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Fit for the Future

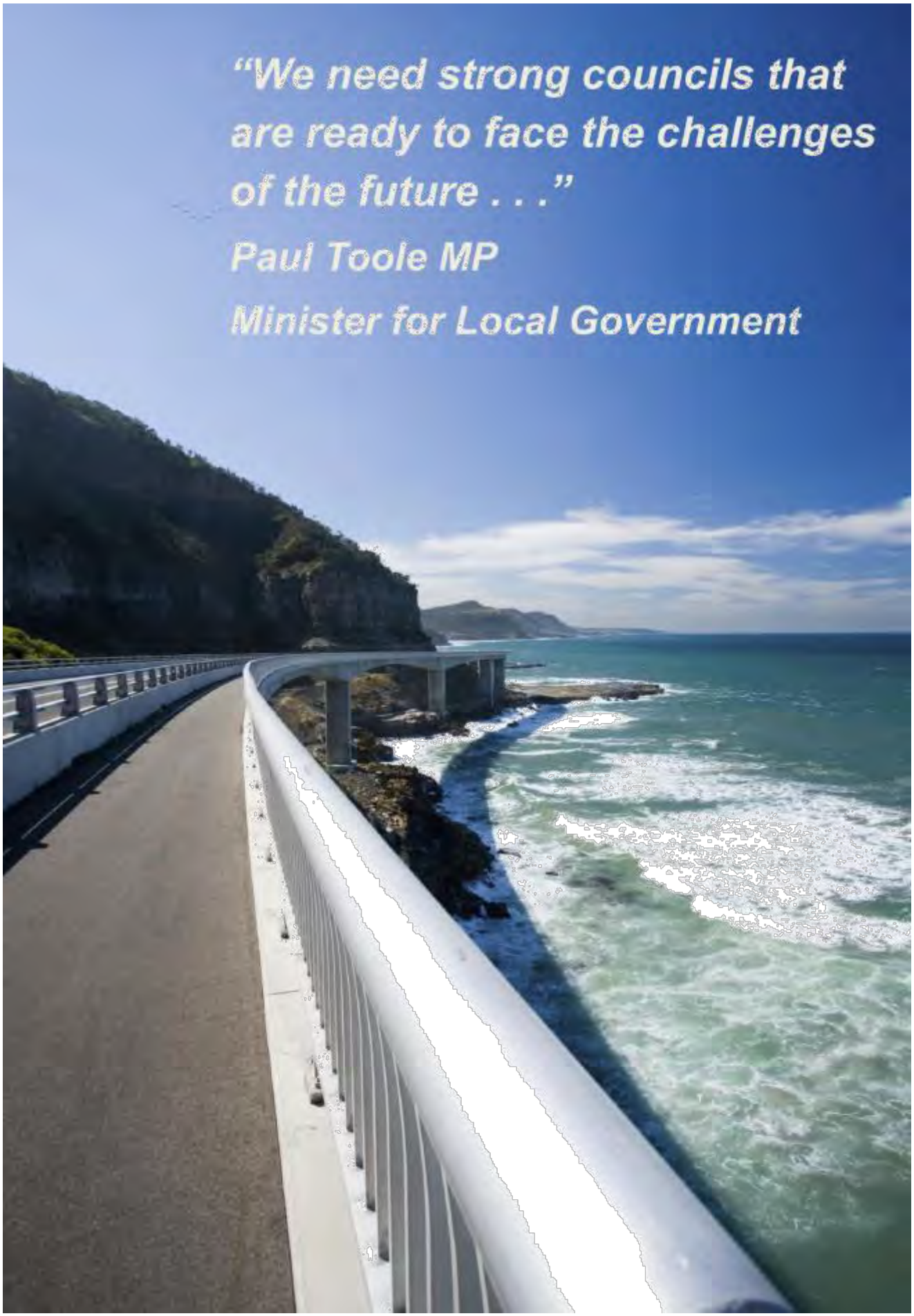
Guidance material

Completing Template 1:

Council Merger Proposal

NSW Office of Local Government

October 2014


"We need strong councils that are ready to face the challenges of the future . . ."
Paul Toole MP
Minister for Local Government

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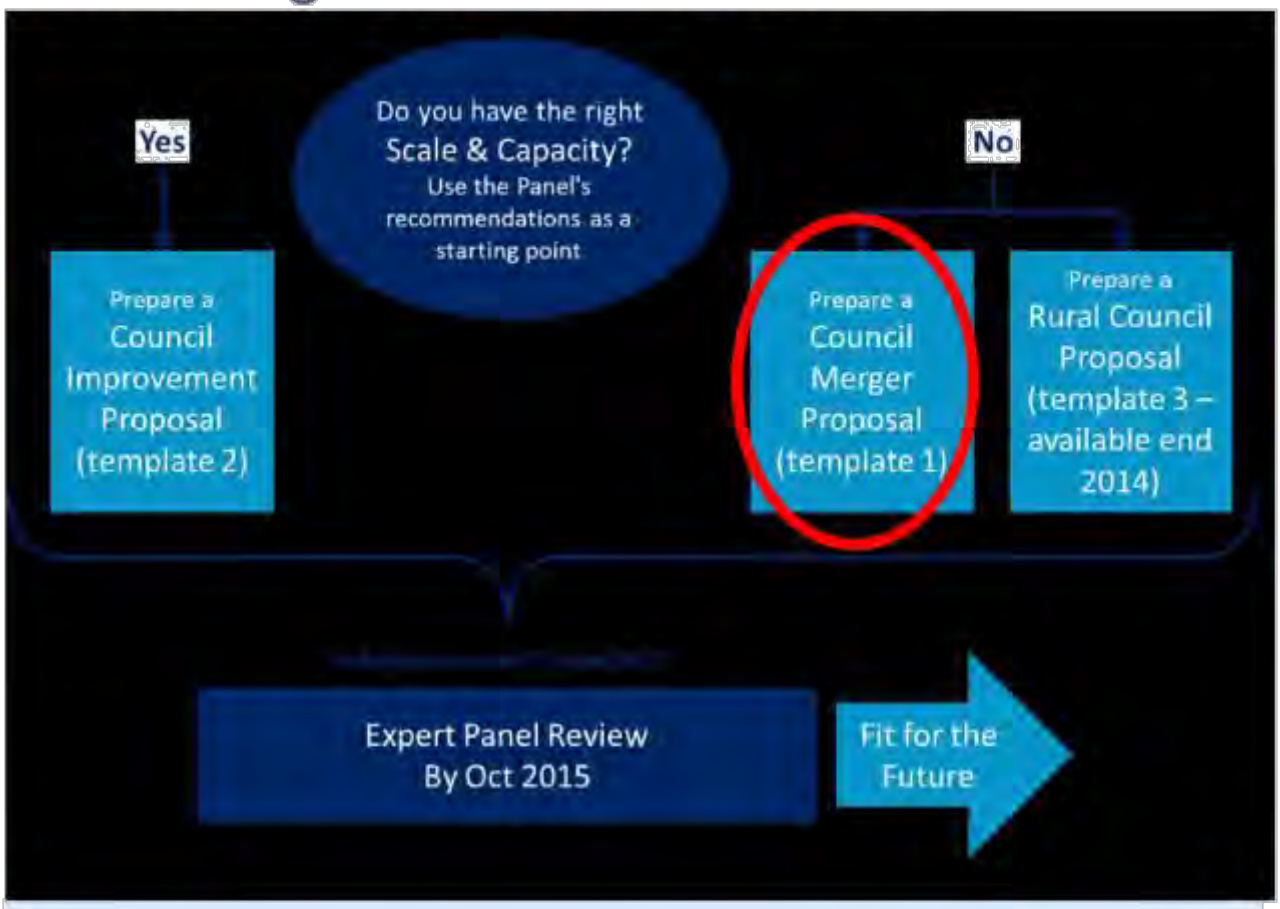
Produced by the Office of Local Government

About this guide . . .

This guide will assist councils in preparing a plan to become Fit for the Future. It explains the process and support available, and provides guidance on completing Template 1. Councils completing Template 1 are asked to outline the agreed merger proposal, the benefits and costs of the proposal and explain how the community has been informed and involved. To assist the new entity to plan the change, councils are also asked to provide an estimate of how the new entity will work towards achieving the Fit for the Future benchmarks.

The group of councils proposing the merger may choose one of their number to complete the Template on their behalf. However, the proposal must include information relevant to all group members, as well as the endorsement of each proposed merger partner.

Becoming Fit for the Future . . .



Is this the right template for our council?

This template is designed for councils that intend to undertake a voluntary merger.

You should only complete this template if you are satisfied that the newly merged council being proposed will be of the appropriate scale and capacity.

The recommendations of the Independent Panel are a starting point to help you with this assessment.

4

What information will help us to prepare our proposal?

Your current Integrated Planning and Reporting (IP&R) documents should be the starting point for your Fit for the Future Proposal. IP&R draws your council's plans together to ensure issues are not regarded in isolation. It is important to maintain this integrated approach when preparing your Merger Proposal.

Community Strategic Plan

The priorities identified by your community, both locally and regionally should help to inform your Merger Proposal. How will the proposed merger help you to achieve your community's goals and priorities? The CSP also serves as a guide to your community's expectations regarding services and infrastructure. How will you continue to address these expectations in the newly-merged council?

Long Term Financial Plan

Preparing this plan has already given your council the opportunity to undertake financial modelling for the future, and prepare financial projections for the resourcing required to meet your community's needs. The financial analysis undertaken in the LTFP and the forward estimates and budgets prepared for your Delivery Program and Operational Plan will be important in completing your Merger Business Case and assessing the benefits of the proposal. If the Merger Proposal is approved, further planning will be required to help the new council meet the Fit for the Future benchmarks.

Asset Management Strategy

The Asset Management Strategy and Asset Management Plans prepared for IP&R should give you a clear understanding of the current state of your council's assets and the investment and works required to maintain them at the standards expected by your community. Councils with an infrastructure backlog will need to consider how they will continue to address this issue post merger. If the Merger Proposal is approved, further planning will be required to help the new council meet the Fit for the Future benchmarks.

Workforce Management Strategy

Your workforce planning will be helpful in completing your Merger Business Case. Your Merger Proposal will need to consider the new council's capacity to attract and maintain suitably qualified staff and to deal with your specific workforce challenges.

Delivery Program and Operational Plan

These documents give you a perspective of your community's current priorities and how your council is travelling in delivering these priorities within specification and budget. They will provide important information for your Merger Proposal.

Other useful documents

Other documents you may wish to reference in preparing your Merger Proposal include: Your council's TCorp analysis report and Infrastructure Audit results; the Sydney Metropolitan Strategy; regional plans, such as Regional Growth Strategies and Economic Development Strategies; your council's land use and environmental strategies and community development plans, and other research undertaken by the Independent Panel during the Review.

What support is available to our council?

Facilitators

- The NSW Government has assembled a Panel of fully-funded expert facilitators to help councils begin the discussions with their neighbours about structural change and provide support as they discuss the options and issues.

Relationship Managers

- Your Regional Relationship Manager is there to support your council through the Fit for the Future process. He or she can help you to access the services of Facilitators and arrange for a Merger Business Case to be prepared.

