner shown on the 1 attached map marked "Hepburn Shire Planning Scheme, Amendment C91hepb".

Planning Scheme Ordinance

The Planning Scheme Ordinance is amended as follows:

2. In **Overlays** - Clause 43.01, insert a new Schedule HO989 in the form of the attached document.
3. In **Operational Provisions** – Clause 72.04, replace the Schedule with a new Schedule in the form of the attached document.
4. In **Operational Provisions** – Clause 72.08, replace the Schedule with a new Schedule in the form of the attached document.

End of document

23/01/2020 **SCHEDULE TO CLAUSE 43.01 HERITAGE OVERLAY**

1.0 Application requirements

30/07/2018 None Specified

2.0 Heritage places

04/11/2022 The requirements of this overlay apply to both the heritage place and its associated land.

HO989	Algerian Oak (<i>Quercus canariensis</i>) at Bullarook Creek Streamside Reserve – Werona-Kingston Road, Kingston Statement of significance: Algerian Oak (<i>Quercus canariensis</i>), Bullarook Creek Streamside Reserve, Kingston Statement of Significance	No	No	Yes	No	No	No	No	No

13/12/2023

SCHEDULE TO CLAUSE 72.04 INCORPORATED DOCUMENTS**1.0****Incorporated documents**

13/12/2023

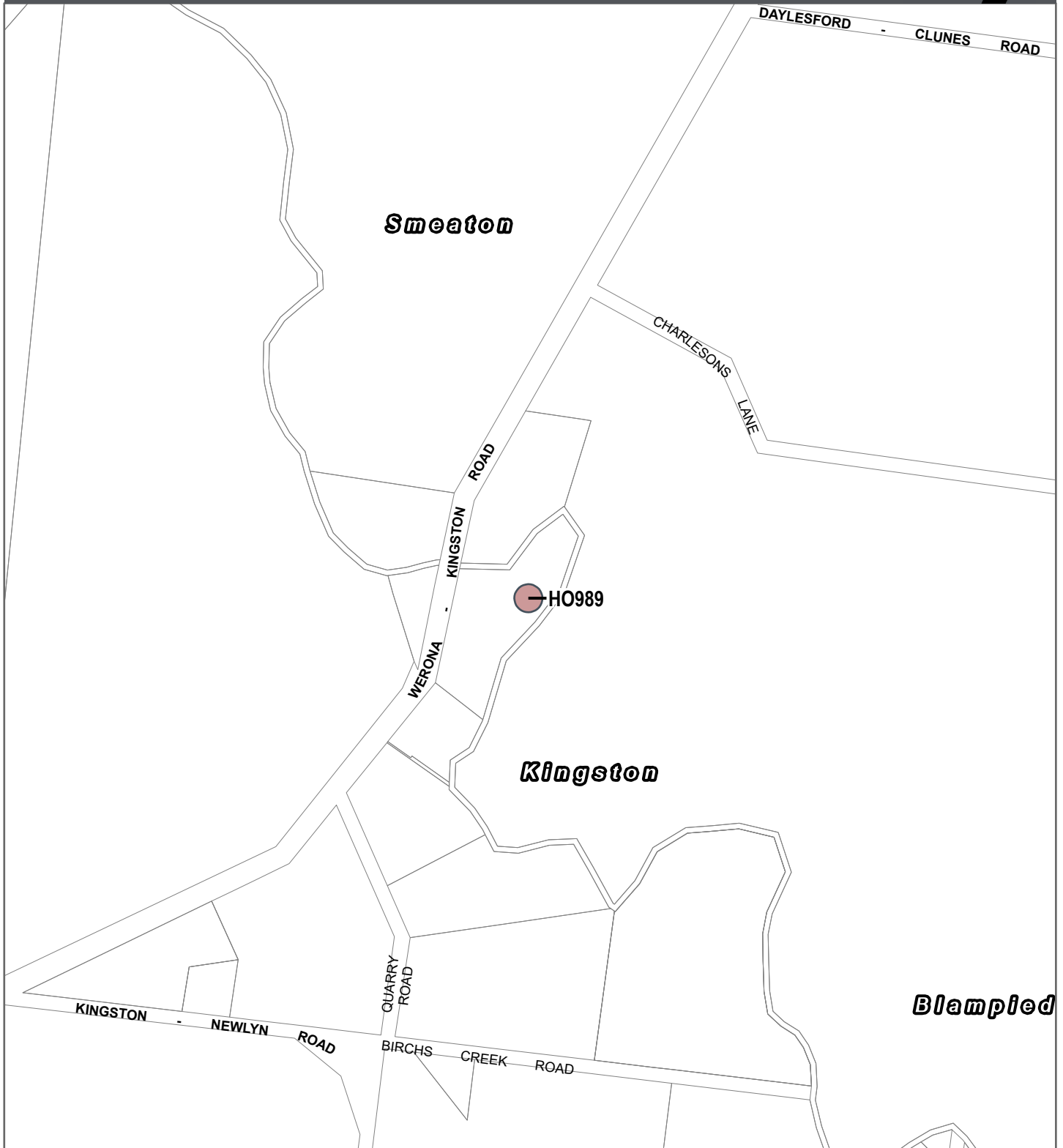
Name of document	Introduced by:
<i>Algerian Oak (Quercus canariensis), Bullarook Creek Streamside Reserve, Kingston Statement of Significance (Plan Heritage, April, 2026)</i>	C91hepb