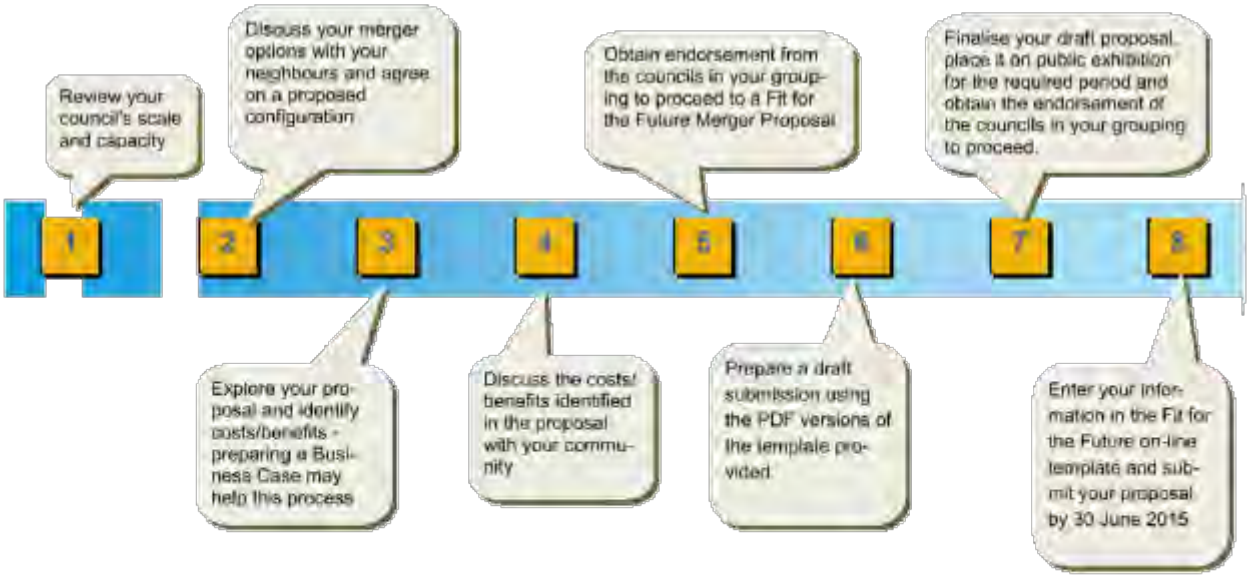
Self-Assessment Tool

- The OLG has prepared a Self Assessment Tool to help councils get a clearer picture of their current performance against the Fit for the Future criteria. Completing the Self-Assessment may improve your understanding of the challenges facing your council and how structural change may assist in overcoming them.

Business Case

- The NSW Government will provide 50% of the cost of preparing a Business Case for proposed mergers and provide access to a team of skilled professionals to carry out the work.

How do we prepare and submit our proposal?



Step 1

Addressing the question of scale and capacity

Determining the appropriate scale for your council is a complex exercise. It involves considering a wide range of issues - some of which may be challenging for your community.

The Independent Pricing and Regulatory Tribunal recommended that councils should address Scale and Capacity before considering the other three criteria.

Your council's assessment of whether it has appropriate scale and capacity will determine which template you complete.

While it is important to acknowledge current views and attitudes when considering scale and capacity, it is also important to consider opportunities and options for the future.

The Independent Local Government Review Panel carried out extensive research and consultation on the question of scale and capacity and has made recommendations regarding each council in NSW.

In making its recommendations, the Panel did not take a "one size fits all" approach to scale and capacity. It did not set a minimum geographic or population size. It looked at the unique characteristics of each area—geography, economic and transport flows, communities of interest and local identity. The Panel made recommendations to ensure each council was able to meet the key elements of strategic capacity*:

- More robust revenue base and increased discretionary spending
- Scope to undertake new functions and major projects
- Ability to employ a wider range of skilled staff
- Knowledge, creativity and innovation
- Advanced skills in strategic planning and policy development
- Effective regional collaboration
- Credibility for more effective advocacy
- Capable partner for State and Federal agencies
- Resources to cope with complex and unexpected change
- High quality political and managerial leadership.

The starting point for all Fit for the Future proposals is therefore the Independent Panel's final report.

These recommendations should serve as a guide for your Fit for the Future proposal.

You do not have to adopt the exact recommendations of the Panel (in some cases, several options were presented) but your proposal should demonstrate how your council has scale and capacity.

If the Panel recommended a merger for your council, this should be the first option that you consider.

If you support the Panel's position - or an alternative merger proposal broadly consistent with the Panel's proposal, then you should proceed with Template 1 - the Merger Proposal.

The following pages explain how to work through each section of the template.

** Box 8, p 32 of Revitalising Local Government, Final Report of the Independent Local Government Review Panel.*

Step 2 Completing the template . . .

Section 1: The proposed merger

1.1 Forming a new council

Purpose

This section confirms which councils have agreed to be part of the Merger Proposal.

How to complete

- Identify the councils that have agreed to participate in the new structure.
- Nominate the date that each council resolved to support the merger.

Things to consider

- It is important that each council that is party to the merger fully participates in this process.
- The proposal should reflect an agreed position in terms of the merger and the anticipated outcomes (ie, costs and benefits of the merger and the impact of the merger on the residents and ratepayers).

1.2 Agreed boundary changes

Purpose

To clarify whether additional boundary changes are proposed as part of the new structure.

How to complete

- Identify any proposed external boundary changes associated with the proposal and explain the reasons for these proposed changes.
- You should attach maps indicating the boundary change proposals.
- Provide evidence that the affected councils have agreed to the proposal.

Things to consider

- How will the proposed boundary changes impact on the affected councils' Fit for the Future proposals?

1.3 Scale and capacity

Purpose

To confirm whether the proposed new structure will create sufficient scale and capacity broadly consistent with the recommendations of the Independent Local Government Review Panel.

How to complete

- Identify if your proposed new structure is the same as the recommendations of the Independent Local Government Review Panel.
- In some cases the Panel recommended several structural options for councils. Your proposal should be the same as one of these in order to answer 'Yes'.
- If your proposal is not the same as the Panel's recommendations, please explain why.

Things to consider

- You should refer to the guidance on Scale and Capacity on Pg 7 when making this assessment
- You may also wish to reference your Merger Business Case in addressing this section.

Section 2: The outcome

2.1 Delivering key priorities and addressing challenges

Purpose

This section defines the community, economic, social and environmental priorities for the new council and describes how the merger will assist in delivering these priorities and meeting the challenges the councils currently face.

This will provide a basis for Local Transition Committees, to be established once the merger is approved, to plan implementation.

How to complete

- Use the priorities already identified by each council in its Community Strategic Plan as a starting point.
- Describe how the merger will assist in achieving these priorities in terms of increased capabilities and resourcing, or increased strategic capacity.
- Consider the challenges facing the communities and what needs to be done to overcome them in implementing the merger.

Things to consider

- Consider the priorities outlined in the Community Strategic Plans, and in other relevant plans (e.g. Sydney Metropolitan Strategy) including:
  - economic priorities
  - environmental priorities
  - social priorities.
- Consider challenges faced in the past in delivering these priorities and identify how these challenges will be overcome through the merger.
- Consider any tensions between the current priorities of councils within the proposed grouping.
- You may also wish to draw on regional priorities previously identified in your CSP, or collaborative work with other councils and identify how the new structure will help you achieve these outcomes.
- You may wish to attach information from your Merger Business Case to support your submission.

If you need help to undertake a merger business case to support your proposal, contact the One Stop Shop or your council's regional Relationship Manager for details.

2.2 & 2.3 Considering benefits and costs of the proposal

Purpose

These sections provide an overview of the financial and non-financial benefits and costs associated with the proposal.

How to complete

- List the anticipated benefits and costs that will occur as a result of the merger.
- Only include incremental benefits/costs that are a consequence of the merger (i.e. exclude any benefits/costs that were likely to occur without the merger)
- Describe in qualitative and quantitative (where possible) terms the estimated impact of the benefit/cost and any assumptions that underpin the achievement of these benefits/costs.
- Identify the overall net benefit or cost if possible.
- Highlight any potential risks associated and what could be done to mitigate these risks.
- You may wish to attach your Merger Business Case and/or other supporting material to demonstrate the benefits, how they will be achieved and how the costs will be addressed.

Things to consider

- Councils may wish to get funding from the Government to prepare a Merger Business Case or may wish to access existing tools to prepare a cost benefit analysis eg NSW Treasury Guidelines on cost-benefit analysis.
- You may also wish to refer to the guidance on Scale and Capacity on Pg 7 when identifying potential non-financial benefits.
- Consider the impact of the Government funding to support mergers in delivering the benefits and mitigating potential costs.
- Consider the costs that are likely to occur as a direct result of the merger, for example, implementation and consultation costs, impact on local employment and employee numbers. Ongoing costs should also be identified including qualitative and quantitative costs.
- Findings from your community consultation may assist in identifying benefits and costs associated with the proposed merger.

Section 3: Community involvement

3.1 - 3.2 Discussing the options and impact

Purpose

These sections identify the level of community awareness of the merger proposal.

How to complete

- Provide an overview of the strategies your councils used to discuss the merger proposal with their respective communities.
- Your response should include confirmation that the minimum public exhibition period for the proposal has been achieved by each of the participating councils.
- Describe how the benefits and costs of the proposal were explained to the community.
- What methodologies did your councils use to communicate the information? eg brochures, website, social media, public meetings etc.

Things to consider

- The Independent Panel conducted extensive consultation in determining the recommendations for mergers. Future consultation should build on this and focus on explaining the benefits to communities.
- You may wish to attach a copy of the communications plan your councils used during the community engagement process.
- You may also wish to attach examples of some of the material circulated by your councils to help the community participate in the discussions.
- Links to web-based information or results of community surveys/polls could also be included.
- Councils should also identify how council staff have been consulted on the proposal.

3.3 Community response

Purpose

To identify the benefits and concerns highlighted in the community response.

How to complete

- Provide an overview of the benefits and concerns identified by the community when considering the Merger Proposal.
- You may provide quantitative or qualitative information in your response, depending on the methodologies used to discuss the options with the community.

Things to consider

- You may wish to refer to any community surveys or polls undertaken when preparing your proposal, or provide references to on-line resources or relevant social media.
- If your councils have prepared a draft communications strategy for the transition period, you may wish to reference this document or attach the Executive Summary.

Section 4: Expected performance improvements

Purpose

The purpose of this section is to highlight the new council's anticipated performance against the Fit for the Future benchmarks, to support implementation planning.

How to complete

- Indicate your expected future performance (2016-17 to 2019-20) for each of the Fit for the Future benchmarks.
- Estimates are sufficient for this exercise - more detailed modelling will take place in the transition period.
- The new entity is not required to demonstrate it will meet the benchmarks by 2020. This section simply assists councils in identifying the possible strengths and challenges facing the new entity, to support implementation planning.

Things to consider

In describing what is driving your new council's performance against the Fit for the Future benchmarks, key considerations include:

- Timeframe for transitioning to the new organisation
- Resources available to implement action
- Demographic factors that make improvement challenging
- Off-sets and transition agreements that may affect performance improvement.

Office of Local Government

Council Merger Proposal

Template 1

Fit for the Future

Getting started . . .

Before you commence this template, please check the following:

- You have chosen the correct template – only councils that are intending to merge should complete Template 1
- You have obtained a copy of the guidance material for Template 1 and instructions for completing each question
- You have undertaken analysis of the costs and benefits of the proposed merger. This could include preparing a Merger Business Case for your proposal.
- Each council has met the minimum public exhibition requirements for the proposal (28 days) and consulted with staff
- Your submission has been endorsed by a resolution of each council involved in the proposed merger.

1. The proposed merger

N.B. This template should be endorsed by all councils within the proposed merger group. The council completing the template on the group's behalf should ensure that endorsements from the other councils are attached to the submission.

1.1 Which councils have agreed to merge and form a new council?

Council name	*Select from the drop-down box*	Date of council resolution to support the merger

1.2 Agreed boundary changes

If there are any external boundary changes proposed in the merger, please provide details below and attach letters of support from the affected councils.

See Guidance material Pg 8 for help completing this section.

1.3 Scale and capacity

Is the proposed merger the same as the Independent Local Government Review Panel recommended for your councils?

(or the same as one option, where more than one was presented)

Yes/No

If NO, please explain:

- Why you have chosen a different grouping
- How your merger proposal is broadly consistent with what the Panel recommended
- How your merger proposal will provide sufficient scale and capacity

For example, your proposal may include different councils from those proposed in the Panel's recommendation

See Guidance material Pg 9 for help completing this section.

2. The outcome

2.1 Delivering key priorities and addressing challenges

2

Priorities	How will the merger help you deliver these priorities?
Priorities for the new council, based on regional plans and the priorities of the existing councils, as identified in their CSPs	
1.	

Challenges	How will the merger help you meet these challenges?
1.	

See Guidance material Pg 10 for help completing this section.

2.2 Financial and non-financial benefits of the merger

Summarise the key benefits of the proposal and the risk management strategies and assumptions that support your findings

Councils may wish to attach a supporting business case and any research/analysis undertaken

Benefits	Impacts	Assumptions	Risks	Mitigation

See Guidance material Pg 11 for help completing this section.

2.3 Financial and non-financial costs of the merger

Summarise the anticipated costs of the proposal and the risk management strategies and assumptions that support your findings.

Councils may wish to attach a supporting business case and any research/analysis undertaken.

Costs	Impacts	Assumptions	Risks	Mitigation

See Guidance material Pg 11 for help completing this section.

3. How has the community been involved?

3.1 Discussing the options

Explain how each council has involved the community in the merger proposal discussions

See Guidance material Pg 12 for help completing this section

3.2 Explaining the benefits and costs

Outline how the benefits and costs of the proposal were explained to your community

You may wish to attach examples of the materials circulated

See Guidance material Pg 12 for help completing this section

3

3.3 Community response

Benefits	Concerns
What were the main benefits identified with the proposal? *Eg: Savings, improved services, lower rates etc*	*What were the main areas of concern?* *Eg: Local identity, taking on debt etc*

See Guidance material Pg 13 for help completing this section.

3

4. How will the merger help you achieve the benchmarks?

Please provide some estimates to show the new organisation's anticipated performance

4

4.1 Expected improvement in performance

Measure/ benchmark	2016/17	2017/18	2018/19	2019/20
Operating Performance Ratio (Greater than or equal to break-even average over 3 years)				
Own Source Revenue Ratio (Greater than 60% average over 3 years)				
Building and Infrastructure Asset Renewal Ratio (Greater than 100% average over 3 years)				
Infrastructure Backlog Ratio (Less than 2%)				
Asset Maintenance Ratio (Greater than 100% average over 3 years)				
Debt Service Ratio (Greater than 0% and less than or equal to 20% average over 3 years)				
Real Operating Expenditure per capita (A decrease in real operating expenditure per capita over time)				

FREQUENTLY ASKED QUESTIONS: PREPARING A FIT FOR THE FUTURE PROPOSAL

Our council has more than one merger option available to it. Can we submit two different Fit for the Future Proposals?

A. No, you should only submit a Proposal for your preferred option. The NSW Government is providing support through facilitation and subsidised merger business case studies to help councils and their communities determine which Proposal presents the best option for them.

Our council has been recommended for a merger with a neighbouring council or councils, but none of these councils are willing to consider a merger with us. How can we achieve appropriate scale and capacity if other councils won't come to the party?

A. Councils placed in such a position should complete Template 2 and explain in Section 1.2 (Scale and Capacity) why they are not able to undertake a voluntary merger. Part 3.5 (Other actions considered) provides an opportunity to outline the steps the council has taken to try and achieve scale and capacity, the outcome of approaches made to neighbouring councils and any evidence supporting the proposed merger.

Some of the reform initiatives haven't been implemented yet, such as the possible redistribution of FAGs.

A. Councils' long-term financial planning has always required them to make certain assumptions and conduct a sensitivity analysis on the potential impacts of external factors. The same process will be applied to their Fit for the Future Proposals. The Templates provide an opportunity for councils to explain the assumptions they have used to carry out their financial modelling.

The Templates focus on quantitative information, but the story behind our council's performance is broader than just financial indicators – how do we include the qualitative information?

A. All councils completing Templates 2 and 3 have the opportunity to explain their operating environment and current strengths/achievements.

Councils that are not yet achieving the benchmarks can tell the story behind this performance in each part of Section 2. There may be reasons why a council operates in a particular way (for example a "no borrowings" policy, or community preferences on resource allocation) and there are opportunities to explain how this affects performance. Councils can also tell the story about how they will address these issues in Section 3 of the Template, the Action Plan.

What level of community consultation is expected when preparing our Fit for the Future Proposal?

A. All councils are encouraged to work with their community, including council staff, in preparing their Proposals.

Councils that are preparing a Template 1 Merger Proposal will need to explain how they have discussed the potential benefits and costs of the proposal with their community and considered their concerns. There is a minimum 28 day public exhibition period required for merger proposals.

Councils preparing a Template 2 or 3 Proposal may wish to draw on consultation that have recently completed for their Integrated Planning and Reporting requirements, or undertake a specific consultation. It is up to each council to decide, based on the details of their Proposal.

Q. What happens if our council decides not to prepare a Fit for the Future Proposal?

A. Preparing a Fit for the Future Proposal allows councils to demonstrate their performance against standard industry benchmarks and to show they have made an objective and evidence-based assessment of their future options. Where councils are not prepared to undertake these assessments, their community has a right to ask why. Councils that choose not to participate in the process will automatically exclude their community from the benefits that Fit for the Future councils enjoy, such as access to cheaper finance for community infrastructure.

How were the Fit for the Future Criteria and benchmarks decided?

A. The Independent Local Government Review Panel identified a series of essential elements for an effective system of local government. The four Fit for the Future criteria are based on these elements.

The measures and benchmarks were developed in consultation with TCorp and reviewed by IPART. When determining the methods of calculation, the OLG drew on advice from TCorp, as well as feedback it had previously received from councils.

Our council meets all the financial, asset management and efficiency benchmarks, but the Panel has recommended us for a merger. If we already meet the benchmarks, why do we need to consider a merger? Can we complete Template 2 or 3?

A. Becoming Fit for the Future is about addressing all four criteria – the first of which is Scale and Capacity.

If the Panel has recommended a merger for your council, you will need to address this issue in your Proposal. You do not have to adopt the exact recommendations of the Panel, but you should show that your council has appropriate scale and capacity.

Our council can't achieve all the benchmarks by 2020, in fact, we may never achieve some of them, such as Own Source Revenue. How can we become Fit for the Future?

A. Becoming Fit for the Future is a process. It is not expected that every council can achieve all the benchmarks by 2020.

The point of the process is to show that:

Your council has done everything it can to achieve the appropriate scale and capacity

Your council has a credible plan to move towards achieving the benchmarks over time.

The Independent Expert Panel will assess whether your council has a credible plan to become Fit for the Future.

CENTRAL WEST LIBRARIES - BLAYNEY SHIRE COUNCIL CONTRIBUTION
PROPOSED 10 YEAR FINANCIAL PLAN

					ESTIMATES								
	2013/14	2014/15 Original	2014/15 Revised	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	*10 year Average*
Branch Expenses														
Employee costs	44,080	54,780	54,780	55,870	59,220	60,800	62,430	64,100	65,810	67,570	69,370	71,240	73,150	
Other Expenses														
CWL Operations (8.8%)	79,817	87,955	90,114	94,317	96,033	98,416	100,600	102,853	105,172	107,640	110,757	-13,550	-16,526	
Net CWL Capital (8.8%)	18,070	18,540	20,699	24,380	27,597	20,733	21,293	24,823	25,765	29,770	31,477	35,751	37,724	
Radio frequency identification (RFID) system project				6,150										
	141,967	**161,275**	**165,593**	**180,727**	**177,850**	**179,946**	**184,323**	**191,776**	**196,746**	**204,980**	**211,604**	**770,541**	**777,400**	*3.56%*
Income & Non cash items														
Other Operating Revenues	- 5,320	- 3,420	- 3,420	- 3,434	- 3,488	- 3,545	- 3,603	- 3,663	- 3,724	- 3,787	- 3,852	- 3,919	- 3,988	
Per Capita Grant	- 23,750	- 20,730	- 20,698	- 20,698	- 20,698	- 20,698	- 20,698	- 20,698	- 20,698	- 20,698	- 20,698	- 20,698	- 20,698	
Add back: Depreciation	15,853	17,410	17,410	17,408	17,438	17,844	17,844	17,844	17,844	17,844	18,250	18,290	18,295	*4.56%*
	- 45,920	**- 41,530**	**- 41,528**	**- 41,540**	**- 41,594**	**- 42,087**	**- 42,145**	**- 42,205**	**- 42,266**	**- 42,329**	**- 42,840**	**- 42,907**	**- 42,976**	*-3.43%*
Nett Contribution	**96,047**	**119,745**	**124,065**	**139,187**	**131,256**	**137,859**	**142,178**	**149,571**	**154,480**	**162,651**	**168,464**	**177,634**	**184,424**	
Iora Special Priority Grant		- 5,690	- 5,690	- 5,690	- 5,690									*6.53%*
	96,047	**114,055**	**118,375**	**133,497**	**125,566**	**137,859**	**142,178**	**149,571**	**154,480**	**162,651**	**168,464**	**177,634**	**184,424**	

Blayney Flood Study

BLAYNEY SHIRE COUNCIL

Flood Study Report

DRAFT

30 January 2015

JACOBS

Blayney Flood Study

Project no:	EN04201
Document title:	Flood Study Report
Document no:	
Revision:	DRAFT
Date:	30 January 2015
Client name:	Blayney Shire Council
Client no:	
Project manager:	Akhter Hossain
Author:	Lih Chong, Akhter Hossain
File name:	I:\ENVR\Projects\EN04201\Deliverables\Reports\Blayney Flood Study DRAFT v1.docx

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Document history and status

Revision	Date	Description	By	Review	Approved
0	13-10-2014	Draft Flood Study Report	L Chong	A Hossain	A Hossain
1	30-1-2015	Draft Flood Study Report updated for public exhibition	LC	A Hossain	A Hossain

Contents

Forward

The primary objective of the New South Wales Government's Flood Prone Land Policy is to reduce the impact of flooding and flood liability on individual owners and occupiers of flood prone property, and to reduce private and public losses resulting from floods, utilising ecologically positive methods, wherever possible. Under the Policy, the management of flood prone land remains the responsibility of local government.

The policy provides for a floodplain management system comprising the following five sequential stages:

1.	**Data Collection**	Involves compilation of existing data and collection of additional data
2.	**Flood Study**	Determines the nature and extent of the flood problem
3.	**Floodplain Risk Management Study**	Evaluates management options in consideration of social, ecological and economic factors relating to flood risk with respect to both existing and future development
4.	**Floodplain Risk Management Plan**	Involves formal adoption by Council of a plan of management for the floodplain
5.	**Implementation of the Plan**	Implementation of flood response and property modification measures (including mitigation works, planning controls, flood warnings, flood preparedness, environmental rehabilitation, ongoing data collection and monitoring by Council

Blayney Shire Council proposes to develop a Floodplain Risk Management Plan for the Town of Blayney to address the existing, future and continuing flood problems in accordance with the NSW Floodplain Development Manual (2005).

This report represents the first and the second stages of the management process and has been prepared for Council by Jacobs (Sinclair Knight Merz merged with Jacobs in December 2013). It documents the nature and flooding extents within the Study Area for Blayney and is an essential resource for the subsequent stages of the floodplain management process.

Important note about this report

The sole purpose of this report and the associated services performed by Jacobs is to undertake a flood study for the Town of Blayney located in New South Wales in accordance with the scope of services set out in the contract between Jacobs and Blayney Shire Council (the Client). That scope of services, as described in this report, was developed with the Client.

In preparing this report, Jacobs has relied upon, and presumed accurate, any information (or confirmation of the absence thereof) provided by the Client and/or from other sources. Except as otherwise stated in the report, Jacobs has not attempted to verify the accuracy or completeness of any such information. If the information is subsequently determined to be false, inaccurate or incomplete then it is possible that our observations and conclusions as expressed in this report may change.

Jacobs derived the data in this report from information sourced from the Client, third parties, and/or available in the public domain at the time or times outlined in this report. The passage of time, manifestation of latent conditions or impacts of future events may require further examination of the project and subsequent data analysis, and re-evaluation of the data, findings, observations and conclusions expressed in this report. Jacobs has prepared this report in accordance with the usual care and thoroughness of the consulting profession, for the sole purpose described above and by reference to applicable standards, guidelines, procedures and practices at the date of issue of this report. For the reasons outlined above, however, no other warranty or guarantee, whether expressed or implied, is made as to the data, observations and findings expressed in this report, to the extent permitted by law.