30/07/2018



SCHEDULE SCHEDULE TO CLAUSE 72.08 BACKGROUND DOCUMENTS**1.0****Background documents**

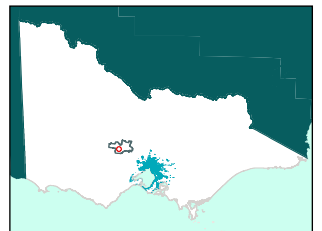
30/07/2018

Name of background document	Amendment number - clause reference
Algerian Oak (<i>Quercus canariensis</i>), Bullarook Creek Streamside Reserve, Kingston Heritage Citation (March, 2026)	C91hepb, 43.01



LEGEND

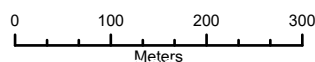
-  HO - Heritage Overlay
-  Local Government Area



Part of Planning Scheme Map 24HO

Disclaimer
 This publication may be of assistance to you but the State of Victoria and its employees do not guarantee that the publication is without flaw of any kind or is wholly appropriate for your particular purposes and therefore disclaims all liability for any error, loss or other consequence which may arise from you relying on any information in this publication.

Planning Spatial Services
 Print Date: 26/03/2026
 Amendment Version: 1



Cambridge Street Precinct Concept Plan

ATTACHMENT 7.8.1



KEY FACTS

- 45 degree angled carparking.
- 17 of 18 existing trees retained (centre of road).
- Up to 21 additional trees proposed (centre of road).