This report should be read in full and no excerpts are to be taken as representative of the findings. No responsibility is accepted by Jacobs for use of any part of this report in any other context.

All topographic data used in this study were sourced from a LiDAR survey and a ground survey which were undertaken by third parties. Undertaking independent checks on the accuracy of the topographic data was outside Jacobs's scope of work for this study.

This report has been prepared on behalf of, and for the exclusive use of, Jacobs's Client, and is subject to, and issued in accordance with, the provisions of the contract between Jacobs and the Client. Jacobs accepts no liability or responsibility whatsoever for, or in respect of, any use of, or reliance upon, this report by any third party.

1. Introduction

1.1 Background

The Town of Blayney is located in the Central West region of New South Wales approximately 240km west of Sydney in the Blayney Shire Council area. Blayney Township (population 3,355 at the 2011 census) is the urban centre of Blayney Shire Council (hereafter Council) and provides the administrative, commercial, retail and industrial centre for the Shire. Blayney is strategically located on the junction of the Mid-Western Highway and the road between Orange and Goulburn. It is also located on the intersection of the Main Western Railway and the Blayney – Demondrille Railway, which provides a link between the Western and Southern lines and direct rail access into Melbourne.

The town is located in the upper reaches of the catchment, so flooding occurs with little or no warning, other than the contributory rain. Severe weather events in September and December 2010 and March 2012 resulted in the Belubula River and its tributaries all experiencing high flows which caused damage to the infrastructure including roads and bridges. Roads were closed in the town due to elevated water levels and SES attended houses in the area.

Council proposes to develop a Floodplain Risk Management Plan for the Town of Blayney to address the existing, future and continuing flood risk. Council wishes to develop formal floodplain risk management strategies to provide an appropriate level of protection for the community. Further, Council wishes to develop formal emergency management strategies to effectively manage the continuing flood risk for Blayney. Hence, Council proposes to develop a Floodplain Risk Management Plan in phases, in accordance with the NSW Government's (2005) Floodplain Development Manual. Initial investigations (including data collection and review of all relevant data) and a Flood Study, are components of the first phase (Phase 1). A Floodplain Risk Management Study (the Study) and Plan (the Plan) will be developed in the second phase (Phase 2), with the Plan being implemented in the third phase (Phase 3).

Sinclair Knight Merz (operating as Jacobs since December 2013) was engaged by Council in May 2013 to develop a Floodplain Risk Management Plan for the Town of Blayney encompassing all activities in Phases 1 and 2. This report details outcomes from Phase 1 (Flood Study) of the project.

1.2 Study Area

The town of Blayney sits in the Belubula River valley, part of the larger Lachlan River basin, and is surrounded by rolling hills that range from 890m to 930m above sea level and falling to the river corridor at approximately 850m to 860m. The town generally drains from west to east, with the major watercourse being the Belubula River running north to south along the eastern edge of the urban area (catchment size approximately 120km^2 upstream of the town). Remaining watercourses are either drainage channels or intermittent watercourses that generally run from the higher elevations to the north and west towards the Belubula River in the east. The only other named watercourse is Abattoir Creek (sometimes referred to as Farm Creek and with an approximate catchment of 20km^2), which arises in the rural lands and undulating hills to the north west and drains along the northern edge of town, north of the Main Western Railway, before joining the Belubula River. As a result of this pattern of watercourses and the catchment topography there are potential drainage/flooding issues present in Blayney.

The study area for Blayney is presented in **Figure 1-1**, which shows that the urban area is generally a typical grid pattern running in a north-south and east-west direction. Blayney is the key centre in the Blayney Shire with a variety of land uses including business, industrial, community and residential land uses and open space and recreation.


0
250
500
1,000
Metres
Legend
Railway
Road
Study Area
JACOBS
Study Area
Blayney Flood Study and FRMS&P
Blaney Shire Council
FIGURE 1-1

1.3 Nature of Flooding

The major watercourse adjacent to the town of Blayney is the Belubula River which runs along the eastern edge of the urban area. The remainder of the watercourses are either drainage channels or intermittent watercourses that generally run from the higher elevations to the north and west towards the Belubula River in the east. The only other named watercourse is Abattoir Creek located north of the Main Western Railway. As a result of this pattern of watercourses and the catchment topography there are potential drainage/flooding issues present in Blayney.

During the severe weather events of September and December 2010, and March 2012 the Belubula River and its tributaries all experienced high flows causing damage to infrastructure including roads and bridges. Roads closed in the Town of Blayney due to elevated water levels included Hobbys Yards Road (MR390), Farm Lane, Henry Street and Newbridge Road. State Emergency Services attended houses in the Farm Lane and Henry Street area.

The Abattoir Creek catchment rises to the north-west of Blayney, through the undulating hills of rural lands, before entering the more built up area alongside the Main Western Railway in the vicinity of the old abattoir located at the western end of Hills Street. At the western end of the Intermodal Terminal at Blayney Railway station it joins with an unnamed water course from the urban area to the south of the Newcrest dewatering facility, prior to traveling east toward St Joseph's Central School, located north of the railway line at the intersection of Adelaide and Hill Streets. The school has been affected by overland flows along Abattoir Creek, in recent years, and most notably on 1 June 1990.

The unnamed water course that meets Abattoir Creek rises to the west of the Blayney-Demondrille Railway through rural lands before entering the piped stormwater system, before day lighting at the intersection of Burton and Smith Streets and passing under the Main Western Railway at the western end of the Intermodal Terminal.

Residents have previously complained about ongoing development in the catchment, generating larger overland flows between Burton and Doust Streets exceeding the capacity of the drainage path.

The area to the south-west of Blayney on the western side of the Blayney- Demondrille Railway is generally directed to a single culvert under the railway, despite three culverts existing, and toward the piped system in the vicinity of the intersection Plumb Street and Piggot Place. On 21 December 2007, residents were affected by overland flows causing over floor flooding to dwellings at the lower end of Piggott Place.

To the south of Blayney, there are two drainage paths that carry flows into the urbanised environment. A catchment drains alongside the Mid-Western Highway through open flow paths, before crossing the highway in the vicinity of the Blayney Ambulance Station and passing along a concrete lined open channel to Stillingfleet Street into the piped network. The recently developed Highlands Estate to the south of Polona Street delivers stormwater to a natural watercourse running behind properties to the west of Mount Errol Street before crossing Hobbys Yards Road. Residents complained about surcharging of the stormwater pit at Polona Street to Council.

1.4 Objectives

The objective of this Flood Study is to define the riverine flood behaviour of the Belubula River and Abattoir Creek as well as the overland flood behaviour in Blayney and their possible combined effects of the town area of Blayney. The study produces information on flood levels, velocities and flows for a full range of riverine and overland flood events under existing catchment conditions. These results will enable Council to progress to the next phases in the floodplain risk management process, by identifying the possible management options within the Floodplain Risk Management Study and development of a draft Risk Management Plan (the Plan) for Council's consideration.

The overall development of the Plan is being undertaken in two major phases:

Phase 1

Initial Investigations (Stage 1)

- Undertake a comprehensive site inspection;
- Review of all relevant documents, data and reports and anecdotal evidences on ground;
- Undertake a comprehensive consultation with the local community, Council and relevant agencies;
- Collate and assess all data and information required to satisfy the objective of this study including the current status of the material;
- Identify any "gaps" in the available data including surveys required to complete the study and update all information as required, with the approval of the Council.

Flood Study (Stage 2)

- Establish appropriate hydrologic model/s of both the Belubula River and the sub-catchments for overland flooding assessment to be used in the estimation of design floods for riverine and overland flooding and /or modelling of flood storages;
- Establish appropriate hydraulic model/s for the Belubula River, Farm Creek and overland flowpaths within the study area, to be used in the estimation of design flood levels and modelling of any preferred/ recommended flood mitigation measures;
- Identification of flood velocities and flood levels for 0.5%, 1%, 5% and 20% annual exceedance probability (AEP) events and the Probable Maximum Flood (PMF);
- Mapping of flood extents and peak velocities for all investigated design events and preparing provisional hydraulic and hazard categorisation mapping for the 1% AEP event, and preparing a provisional Flood Planning Area map (based on the 1% AEP flood levels with a 0.5m freeboard).

Phase 2 Floodplain Risk Management Study and Plan (Stages 3 & 4)

- An assessment of potential flood management and mitigation measures in order to achieve improvements necessary to meet the required service levels. Such measures may include flood modification (eg. levees, bypass floodways, retarding basins, channel modifications etc.), property modifications (eg. development control, rezoning, voluntary purchase of high hazard properties, house floor raising, flood proofing etc) and response modification (eg. flood education, flood preparedness, flood warning, local flood plans etc.);
- Estimates of the flood damages in the design floods and annual average damages and their net present worth;
- An economic assessment of the floodplain management measures based on life cycle costs and benefits; and
- Completed application for financial assistance for all recommended mitigation and/or management objectives.

1.5 Structure of the Report

This report describes the outcomes from Phase 1 as defined in **Section 1.4**. The outcomes of the Floodplain Risk Management Study and the Plan (Phase 2) will be produced in separate documents. This report has been divided into the following sections:

Section 1: Introduces the study

Section 2: provides details on the initial investigations undertaken for the study including review of the available data and community consultation

Section 3: details hydrologic assessment undertaken for this study

Section 4: details formulation of a hydraulic model to serve the overall objective of this study

Section 5: provides details on the estimation of design floods

Section 6: provides outcomes from the flood modelling including flood mapping

Section 7: provides conclusions and recommendations on the study

Section 8: acknowledges contribution received from others in undertaking this study

Section 9: provides details on references citied in this report

Section 10: provides the glossary of terms

Appendix A: contains the Newsletter and Questionnaire sent to residents

Appendix B: details on topographic survey

Appendix C: details on hydrologic modelling

Appendix D: provides flood depths and flood extent maps for all design events for the existing conditions

Appendix E: contains peak flow velocity maps

Appendix F: summarises peak flows at selected locations for the design flood events

Appendix G: contains flood hazard maps

Appendix H: contains sensitivity analysis flood impact maps for the 1% AEP events

2. Initial Investigations

2.1 Site Inspection

A site inspection was carried out on 6 June 2013 to gain an overall appreciation of the study area including flood behaviour. Experience gained from the site reconnaissance has been utilised to define the scope of the topographic survey for this study and to determine modelling parameters such as Manning's roughness coefficients for channels and floodplains located within the study area.

2.2 Data Collection and Review

Council and a number of organisations including NSW Office of Water, State Emergency Services (SES), NSW Office of Environment and Heritage (OEH), State Water Corporation and the Bureau of Meteorology were contacted to collect information on flooding, GIS layers, hydrologic and hydrologic investigations undertaken for various projects and flood evacuation etc. Reports and data available to this study are discussed below.

2.2.1 Available Reports

- **Flooding Advice for Proposed Upgrade of Belubula River Crossing at Blayney (August 2012)** prepared by Cardno for Blayney Shire Council - A flood frequency analysis was undertaken on the available recorded streamflow data for two gauging stations on the Belubula River near Blayney for the period 1992 to 2002. Considering the relatively short length of records and the quality of the recorded streamflow data, design discharges in the Belubula River at the proposed crossing was estimated using the Probabilistic Rational Method for Eastern NSW as defined in AR&R 1998. The 20 and 100 year ARI peak discharges in the Belubula River at the proposed crossing in Blayney were estimated at 123 m^3/s and 235 m^3/s respectively. The adopted design discharge for the 2000 year ARI event was 500 m^3/s. In order to undertake the flood impact assessment a local 2D TUFLOW model (grid size 2m x 2m) was assembled of a reach of the Belubula River from downstream of the crossing to a section just downstream of the Railway Line. Constant discharges were used in the 2D TUFLOW model to define flood behaviour at the proposed crossing both under the existing and the proposed conditions. A number of flood maps are referenced in the flood advice prepared by Cardno. However, these maps were not available to this study. Estimated peak flood levels and velocities estimated in the flood study with the proposed crossing are shown in **Table 2-1.**

- **Table 2-1 Estimated Peak Flood Levels and Velocities at the Proposed Crossing**

Location	20 year ARI		100 year ARI		2000 year ARI	
	Flood Level (mAHD)	Velocity (m/s)	Flood Level (mAHD)	Velocity (m/s)	Flood Level (mAHD)	Velocity (m/s)
Upstream	862.21	2.56	862.52	2.61	863.05	2.93
Downstream	862.12	1.72	862.42	2.36	862.84	2.91

- **Draft Blayney Settlement Strategy (October 2010)** prepared by Blayney Shire Council – Blayney is the key town in the Blayney Shire and a mature settlement with a wide range of land uses including business, industrial, community and residential land uses and open space and recreation. The Draft Settlement Strategy recommends several significant changes to the existing land use patterns for Blayney. The strategy identifies that part of the existing urban area of Blayney is located on flood prone land primarily along the Belubula River floodplain and associated drainage channels through the town and has the potential to constrain development, particularly to the east of Blayney.

- **Blayney Shire Local Flood Plan (November 2009 Edition)** – The plan prepared by the SES covers preparedness measures, the conduct of response operations and the coordination of immediate recovery measures from all levels of flooding within the Blayney Shire Council area and includes the town of Blayney. The plan identifies specific roles and responsibilities of emergency service organisations and supporting services.

  A defining characteristic of flooding within Blayney is the rapid rise and fall of floodwaters. The plan identifies that the three major floods on record at Blayney occurred in in October 1934, January 1972 and January 1990. The 1934 flood was the most severe, but those of 1972 and 1990 were of similar heights (4mm and 13mm lower than the 1934 event). The height of the 1972 flood is marked on a concrete wall on Henry Street, Blayney (858.7m AHD). In August 1990, the flood level rose to within 50mm of the 1972 flood mark. Another major flood occurred in June 1952 which may have exceeded the 1934 flood, but no records are available for this event.

  The plan identifies that land within the town of Blayney is largely flood free except for the area along Abattoir Creek and land in the vicinity of the Belubula River (Church, Henry and Burns Streets). Flooding along Abattoir Creek occurs largely due to backwater effects from the Belubula River. The plan identifies that a total of about seven (7) buildings were affected in a major flood and most of these buildings were located in the vicinity of Henry Street between Church and Burns Streets.

  The plan identifies that localised flooding on 21 December 2007 occurred due to a heavy local rainfall of 55mm in a 5-hour period which resulted in over floor flooding of a residential property in Adelaide Street, flooding of lower levels of a business property in Osman Street (near Water Street) and Plumb Street was closed.

- **Blayney Concentrate Dewatering Facility Flood Impact Assessment Report (July 2000)** - The report was prepared by Gilbert and Associates for Cadia Holdings Pty Ltd to address impact of the Blayney Concentrate Dewatering Facility on the flood behaviour in Abattoir Creek. The dewatering facility is located adjacent to Abattoir Creek which drains a catchment 19.5 km² near the dewatering facility. A hydrologic model was developed using RORB for the catchment area of Abattoir Creek to estimate the 100 year average recurrence interval (ARI) event at the dewatering facility. In the absence of recorded streamflow data the RORB model was not calibrated. RORB model parameter values (kc, m and rainfall losses) adopted in the estimation of the 100 year ARI design discharges are not defined in the report. The report considered peak design discharges both in the main channel and a tributary catchment located near the dewatering facility. The report does not identify critical storm durations for the main channel and the tributary catchment. The estimated 100 year ARI peak discharge in Abattoir Creek was 67.2 m^3/s. A hydraulic model was developed using HEC RAS to assess flood impacts due to construction of the dewatering facility which involved some filling within the site for the dewatering facility. The 100 year ARI discharge at the confluence of Belubula River and Abattoir Creek (total catchment area 140 km^2) was estimated at 224 m^3/s applying the Probabilistic Rational Method of AR&R 1998 for eastern NSW.

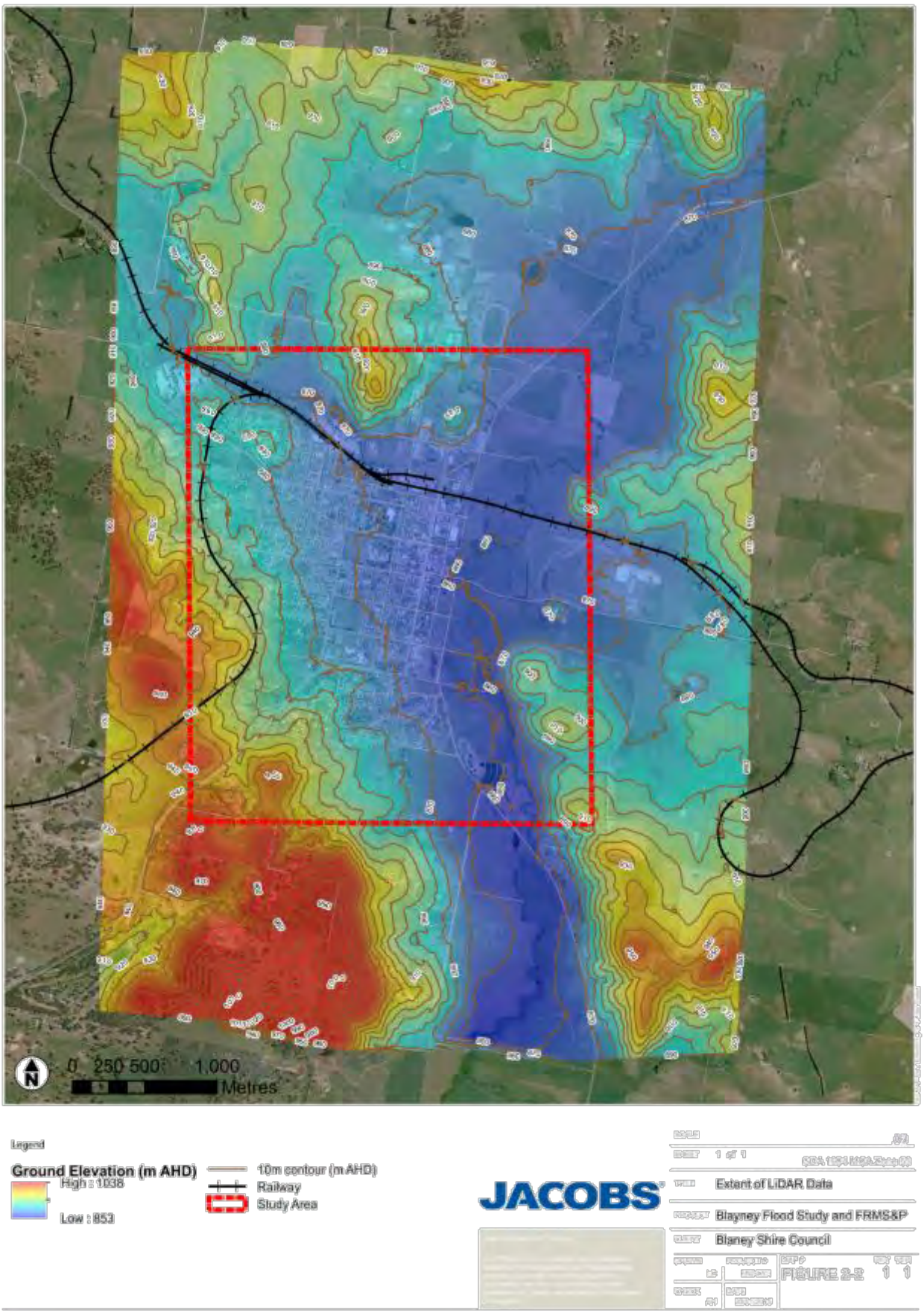
- **New South Wales Inland Rivers Flood Plain Management Studies, Lachlan Valley (1983)** – The report was prepared by Rankine & Hill to recommend a program of works and other measures for floodplain management in the Lachlan Valley. The report identifies flood events of October 1934, January 1972 and January 1990 as the three major floods on record at Blayney. The approximate flood extent during major flood events in Blayney is included in the report and is shown in 1. The report identifies that a total of seven buildings including houses and commercial premises are affected by floodwaters in a major flood. Most of these buildings are located in the vicinity of Henry Street between Church and Burns Streets.

2.2.2 Topographic Data and Imagery

LIDAR data for Blayney was captured by Land and Property Information (LPI) on 5 February 2009. The captured LIDAR data was processed by LPI and 1m, 2m, 5m and 10m digital elevation models (DEM) were provided to Jacobs in ASCII format which covered the entire study area. The extent of the LIDAR data is shown in Figure 2-2. The horizontal spatial accuracy of the data is 0.8m and the vertical spatial accuracy is 0.3m and LPI identified that the accuracy specifications (95% confidence interval) meet ICSM guidelines for digital

elevation data. In addition to the LiDAR data, LPI provided a 50cm imagery (in .ecw format) for Blayney and its surrounding areas captured in 2007 areas and a 10cm imagery for the township of Blayney captured in 2009.

- **Figure 2-1 Approximate Flood Extent During Major Flood Events (Source: Rankine & Hill (1983))**


0 250 500 1,000
Metres
Legend
Ground Elevation (m AHD)
High : 1038
Low : 853
10m contour (m AHD)
Railway
Study Area
JACOBS
Extent of LiDAR Data
Blayney Flood Study and FRMS&P
Blaney Shire Council
FIGURE 2-2

Council provided drawings for the following bridges:

- Engineers working drawings as constructed, Bridge over Belubula River (floodplain bridge), Newbridge Road Blayney dated 13 July 1978, Blayney Shire Council;
- Bridge over Belubula River (2.4km South of Blayney, also known as Hobbys Yards Road Bridge), approved on 30 March 1982, Department of Main Roads, NSW;
- Bridge over Belubula River 35.0km South-West of Bathurst (Mid-Western Highway), construction drawings prepared by GHD on 22 March 2006 for Roads and Traffic Authority of NSW; and
- Bridge over Belubula River (main channel) at Blayney, Newbridge Road, Construction drawings prepared by Cardno on 15 August 2013 for Blayney Shire Council.