- Remove turning lane priority restrictions (complete).
- Consider Victoria Street speed limit reduction.
- Install at-grade pedestrian ("wombat") crossing, lighting, footpath connections and kerbing.
- Install long vehicle / caravan parking.
- Install at-grade pedestrian ("wombat") crossings across Cambridge Street.
- New timber post and rail fencing ("hurdles") to limit vehicle access to parkland while maintaining pedestrian access.
- Remove vehicle access and topsoil, grass and plant trees.
- Indicative upgraded stormwater drainage.
- 45 degree carparking (2.6m wide x 5.4m long) as shown (total 60 carparks shown).
- Possible future street trees (indicative - subject to services setbacks, detailed design and suitable for under OH powerlines).
- Retain and protect all existing trees subject to arborists advice with setbacks of new pavement as shown.
- Centrally located concrete M-type kerb / channel with asphalt pavement on either side (where shown) to minimise earthworks within parkland.
- New bollards to limit vehicle access around trees while maintaining pedestrian access.
- Loading zone - suitable for heavy vehicles. Relocate fire hydrant if required.
- Remove vehicle access and carparking, topsoil and grass.
- Possible new large-growing shade trees.
- Possible future street trees (indicative - subject to services setbacks, detailed design and suitable for under OH powerlines).
- Existing poor quality tree to be removed.
- Replace loose stone with exposed aggregate concrete, or similar, to ensure weed free maintenance. Refurbish or replace existing fence and railing.
- Footpath connection (complete).
- Limited, unit picnic tables for casual use.
- Future services connections (water, power, sewer) for possible event usage.
- Long vehicle / caravan parking.
- Improved pedestrian safety with concrete footpath, connections and at-grade road ("wombat") crossings as shown. Line-marked carparks including accessible space.
- Consider use of area, informal carparking and pedestrian access to suit future use of building.

Notes

1. Drawing PLA595-L01 revision B issued 12/11/2024.
2. This plan is based on conceptual civil designs by Driscoll Engineering Services Pty Ltd, Scott Campbell Design & Drafting Pty Ltd and advice from Hepburn Shire Council and aerial photograph sourced from Nearamaps dated 9/2/2023.
3. This drawing is conceptual only for consultation and subject to detailed engineering design and an arborist assessment.

▶ RECORD OF COUNCILLOR ATTENDANCE

MEETING	Councillor Briefing	DATE	Tuesday, December 02, 2025
LOCATION	<input checked="" type="checkbox"/> Council Chamber <input type="checkbox"/> Video Conference <input type="checkbox"/> Other: Click or tap here to enter text.:	TIME	9:30am
COUNCILLORS PRESENT	<input checked="" type="checkbox"/> Cr Brian Hood <input checked="" type="checkbox"/> Cr Lesley Hewitt <input checked="" type="checkbox"/> Cr Don Henderson <input checked="" type="checkbox"/> Cr Tim Drylie <input checked="" type="checkbox"/> Cr Tony Clark <input checked="" type="checkbox"/> Cr Pat Hockey <input checked="" type="checkbox"/> Cr Shirley Cornish		
OFFICERS PRESENT	<input checked="" type="checkbox"/> Acting CEO – Bruce Lucas <input checked="" type="checkbox"/> Acting Director Infrastructure and Delivery – Lace Daniel <input checked="" type="checkbox"/> Director Performance and Transformation – Brooke Holmes <input checked="" type="checkbox"/> Director Development and Community – Ron Torres Manager Community Safety & Health – Khalid Wright Manager Facilities & Circular Economy – Sean Ludeke Coordinator Resource Recovery - Chantelle Hatzinikitas Resource Recovery Officer – Candice Regan Manager Project Delivery – Ben Grounds Coordinator Project – Sam Hattam Project Manager – Elizabeth Atkin Manager Customer, Community & Economy – Jacqui Horwood Reconciliation Officer – Carolyn Sanders Click or tap here to enter text.		

MATTERS CONSIDERED

Agenda attached – CM Reference: DOC/25/47603

CONFLICT OF INTEREST DISCLOSURES

Nil

NOTES:

Cr Lesley Hewitt – arrived at 10:15am

RECORD COMPLETED BY

Director Performance and Transformation – Brooke Holmes

Other:

[Click or tap here to enter text.](#)

Signed:

▶ RECORD OF COUNCILLOR ATTENDANCE

MEETING	Councillor Briefing	DATE	Tuesday, December 09, 2025
LOCATION	<input checked="" type="checkbox"/> Council Chamber <input checked="" type="checkbox"/> Video Conference <input type="checkbox"/> Other: Click or tap here to enter text.:	TIME	10:15am
COUNCILLORS PRESENT	<input type="checkbox"/> Cr Brian Hood <input checked="" type="checkbox"/> Cr Lesley Hewitt <input checked="" type="checkbox"/> Cr Don Henderson <input checked="" type="checkbox"/> Cr Tim Dryllie <input checked="" type="checkbox"/> Cr Tony Clark <input type="checkbox"/> Cr Pat Hockey <input checked="" type="checkbox"/> Cr Shirley Cornish		
OFFICERS PRESENT	<input checked="" type="checkbox"/> Acting CEO – Bruce Lucas <input checked="" type="checkbox"/> Acting Director Infrastructure and Delivery – Lace Daniel <input checked="" type="checkbox"/> Director Performance and Transformation – Brooke Holmes <input type="checkbox"/> Director Development and Community – Ron Torres Manager Planning – Matt Rogers Coordinator Strategic Planning – Genna Walkley Coordinator Engineering – Tim Powell Project Manager – Clay Drysdale Manager Project Delivery – Ben Grounds Coordinator Projects – Sam Hattam Project Manager – Alison Breach Manager Facilities & Circular Economy – Sean Ludeke Property Officer – Karen Menne Coordinator Facilities – Victoria O’Halloran Manager Customer Community and Economy – Jacqui Horwood Community Grants Officer – Adam Ford Click or tap here to enter text.		

MATTERS CONSIDERED

Agenda attached – CM Reference: DOC/25/48509

OR

List matters considered:

Click or tap here to enter text.

CONFLICT OF INTEREST DISCLOSURES

Declared by	Item being considered	Time left meeting	Time Returned
Choose an item.	Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.
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Choose an item.	Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.

▶ RECORD OF COUNCILLOR ATTENDANCE

NOTES:

Director Performance & Transformation – Brooke Holmes joined briefing via Teams at 11:45am

Break at 12:15pm – 12:25pm

Meeting closed 1:25pm

RECORD COMPLETED BY

- A/CEO – Bruce Lucas
- A/Director Infrastructure and Delivery – Lace Daniel
- Director Performance and Transformation – Brooke Holmes
- Director Development and Community – Ron Torres

Other:

Click or tap here to enter text.



Signed:

▶ RECORD OF COUNCILLOR ATTENDANCE

MEETING	Pre-Council Meeting Briefing	DATE	Tuesday, December 16, 2025
LOCATION	<input checked="" type="checkbox"/> Council Chamber <input checked="" type="checkbox"/> Video Conference <input type="checkbox"/> Other: Click or tap here to enter text.:	TIME	4:15pm – 5:15pm
COUNCILLORS PRESENT	<input checked="" type="checkbox"/> Cr Brian Hood <input checked="" type="checkbox"/> Cr Lesley Hewitt <input checked="" type="checkbox"/> Cr Don Henderson <input checked="" type="checkbox"/> Cr Tim Drylie <input checked="" type="checkbox"/> Cr Tony Clark <input checked="" type="checkbox"/> Cr Pat Hockey <input checked="" type="checkbox"/> Cr Shirley Cornish		
OFFICERS PRESENT	<input checked="" type="checkbox"/> CEO – Bradley Thomas <input checked="" type="checkbox"/> Director Infrastructure and Delivery – Bruce Lucas <input checked="" type="checkbox"/> Director Development and Community – Ron Torres <input type="checkbox"/> Director Performance and Transformation – Brooke Holmes Others (Position Title and Name): Click or tap here to enter text.		

MATTERS CONSIDERED

As per Council Meeting Agenda for 16 December 2025.

CONFLICT OF INTEREST DISCLOSURES

Nil.

NOTES

Nil.