2.2.3 Stormwater Network

Council provided the stormwater network for Blayney in MapInfo format. The stormwater network included approximate pipe alignment and sizes of some stormwater pipes. The stormwater network is shown in **Figure 2-3.**

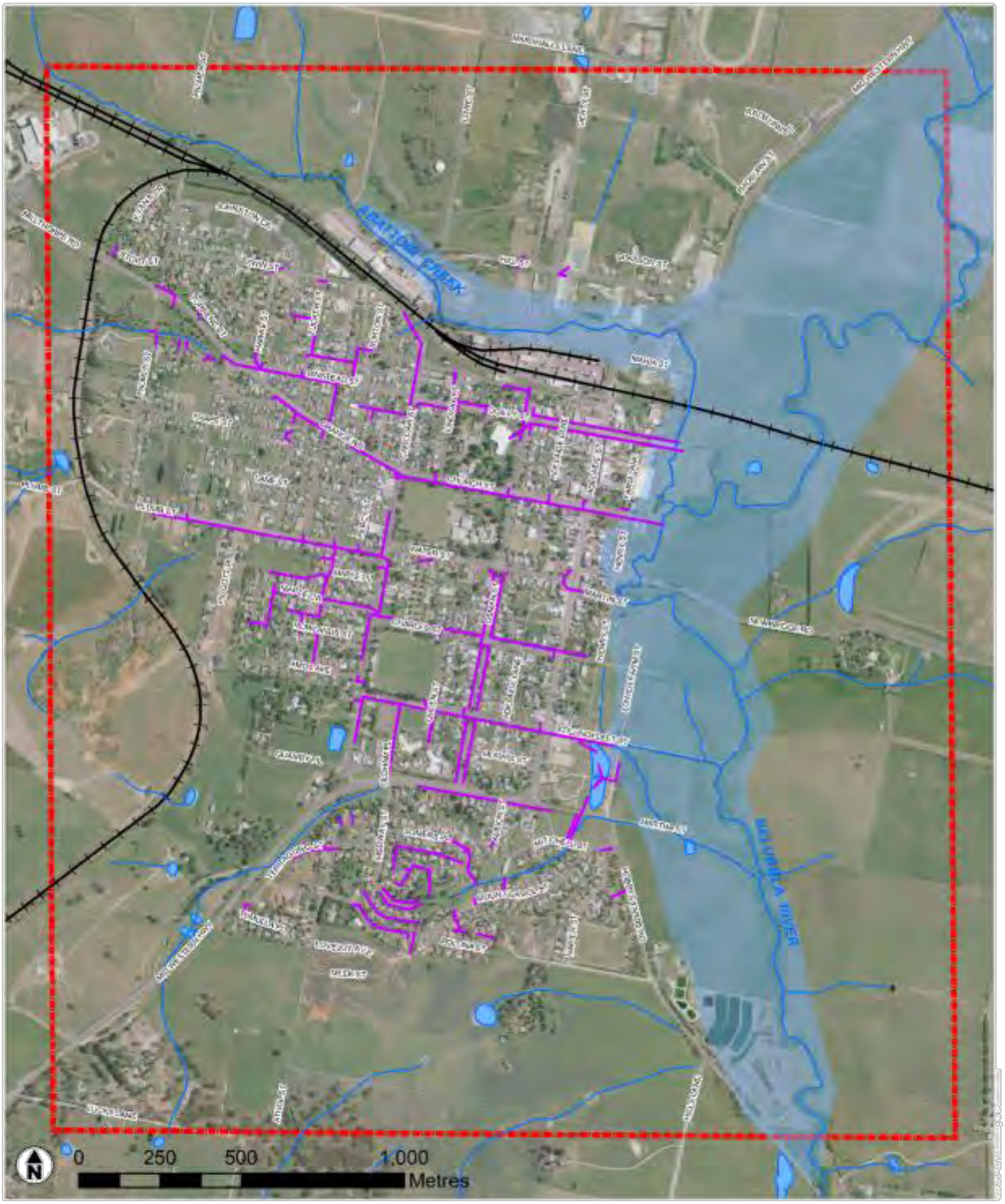
2.2.4 Rainfall Data

A search of the Bureau of Meteorology's website located rainfall stations in close proximity to Blayney. Daily rain gauges around Blayney are shown in **Figure 2-4**, which shows that there are six rain gauges that are located within the catchment area of the Belubula River. Of the six rain gauges, only one rain gauge (No. 63294) is currently open. The rain gauge No. 63294 was opened on April 1990 and is located approximately 1.5 km north-west of rain gauge No. 63010 with the longest length of records (June 1885 to July 1992). Ten (10) highest 1-day (9 am to 9 am) rainfall events recorded at the two rain gauges are shown in **Table 2-2**, which shows that the highest daily rainfall depth (119.4 mm) recorded in Blayney occurred on 25 March 1926.

Table 2-2 Ten Highest Recorded Daily Rainfall in Blayney

Date	1 Day Peak Rainfall (mm)	Rain Gauge
25/03/1926	119.4	63010
2/04/1959	106.2	63010
25/07/1922	104.6	63010
31/01/1978	94.8	63010
7/08/1967	94.7	63010
21/03/1900	92.5	63010
20/01/1887	88.9	63010
22/06/1925	88.4	63010
12/02/1997	86.4	63294
4/11/1907	83.8	63010

No pluviograpghs are located within the catchment area of the Belubula River in the vicinity of Blayney. The closest pluviograph stations (No. 63253 and 63254) to Blayney were located in Orange, approximately 30km north-east of Blayney. The pluviograph station No. 63253 was operational for the period August 1955 to July 1973 and the pluviograph station no. 63254 was operational for the period May 1984 to May 2011.


0
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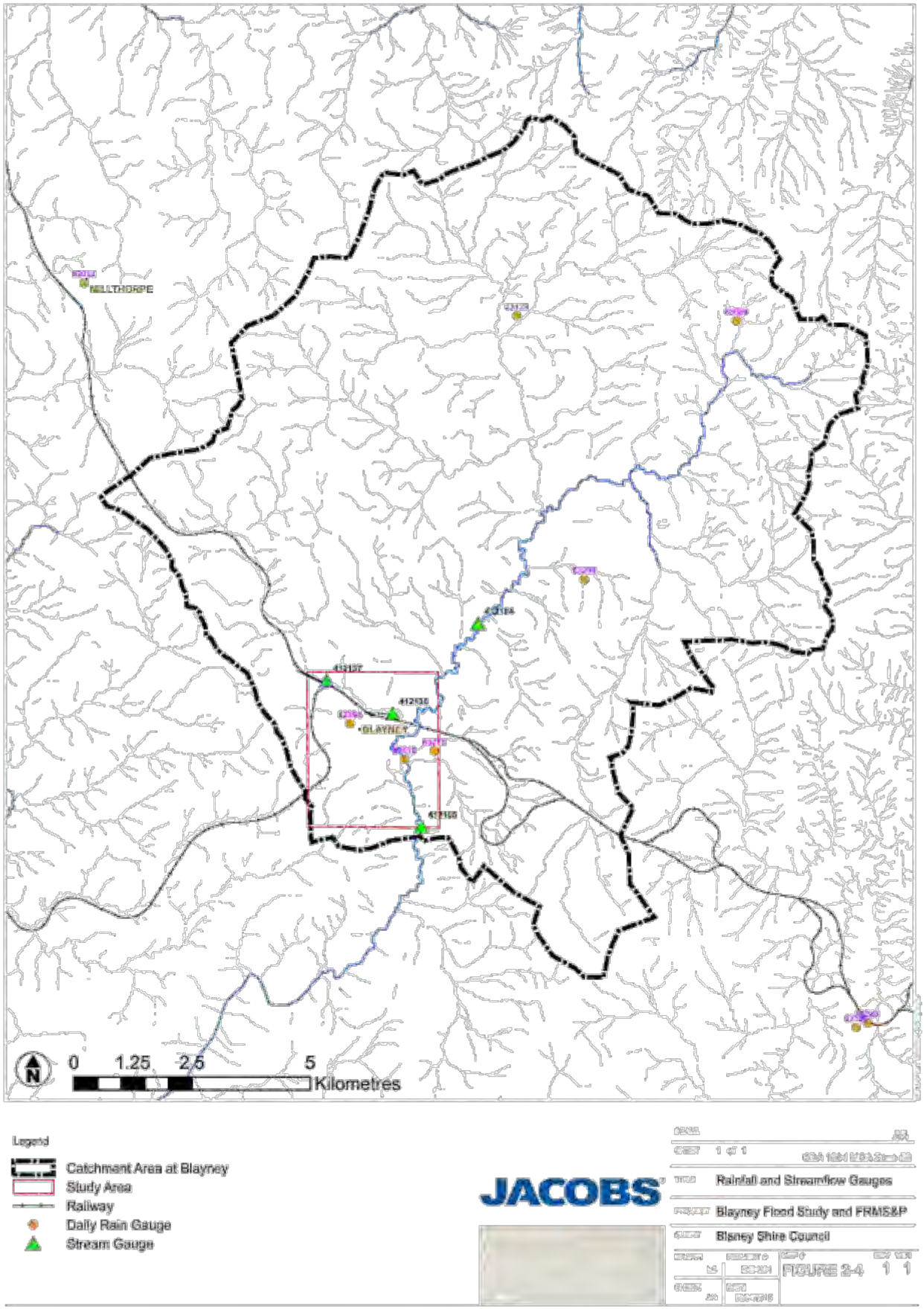
Railway
Road
Study Area
Council's Stormwater Network
Floodplain Region Defined by Council
JACOBS
Stormwater Network and Floodplain
Blayney Flood Study and FRMS&P
Blayney Shire Council
FIGURE 2-3


MELLTHORPE
BLAYNEY
0 1.25 2.5 5
Kilometres
Legend
Catchment Area at Blayney
Study Area
Railway
Daily Rain Gauge
Stream Gauge
JACOBS
Rainfall and Streamflow Gauges
Blayney Flood Study and FRMS&P
Blayney Shire Council
FIGURE 2-4

2.2.5 Streamflow Data

Streamflow gauging stations of relevance to this study are shown in **Figure 2-4** and details on the stations provided by NSW Office of Water are presented in **Table 2-3**. It is to be noted that discharges were measured at the gauging sites at different times and hence there are inconsistencies in measured highest discharges between upstream and downstream gauging stations.

Table 2-3 Details on Streamflow Gauging Stations

Gauge No.	Description	Catchment Area (km^2)	Date Commenced and Ceased	Comment/ Data Type
412137	Abattoir Creek @ Palmer Street	16.7	21/06/1990 - 05/02/1998	Highest measured discharge 23 Ml/d
412136	Abattoir Creek @St. Joseph's College	19.8	21/06/1989 – 05/02/1998	Highest measured discharge 102 Ml/d
412104	Belubula River @ U/S Blayney	108	23/11/1976 – 24/9/1997	Highest measured discharge 115 Ml/d
412105	Belubula River @ D/S Blayney	154	23/11/1976 – 05/08/2002	Highest measured discharge 1710 Ml/d

NSW Office of Water also provided the available daily water levels and discharges for the two gauging stations in the Belubula River near Blayney for the period 1992 to 2002. Peak discharges at the two gauging stations were 7.5 m^3/s (642 Ml/d) at GS 412104 and 25.2 m^3/s (2179 Ml/d) at GS 412105 and both gauges were not referenced to AHD. On the basis of the limited length of records available for the stations, the available streamflow data was considered to have limited value to this study.

2.2.6 Information on Flooding

Council provided a number of photographs (shown in **Figure 2-5**) captured on 19 August 2010 which shows the nature and the extent of flooding in the Belubula River near the intersection of Henry Street and Newbridge Road. It is to be noted that a rainfall of 19.2 mm was recorded at rain gauge No. 63294 on 19 August 2010 and 68mm rain was recorded at the gauge during the period 9 to 17 August 2010.

In addition to the flood photographs for the flood event of 19 August 2010, Council also provided a GIS layer showing the extent of the floodplain (refer to **Figure 2-3**) along the Belubula River and Abattoir Creek which were sourced from Rankine & Hill (1983). The source and the accuracy of the GIS layer were unknown.

2.3 Community Consultation

2.3.1 Flood Questionnaire

A community consultation process was initiated to obtain flood information for past events. This involved sending a newsletter and a questionnaire (included in **Appendix A**) to residents and landowners within the study area in Blayney. The newsletter introduced the floodplain management process to the residents of the areas, described the purpose of the questionnaire and provided the residents with contacts for their responses. The questionnaire was prepared in consultation with Council to help identify flooding issues for the study area and to provide reliable flood information to assist in the validation of the hydrologic and hydraulic computer models.

- **Figure 2-5 August 2010 Flood Photographs**

Photo 1 – Flooding on Henry Street (looking towards south)

Photo 2 – Flooding at corner of Henry Street and Newbridge Road (looking towards north)

Photo 3 – Bridge over the Belubula River (main channel) along Newbridge Road (looking east)

Photo 4 - Bridge over the Belubula River floodplain along Newbridge Road (looking east)

The flood information that was requested included:

- General information, such as:
  - Residents from the Study Area
  - Ownership of the residence
  - How long residents lived at the property
- Specific flood information, such as:
  - Experience on flooding in residence and/or at work
  - Location and depth of flood water in the worst flood experienced

- Duration of flooding
- Flood damages to residence and business
- Disruption to vehicular access to residence during flooding
- Assistance required by residents from SES during flooding
- Flooding to residence made worse by works on other properties or by construction of roads or other structures
- Identify information (eg. flood photographs, newspaper clippings, flood marks etc) that can be provided to the Consultant
- Residents intention for further development on their lands
- Ranking of development types for protection against flooding
- Ranking of potential flood mitigation measures

Any comments on any other issues associated with this study

2.3.2 Summary of Responses to Flood Questionnaire

In total 220 questionnaires were sent to residents of Blayney with reply paid envelopes and sixteen (16) responses were received from the community to the questionnaire and all respondents were residents of the study area. One response was received from Blayney Hospital. A summary of responses is provided in the following paragraphs.

Residency status (Question 1)

All respondents were residents of Blayney.

Length of Residency in Blayney and Business Activity (Questions 2-4)

Respondents lived in Blayney between 3 months to 45 years with an average residency of 17 years. Two (2) respondents managed a business located within the study area.

Experiences of Flooding (Questions 5-12)

Five (5) respondents experienced flooding during the flood events of 1973, 2007, 2011, 2012 and 2013. Three (3) respondents experienced flooding in their houses, two (2) respondents experienced flooding at their workplace and one (1) respondent experienced flooding elsewhere and the depth of flooding varied between 0.3m to 1.2m. Two respondents reported that the duration of flooding was less than 2 hours and one respondent identified the duration of flooding being less than six hours and another respondent identified the duration of flooding more than one day.

Three respondents identified minor flood damage to garden, lawn and backyard whilst one respondent identified minor damage to external wall of the house. One respondent identified minor damage to property fence.

Two (2) respondents identified that vehicular access to their properties were cut off and one business identified loss of income due to road closure by flood waters.

Flood Affection to properties due to works (Questions 13 - 14)

Three (3) respondents identified that flood impact on their properties was aggravated due road works and new developments along Newbridge Road, south of Polona Street and Smith Street.

Intention of Respondents for further development (Question 15)

Nine (9) respondents were not expecting to undertake any further developments on their lands and three (3) respondents were expecting to undertake minor extensions to their properties.

Priority for protecting different types of developments from flooding (Question 16)

Respondents were asked to rank different types of development for protection against flooding. Nine (9) respondents gave the emergency facilities (Hospital, Police Station, etc.) the greatest priority for protection against flooding, whilst five (5) respondents assigned the highest priority for protection of residential properties against flooding.

Priority for flood mitigation measures (Question 17)

Eight (8) respondents identified flood protection of house/business as the greatest priority. Three (3) respondents identified flood warning as their greatest priority and three (3) respondents assigned their highest priorities to providing an emergency flood free access to properties

Willingness to provide additional information (Question 18)

Willows in the Belubula River were a major concern to a respondent.

Contact details for respondents (Question 19)

Fourteen (14) respondents provided their contact details.

2.4 Additional Topographic Survey

The available topographic data was reviewed and gaps in the data were identified and a technical brief was prepared to collect the additional topographic data in two stages. In consultation with Council, Geolyse Pty Ltd was engaged to collect the required additional topographic data for this project. The following items were surveyed by Geolyse with assistance from Council staff:

- Details for five (5) bridges;
- Details (eg. size, shape, invert level, top of road level etc.) for 44 culverts;
- Details for 75 stormwater pits and associated stormwater pipes;
- Four (4) streamflow gauges located in the vicinity of the study area were connected to AHD; and
- Four flood marks were connected to AHD. The flood mark (for the flood event of 23 January 1972) on concrete wall at 76 Henry St was connected to AHD. The flood mark was set at RL 862.39 mAHD by Geolyse. A review of the LiDAR data indicated that ground levels in the vicinity of the flood mark were above RL 862 mAHD. However, Blayney Shire Local Flood Plan (November 2009 Edition) defines the height of the 1972 flood at this location at 858.7m AHD which is approximately 3.3m below the surrounding ground levels which is considered unrealistic.

Details of the survey are presented in **Appendix B** and all surveyed data provided by Geolyse were provided to Council and OEH. Floor levels of selected properties will be surveyed at the floodplain risk management stage.

3. Catchment Hydrology

3.1 Catchment Description

Belubula River is a perennial river which is part of the Lachlan River catchment. Belubula River rises south of Vittoria, mid-way between Bathurst and Orange and generally flows south and west. It is joined by eight minor tributaries before flowing east of the township of Blayney and then through Lake Carcoar where its flow is regulated, before reaching its mouth at the Lachlan River east of Gooloogong. Carcoar Dam, constructed in 1970, is a 52m high concrete arch dam with a capacity of 35800 ML (www.statewater.com.au). Water stored in Carcoar Dam is used for irrigation, stock and domestic usage, town water supply and water conservation. The full supply level of the dam is at RL 847.2 mAHD which is located approximately 10m below the bed level of the Belubula River in Blayney. This means that the flood levels in Blayney are unlikely to be impacted by backwater flooding due to Carcoar Dam.

The majority of the catchment area of the Belubula River upstream of Blayney was cleared for agriculture. A part of Vittori State Forest is located along the upper northern catchment of the river. Abattoir Creek is a major tributary which joins the river near Blayney. The bed level of the Belubula River drops approximately 670m over its 165km course.

3.2 Catchment Modelling Methodology

A RORB hydrologic model was developed by Jacobs (formerly SKM) for State Water for the catchment area of Carcoar Dam as part of "Portfolio Risk Assessment for 24 Dams" in 2001. State Water was contacted to provide the updated hydrologic modelling data for use in this flood study. However, at the time undertaking this study, Jacobs did not receive any updated hydrologic model for Carcoar Dam catchment.

A 1:100 000 topographic map was used in the 2001 study to delineate sub-areas for the RORB model and the catchment area of Carcoar Dam was sub-divided into 17 sub-areas. On the basis of the available recorded pluviograph and streamflow data provided by the former NSW Department of Land and Water Conservation, the RORB model was calibrated against recorded streamflow data for the Belubula River downstream of Carcoar Dam (GS 412077) for flood events of November 1973, August 1974 and September 1974. The calibrated RORB model was utilised in the estimation of design inflows into Lake Carcoar for a range of storm events between 2% AEP and the PMF.

Considering the facts that a calibrated and a validated RORB model was available for the catchment area of Carcoar Dam, no further recorded data was available to enhance model calibration, and the need for a more refined representation of sub-catchments within the study area (ie. catchment area located between GS 412104 and GS 412105), design inflow hydrographs produced by the RORB model at GS 412104 were adopted and another hydrologic model using XP-RAFTS was developed for the catchment area of the Belubula River between GS 412104 and GS 412105. Hence both the RORB and the XP-RAFTS hydrologic models were used in the estimation of design floods in this study.

3.2.1 Model Set Up

Model set up for the RORB and XP-RAFTS models are shown in **Appendix C.**

3.2.1.1 Catchment Areas

Sub- areas of the RORB model were delineated as part of 2001 study using 1:100,000 topographic map. Sub-catchments for the XP-RAFTS model were delineated using the LiDAR topographic data, where available, and outside the range of LiDAR data, the available 10m contours were used. These sub-catchments were then digitised using ArcMap, and the catchment areas obtained from the GIS.

3.2.1.2 Pervious and Impervious Fractions

In the case of the RORB model, all sub-areas were considered rural. However, in the case of the XP-RAFTS model, pervious and impervious fractions for each sub-catchment were estimated from the available aerial photography. For each sub-catchment, the major landuses were identified and the area of each landuse estimated. The following impervious fractions were used for different landuse types:

- Residential – impervious fraction = 40%;
- Industrial/commercial – impervious fraction = 90%; and
- Open space – impervious fraction = 5%.

Manning's roughness values were assigned based on the dominant land use within the sub-catchment. A roughness value of 0.025 was adopted for urban areas and a roughness value of 0.04 was adopted for rural areas.

3.2.1.3 Vectored Slopes

In the case of the XP-RAFTS model, vectored slopes were calculated for each sub-catchment by measuring the length of the flowpath from the highest point in the sub-catchment to the sub-catchment outlet. The height difference between these two points was divided by the flowpath length.

3.2.1.4 Channel Routing

The channel routing option was used in XP-RAFTS to estimate travel times between nodes. Wherever possible, the LiDAR data was used to define channel cross sections. Aerial photography of the area and a site reconnaissance were used to assign Manning's n values to model cross sections.

3.3 Input Data for Design Flood Estimation

3.3.1 Rainfall Depths

The rainfall design data for this study for events up to and including the 0.5% AEP was generated within the XP-RAFTS model applying the rainfall intensity, frequency and duration (IFD) relationship based on data presented in **Table 3-1**. It is to be noted that the rainfall design data adopted in this study are similar to the rainfall design data provided in Blayney Shire Council's Engineering Guidelines.

- **Table 3-1: Data Used to Estimate Rainfall IFD**

Data Description	Parameter
Zone	2
1 hour 2 year ARI mm/hr	24.18
12 hour 2 year ARI mm/hr	4.48
72 hour 2 year ARI mm/hr	1.13
1 hour 50 year ARI mm/hr	46.86
12 hour 50 year ARI mm/hr	7.45
72 hour 50 year ARI mm/hr	1.96
Skewness G	0.25
Geographical factor 2 year ARI F2	4.32
Geographical factor 50 year ARI F50	15.61

Areal reduction factors based on Australian Rainfall and Runoff (Engineers Australia, April 2013) were applied to the estimated design rainfall depths for events up to, and including, the 0.5% AEP event.

Estimates of the Probable Maximum Precipitation (PMP) for the study catchment up to 6 hours duration were prepared using the procedures given in *The Estimation of Probable Maximum Precipitation in Australia: Generalised Short Duration Method* (BOM, 2003).

3.3.2 Model Parameter Values

In the case of the RORB model, adopted values of k_c and m for the catchment area of Carcoar Dam were 13.85 and 0.8 respectively. In the case of the XP-RAFTS model for Blayney, the adopted value of Bx was 1.0.

3.3.3 Temporal Patterns

Temporal patterns for all events storm durations up to, and including, the 0.5% AEP event were sourced from the XP-RAFTS model for Zone 2. The temporal pattern for the PMP event was sourced from BoM (2003).

3.3.4 Design Rainfall Losses

An initial loss of 0mm and a continuing loss of 0mm/hr were adopted for impervious areas for all design events considered in this study. Design rainfall losses for the pervious areas were generally based on recommendations made by Walsh *et. al.* (1991). Considering watering of lawns and gardens in the Blayney urban area, a revised initial rainfall loss of 10mm was adopted for the pervious areas within the township.

In the case of the PMP event, an initial loss of 0mm and a continuing loss of 1mm/hr were adopted for pervious areas.

3.4 Validation of Design Discharges

Both the RORB and the XP-RAFTS model were run for a range of storm durations for the selected design flood events to estimate design inflow hydrographs. Whilst the RORB model was used to generate inflow hydrographs in the Belubula River upstream of Blayney gauge, the XP-RAFTS model was used to simulate hydrographs for the downstream sub-catchments. Results from the RORB and the XP-RAFTS model were reviewed to identify storm durations which produced peak discharges for each sub-catchment.

A comparison of design discharges estimated in this study and adopted in the previous studies is shown in **Table 3-2**, which shows that design discharges estimated in this study are generally higher than that adopted in the previous studies. It is to be noted that the RORB model for Abattoir Creek developed by Gilbert & Associates (2000) was not calibrated and the report does not provide details on the adopted rainfall losses or RORB model parameter values k_c and m. The design discharges adopted by Cardno (2013) are based on the Probabilistic Rational Method for Eastern NSW and hence considered to be a generalised estimate. Although design discharges estimated in this study are larger than the other available estimates, considering the lack of observed streamflow data for the study area and the paucity of observed streamflow data for Western NSW, parameter values adopted in the hydrologic models were not refined further.

It is explained in Section 3.2 that design inflow hydrographs produced by the RORB model at GS 412104 were adopted in this study. It is to be noted that 10 sub areas were defined in the RORB model upstream of GS 412104. Moreover, **Table 3-2** shows that the adopted discharges for the 5% and 1% AEP events at GS 412104 are similar to the corresponding discharges estimated using the Probabilistic Rational Method for a 30% larger catchment area. Hence, the estimated design inflow hydrographs extracted from the RORB model at GS 412104 are considered reasonable estimates.