RECORD COMPLETED BY

Governance Advisor – Catherine Nurse

Signed:



▶ RECORD OF COUNCILLOR ATTENDANCE

MEETING	Councillor Briefing	DATE	Tuesday, February 03, 2026
LOCATION	<input checked="" type="checkbox"/> Council Chamber <input type="checkbox"/> Video Conference <input type="checkbox"/> Other: Click or tap here to enter text.:	TIME	
COUNCILLORS PRESENT	<input checked="" type="checkbox"/> Cr Brian Hood <input checked="" type="checkbox"/> Cr Lesley Hewitt <input checked="" type="checkbox"/> Cr Don Henderson <input checked="" type="checkbox"/> Cr Tim Drylie <input checked="" type="checkbox"/> Cr Tony Clark <input checked="" type="checkbox"/> Cr Pat Hockey <input checked="" type="checkbox"/> Cr Shirley Cornish		
OFFICERS PRESENT	<input checked="" type="checkbox"/> CEO – Bradley Thomas <input type="checkbox"/> Director Infrastructure and Delivery – Bruce Lucas <input type="checkbox"/> Director Performance and Transformation – Brooke Holmes <input type="checkbox"/> Director Development and Community – Ron Torres Others (Position Title and Name): Click or tap here to enter text.		

MATTERS CONSIDERED

Agenda attached – CM Reference: DOC/26/3524

OR

List matters considered:

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CONFLICT OF INTEREST DISCLOSURES

Declared by	Item being considered	Time left meeting	Time Returned
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NOTES:

<Record late arrivals or early departures>

RECORD COMPLETED BY


- CEO – Bradley Thomas
- Director Infrastructure and Delivery – Bruce Lucas
- Director Performance and Transformation – Brooke Holmes
- Director Development and Community – Ron Torres

▶ RECORD OF COUNCILLOR ATTENDANCE

Other:

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▶ RECORD OF COUNCILLOR ATTENDANCE

MEETING	Councillor Briefing	DATE	Tuesday, February 10, 2026
LOCATION	<input checked="" type="checkbox"/> Council Chamber <input checked="" type="checkbox"/> Video Conference <input type="checkbox"/> Other: Click or tap here to enter text.	TIME	
COUNCILLORS PRESENT	<input checked="" type="checkbox"/> Cr Brian Hood <input checked="" type="checkbox"/> Cr Lesley Hewitt <input checked="" type="checkbox"/> Cr Don Henderson <input checked="" type="checkbox"/> Cr Tim Drylie <input checked="" type="checkbox"/> Cr Tony Clark <input checked="" type="checkbox"/> Cr Pat Hockey <input checked="" type="checkbox"/> Cr Shirley Cornish		
OFFICERS PRESENT	<input type="checkbox"/> CEO – Bradley Thomas <input type="checkbox"/> Director Infrastructure and Delivery – Bruce Lucas <input type="checkbox"/> Director Performance and Transformation – Brooke Holmes (part) <input type="checkbox"/> Director Development and Community – Ron Torres Others (Position Title and Name): Various Managers and Offices per agenda items		

MATTERS CONSIDERED

Agenda attached – CM Reference: DOC/26/4661

OR

List matters considered:

[Click or tap here to enter text.](#)

CONFLICT OF INTEREST DISCLOSURES

Declared by	Item being considered	Time left meeting	Time Returned
Cr Don Henderson	1.3 Legal and other matters	The entire section related to 1.3	Click or tap here to enter text.
Choose an item.	Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.
Choose an item.	Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.

NOTES:

<Record late arrivals or early departures>

RECORD COMPLETED BY

- CEO – Bradley Thomas
- Director Infrastructure and Delivery – Bruce Lucas
- Director Performance and Transformation – Brooke Holmes
- Director Development and Community – Ron Torres

▶ RECORD OF COUNCILLOR ATTENDANCE

Other:

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Signed:

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▶ RECORD OF COUNCILLOR ATTENDANCE

MEETING	Councillor Briefing - Mid-Year Budget and Long-Term Financial Plan Review	DATE	Tuesday, February 10, 2026
LOCATION	<input checked="" type="checkbox"/> Council Chamber <input checked="" type="checkbox"/> Video Conference <input type="checkbox"/> Other: Click or tap here to enter text.:	TIME	
COUNCILLORS PRESENT	<input checked="" type="checkbox"/> Cr Brian Hood <input checked="" type="checkbox"/> Cr Lesley Hewitt <input checked="" type="checkbox"/> Cr Don Henderson <input checked="" type="checkbox"/> Cr Tim Drylie <input checked="" type="checkbox"/> Cr Tony Clark <input checked="" type="checkbox"/> Cr Pat Hockey <input checked="" type="checkbox"/> Cr Shirley Cornish		
OFFICERS PRESENT	<input checked="" type="checkbox"/> CEO – Bradley Thomas <input checked="" type="checkbox"/> Director Infrastructure and Delivery – Bruce Lucas <input checked="" type="checkbox"/> Director Performance and Transformation – Brooke Holmes <input checked="" type="checkbox"/> Director Development and Community – Ron Torres Others (Position Title and Name): Ange Marshall – Manager Financial Services Shey Kuma – Coordinator Finance Sustainability Ben Grounds – Manager Project Delivery Lace Daniels – Manager Operations		

MATTERS CONSIDERED

Agenda attached – CM Reference: DOC/26/4831

OR

List matters considered:

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CONFLICT OF INTEREST DISCLOSURES

Declared by	Item being considered	Time left meeting	Time Returned
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NOTES:

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RECORD COMPLETED BY

- CEO – Bradley Thomas
- Director Infrastructure and Delivery – Bruce Lucas

▶ RECORD OF COUNCILLOR ATTENDANCE

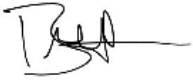
Director Performance and Transformation – Brooke Holmes

Director Development and Community – Ron Torres

Other:

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Signed:

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▶ RECORD OF COUNCILLOR ATTENDANCE

MEETING	Pre-Council Meeting Briefing	DATE	Tuesday, February 24, 2026
LOCATION	<input checked="" type="checkbox"/> Council Chamber <input type="checkbox"/> Video Conference <input type="checkbox"/> Other: Click or tap here to enter text.:	TIME	
COUNCILLORS PRESENT	<input type="checkbox"/> Cr Brian Hood; <input type="checkbox"/> Cr Tim Drylie; Cr Pat Hockey; Cr Don Henderson; Cr Shirley Cornish; Cr Tony Clark.		
OFFICERS PRESENT	<input type="checkbox"/> CEO – Bradley Thomas <input type="checkbox"/> Director Infrastructure and Delivery – Bruce Lucas <input type="checkbox"/> Director Performance and Transformation – Brooke Holmes <input type="checkbox"/> Director Development and Community – Ron Torres Manager Project Delivery – Ben Grounds Manager Facilities and Circular Economy – Sean Ludeke Manager Community Safety and Delivery – Khalid Wright Click or tap here to enter text.		

MATTERS CONSIDERED

Agenda attached – CM Reference: DOC/26/6658

OR

List matters considered:

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CONFLICT OF INTEREST DISCLOSURES

Declared by	Item being considered	Time left meeting	Time Returned
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NOTES:

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RECORD COMPLETED BY

Director Performance and Transformation – Brooke Holmes

Other:

▶ RECORD OF COUNCILLOR ATTENDANCE

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Signed:

▶ RECORD OF COUNCILLOR ATTENDANCE

MEETING	Councillor Briefing	DATE	Tuesday, April 07, 2026
LOCATION	<input checked="" type="checkbox"/> Council Chamber <input checked="" type="checkbox"/> Video Conference <input type="checkbox"/> Other: Click or tap here to enter text.:	TIME	9am - 12.30pm
COUNCILLORS PRESENT	<input type="checkbox"/> Cr Brian Hood <input checked="" type="checkbox"/> Cr Lesley Hewitt <input checked="" type="checkbox"/> Cr Tim Drylie <input checked="" type="checkbox"/> Cr Tony Clark <input checked="" type="checkbox"/> Cr Pat Hockey <input checked="" type="checkbox"/> Cr Shirley Cornish		
OFFICERS PRESENT	<input checked="" type="checkbox"/> CEO – Bradley Thomas <input checked="" type="checkbox"/> Director Community and Development – Ron Torres <input checked="" type="checkbox"/> Director Infrastructure and Delivery – Bruce Lucas <input type="checkbox"/> Director Performance and Transformation – Brooke Holmes Others (Position Title and Name): Jacqui Horwood, Manager Customer Community & Economy Erin Vanzetta Corporate Planning and Performance Officer Click or tap here to enter text.		

MATTERS CONSIDERED

Agenda attached – CM Reference: DOC/26/11902

OR

List matters considered:

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CONFLICT OF INTEREST DISCLOSURES

Declared by	Item being considered	Time left meeting	Time Returned
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NOTES:

<Record late arrivals or early departures>

RECORD COMPLETED BY

CEO – Bradley Thomas

▶ RECORD OF COUNCILLOR ATTENDANCE

- Director Infrastructure and Delivery – Bruce Lucas
- Director Performance and Transformation – Brooke Holmes
- Director Development and Community – Ron Torres

Other:

Click or tap here to enter text.

Signed:



RECORD OF COUNCILLOR ATTENDANCE

MEETING	Budget Workshop	DATE	Tuesday, April 14, 2026
LOCATION	<input type="checkbox"/> Council Chamber <input type="checkbox"/> Video Conference <input type="checkbox"/> Other: Click or tap here to enter text.	TIME	
COUNCILLORS PRESENT	<input type="checkbox"/> Cr Brian Hood <input type="checkbox"/> Cr Lesley Hewitt <input type="checkbox"/> Cr Don Henderson <input type="checkbox"/> Cr Tim Drylie <input type="checkbox"/> Cr Tony Clark <input type="checkbox"/> Cr Pat Hockey <input type="checkbox"/> Cr Shirley Cornish		
OFFICERS PRESENT	<input type="checkbox"/> CEO – Bradley Thomas <input type="checkbox"/> Director Infrastructure and Delivery – Bruce Lucas <input type="checkbox"/> Director Performance and Transformation – Brooke Holmes <input type="checkbox"/> Director Development and Community – Ron Torres Others (Position Title and Name): Click or tap here to enter text.		

MATTERS CONSIDERED

Agenda attached – CM Reference: [Click or tap here to enter text.](#)

OR

List matters considered:

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CONFLICT OF INTEREST DISCLOSURES

Declared by	Item being considered	Time left meeting	Time Returned
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NOTES:

<Record late arrivals or early departures>

RECORD COMPLETED BY

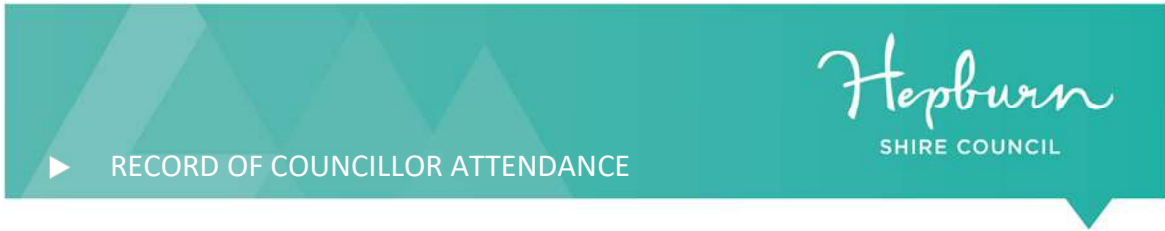
RECORD OF COUNCILLOR ATTENDANCE

- CEO – Bradley Thomas
- Director Infrastructure and Delivery – Bruce Lucas
- Director Performance and Transformation – Brooke Holmes
- Director Development and Community – Ron Torres

Other:

Click or tap here to enter text.

Signed:



MEETING	Councillor Briefing	DATE	Tuesday, April 21, 2026
LOCATION	<input checked="" type="checkbox"/> Council Chamber <input checked="" type="checkbox"/> Video Conference <input type="checkbox"/> Other: Click or tap here to enter text.:	TIME	Full day
COUNCILLORS PRESENT	<input checked="" type="checkbox"/> Cr Brian Hood (part) <input type="checkbox"/> Cr Lesley Hewitt <input checked="" type="checkbox"/> Cr Tim Drylie <input checked="" type="checkbox"/> Cr Tony Clark <input checked="" type="checkbox"/> Cr Pat Hockey <input checked="" type="checkbox"/> Cr Shirley Cornish		
OFFICERS PRESENT	<input checked="" type="checkbox"/> CEO – Bradley Thomas <input checked="" type="checkbox"/> Director Infrastructure and Delivery – Bruce Lucas <input checked="" type="checkbox"/> Director Performance and Transformation – Brooke Holmes <input checked="" type="checkbox"/> Director Development and Community – Ron Torres Others Click or tap here to enter text.: Manager Facilities and Circular Economy - Sean Ludeke Coordinator Facilities - Victoria O'Halloran Property Officer – Karen Menne Manager Financial Services - Ange Marshall Coordinator Finance-Sustainability - Shey Kuma Manager Planning - Matt Rogers Coordinator Statutory Planning - Amanda Firenze Coordinator Strategic Planning - Genna Walkley Statutory and Strategic Planner - Rebekah Forrest		

Commented [BT1]: Can you please add full name and position of
 Sean, Tori, Karen, - from facilities
 Ange and Shey - finance
 Matt, Amanda, Genna, Rebekah - Planning

Commented [AG1R2]: Completed as requested 21/4/2026 - please advise if more changes required. Adela

MATTERS CONSIDERED

Agenda attached – CM Reference: DOC/26/13327

OR

List matters considered:

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CONFLICT OF INTEREST DISCLOSURES

Declared by	Item being considered	Time left meeting	Time Returned
Choose an item.	Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.
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▶ RECORD OF COUNCILLOR ATTENDANCE

NOTES:

Cr Hood in attendance only in part

RECORD COMPLETED BY

- CEO – Bradley Thomas
- Director Infrastructure and Delivery – Bruce Lucas
- Director Performance and Transformation – Brooke Holmes
- Director Development and Community – Ron Torres

Other:

Click or tap here to enter text.

Signed:

A handwritten signature in black ink, appearing to be "BT", written over a horizontal line.

RECORD OF COUNCILLOR ATTENDANCE

MEETING	Pre-Council Meeting Briefing	DATE	Tuesday, April 28, 2026
LOCATION	Council Chamber Video Conference Other:	TIME	4.17pm
COUNCILLORS PRESENT	Cr Tony Clark Cr Shirley Cornish Cr Brian Hood <input type="checkbox"/> (online) Cr Lesley Hewitt Cr Pat Hockey <input type="checkbox"/>		
OFFICERS PRESENT	<input type="checkbox"/> CEO – Bradley Thomas (apology arrived 5pm) <input type="checkbox"/> Director Infrastructure and Delivery – Bruce Lucas <input type="checkbox"/> Director Performance and Transformation – Brooke Holmes <input type="checkbox"/> Director Development and Community – Ron Torres Others (Position Title and Name): Jacqui Horwood, Manager Customer Community and Economy, Allison Watt, Governance Coordinator		

MATTERS CONSIDERED

Agenda attached – CM Reference: DOC/26/14216

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CONFLICT OF INTEREST DISCLOSURES

Declared by	Item being considered	Time left meeting	Time Returned
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Choose an item.	Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.
Choose an item.	Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.

RECORD OF COUNCILLOR ATTENDANCE

NOTES:

CEO Bradley Thomas was an apology but joined the briefing at 5pm. The briefing concluded at 5.08pm.

RECORD COMPLETED BY

Allison Watt, Governance Coordinator

Signed: *Allison Watt*

28 April 2026

Document number: DOC/26/10332