- Table 3-2 Comparison of Design Discharges (m^3/s)

Location	Catchment Area (km^2)	Estimated Design Discharges (m^3/s) and Critical Storm Duration					Other Estimates on Design Discharges	
		20% AEP	5% AEP	1% AEP	0.5% AEP	PMF	5% AEP	1% AEP
GS 412104	108	48 (9 hr)	123 (6 hr)	246 (3 hr)	286 (2 hr)	4,420 (2 hr)		
Sub-catchment C16	20	32 (30 hr)	52 (30 hr)	91 (2 hr)	114 (2 hr)	1,051 (2 hr)		67[a]
Junction of Abattoir Ck and Belubula River	142	58 (9 hr)	157 (6 hr)	320 (3 hr)	424 (3 hr)	5,601 (3 hr)	123[b]	235[b]
GS 412105	156	73 (30 hr)	164 (6 hr)	337 (3 hr)	469 (3 hr)	6,076 (3 hr)		

[a] Estimated by Gilbert & Associates (2000) using a RORB model

[b] Estimated by Cardono (2013) using the Probabilistic Rational Method for Eastern NSW

4. Hydraulic Modelling

4.1 Model Selection

A TUFLOW combined one-dimensional (1D) and two-dimensional (2D) hydrodynamic model has been developed for this study. TUFLOW is an industry-standard flood modelling platform, which was selected for this assessment as it has:

- Capability in representing complex flow patterns on the floodplain, including flows through street networks and around buildings.
- Capability in representing the stormwater drainage network, including pit inlet capacities and interflows between the network and floodplain including system surcharges.
- Capability in accurately modelling flow behaviour in 1D channel, bridge and culvert structures and interflows with adjacent 2D floodplain areas.
- Easy interfacing with GIS and capability to present the flood behaviour in easy-to-understand visual outputs.

The model was developed and run in TUFLOW version 2013-12-AA-w64, in double-precision mode.

4.2 TUFLOW Model Configuration

4.2.1 Extent and Structure

The TUFLOW model is comprised of:

- A 2D domain of the catchment surface reflecting the catchment topography, with varying roughness as dictated by land use.
- A 1D network of the mainstream channels, including Belubula River and Abattoir Creek.
- An additional 1D network of pits and pipes representing the stormwater network, which is connected to the mainstream network at the pipe outlet points. The pits have a defined inflow capacity as dictated by their type and size.
- Additional hydraulic structures including culverts (1D) and road and rail bridges (1D and 2D).
- Obstructions to flow are represented as 2D objects, including existing buildings.

Refer to the following report sections for details on these features. The locations of various features in the TUFLOW model are shown on **Figure 4-1**.


0 250 500 1,000
Metres
Legend
Upstream/Downstream Boundary
1D Stormwater pit
1D Stormwater pipe
1D Cross Section
1D Channel
1D Culvert or Bridge
2D Bridge
2D Model Domain
2D buildings
Railway
Study Area
JACOBS
TUFLOW model Configuration
Blayney Flood Study and FRMS&P
Blayney Shire Council
FIGURE 4-1

4.2.2 Model Topography

The topography of the catchment is represented in the model using a 3m grid. The grid size was selected to optimise model run time and to achieve a level of precision required for adequate representation of flood behaviour within the study area. The basis of the topographic grid used in the TUFLOW model is the LiDAR data set in addition to ground survey at key locations. The model topography is shown in **Figure 2-2**.

4.2.3 Stormwater Network

A selected number of main branches in the overall network were represented in the TUFLOW model. Typically, the selected branches were aligned with the main overland flow paths in the study area. The modelled stormwater network is indicated on **Figure 4-1**.

4.2.4 Stormwater Pits

The stormwater pits provide a dynamic linkage between the underground drainage network and the 2D TUFLOW model domain, representing the floodplain. Water is able to flow between the drainage network and floodplain, depending on the hydraulic conditions.

The location of the stormwater pits and associated attributes were exported directly from the topographic survey undertaken by Geolyse Pty Ltd. Pit inflow relationships were defined in terms of flow depths versus pit inflow.

TUFLOW automatically calculates hydraulic energy losses in the pits based on the alignment of pipes connected to each pit and the flows in each pipe. The calculations are based on the Engelhund manhole loss approach (*TUFLOW User Manual*, BMT WBM, 2010).

4.2.5 Stormwater Conduits

The surveyed stormwater conduits are represented as circular pipes or rectangular culverts with dimensions as indicated by the pit and pipe survey. Other characteristics such as invert levels and lengths are represented.

4.2.6 Building Polygons

This study considers buildings as solid objects in the floodplain. This means that buildings form impermeable boundaries within the model, and while water can flow around buildings, it cannot flow across their footprint. The building polygons were superimposed on the model grid to make model computational cells under the footprints inactive.

4.2.7 Property Fencelines

Fencelines have typically not been explicitly represented in the model and floodwaters are allowed to flow across them freely. Although fences may obstruct overland flood flows in some parts of the catchment, experience indicates that representing fences in the hydraulic model requires making unvalidated assumptions about depths at which fences overflow or fail.

Hence, the potential obstruction to flow caused by fences was represented in the model by increasing the cell roughness (Manning's n values) for certain land uses, as described in **Section 4.2.8**. The limitation of this approach is that the flood levels may be slightly overestimated and flow velocities slightly underestimated for flooding within properties depending on the actual locations of obstructions and the interaction of flood flows with these obstructions. However, this approach does preserve the likely typical flooding behaviour, in which floodwaters use the road corridor as the preferential flow path.

4.2.6 Surface Roughness

All parts of the study area within the TUFLOW model were assigned hydraulic roughness values according to the LEP zoning and ground cover, refer to **Table 4-1**. These are based on engineering experience and typical values used in previous flood studies undertaken in the Sydney Region and Western NSW by Jacobs and other consultants. The relatively high Manning's n values for the residential land use accounts for expected obstructions such as minor structures (sheds, etc.) and fences.

Table 4-1 TUFLOW Model Grid Hydraulic Roughness Values

Land Use Type	Manning's n	Comment
Existing roads and proposed pavement	0.015	
Rail	0.05	
Urban (including fences)	0.2	Allowance for landscaping and fences
Sparse Vegetation	0.05	
Medium Vegetation	0.1	
Dense Vegetation	0.12	
Creeks	0.05	
Industrial	0.03	Assumed mainly paved
Short grass	0.035	
Wetlands	0.12	
Vegetated Drain	0.05	
Concrete Channel	0.02	

4.3 Boundary Conditions and Initial Conditions

4.3.1 Model Inflows

Runoff generated in the sub-catchments from the XP-RAFTS hydrologic model was input to the TUFLOW model via one of three methods:

- At the pits located at the outlet of each sub-catchment. Sealed pits are not assigned a flow. The amount of surface flow entering the pit is dictated by the pit inflow relationship. Flows in excess of the pit inlet capacity remain in the 2D model domain as point inflows, subsequently forming overland flow.
- At the outlet to the overland flow sub-catchment if there are no pits in that sub-catchment as a 2D inflow. Flows are initially input at the lowest point of the sub-catchment and then distributed to wet areas in the catchment as the storm progresses.
- At the outlet to the mainstream sub-catchment if the sub-catchment directly drains to Abattoir Creek or the Belubula River.

Pit surcharge flows are caused when flows in the drainage network exceed network capacity and spill out of the pits and into the 2D domain. Pit surcharges would similarly form overland flow in the model. Depending on the hydraulic conditions in the pipe system, overland flows can re-enter the pipe system via the stormwater pits.

5. Estimation of Design Floods

5.1 Hydraulic Model Parameters for Design Events

5.1.1 Blockages

Only a selected number of pits and pipes in the overall stormwater network were represented in the TUFLOW model, namely those on the main pipe lines with the minor feeder branches omitted. Approximately 40% of the total number of pits and pipes located within the study area were modelled. As such, only a part of the total pit inlet capacity in the system was represented. A zero blockage factor was therefore applied to stormwater pits and culverts in the study area.

5.1.2 Tailwater Conditions

The downstream model boundary was located some distance (approximately 1.5km) downstream of the study area boundary, to eliminate the potential influence of the boundary conditions on flood conditions in the study area. A normal depth condition has been assumed at the boundary.

5.1.3 Initial Conditions

The model was assumed to be dry at the start of the model runs.

5.2 Simulated Design Events

The storm events modelled include the 20%, 5%, 2%, 1% and 0.5% AEP and PMF events. The storm durations assessed were selected based on runs in the XP-RAFTS hydrologic model to capture the critical storm durations throughout the study area. The event durations assessed are summarised below.

Table 5-1 Storm Event Durations Modelled

Event AEP	Durations modelled
20%	25 minute; 1, 9, 30 and 36 hour
5%	25 minute; 1, 6, 30 and 36 hour
1%	25 minute; 1, 2 and 6 hour
0.5%	25 minute; 1, 2 and 3 hour
PMF	15 and 30 minute; 1 and 2 hour

6. Results Mapping and Analysis

6.1 Foreword on the Flood Mapping

The maximum envelope of flood behaviour parameters (depth, level, velocity, velocity x depth, flood hazard) was derived for each event AEP, considering the maximum values over each combination of storm event duration.

6.2 Flood Depth and Flood Level Mapping

Flood depths and flood level contours are mapped in **Appendix D** for the 20%, 5%, 2%, 1% and 0.5% AEP events and the PMF event. A review of the map indicates widespread shallow flooding in the central area of Blayney bounded by Adelaide Street, Water Street, Carcoar Street and Mid Western Highway in the 20% AEP event. Shallow flooding occurs for in the 20% AEP event along Henry Street, Martin Street, Mitchell Street, Mount Errol Street, Hobbys Yards Road, Polona Street, Napier Street, Plumb Street, Orange Road, Ogilvy Street and a number of other street within the township of Blayney implying that the township can be inaccessible by car from Orange, Bathurst and Carcoar in a 20% AEP flood event.

In the case of the 5% AEP event, more extensive flooding occurs along the Belubula River than the 20% AEP event. Extents of flooding along Abattoir Creek and unnamed water courses running through the township are generally similar to the 20% AEP event.

The flood extent for the 1% AEP event is similar in that for the 5% AEP event with increased depth of flooding in the 1% AEP event. In the case of the 1% AEP event a number of properties in central Blayney and northern Blayney are subject to flood depths of 0.2m to 0.5m. A number of the properties are subject to flooding up to 1m depth in the 0.5% AEP event.

During the PMF event, a number of streets in the central and northern parts of Blayney are subject to flooding up to 1m in depth and more than 2m depth of flooding occurs along Mid Western Highway, Farm Lane and Henry Street. Bathurst is completely inaccessible by road and Orange may only be accessible by trucks and large vehicles during the PMF event. The SES requires information regarding the flood behaviour of the PMF event for planning flood evacuation routes and evacuation centre locations.

6.3 Flood Surface Profiles

The peak flood surface profiles are plotted in **Figure 6-1** and **Figure 6-2** for Belubula River and Abattoir Creek, respectively, for the sections of each waterway located within the study area. **Figure 6-1** shows that the Railway and Newbridge Road are two major hydraulic controls along the Belubula River. In particular, the afflux at the Railway is very prominent in the 5%, 1% and 0.5% AEP flood events. The afflux at Newbridge Road is less pronounced than the Railway. The sewage treatment lagoons also encroach on the floodplain of the Belubula River up to and including the 0.5% AEP event. The Railway is also the major hydraulic control along Abattoir Creek as shown in **Figure 6-2**.

Modelled peak flood levels at the major waterway crossings along Abattoir Creek and the Belubula River within the study area are provided in Table 6-1. Table 6-1 shows that Mid Western Highway is overtopped in 1% AEP event due to flooding in Abattoir Creek and deck levels of other major waterway crossings are located above 0.5% AEP peak water levels.

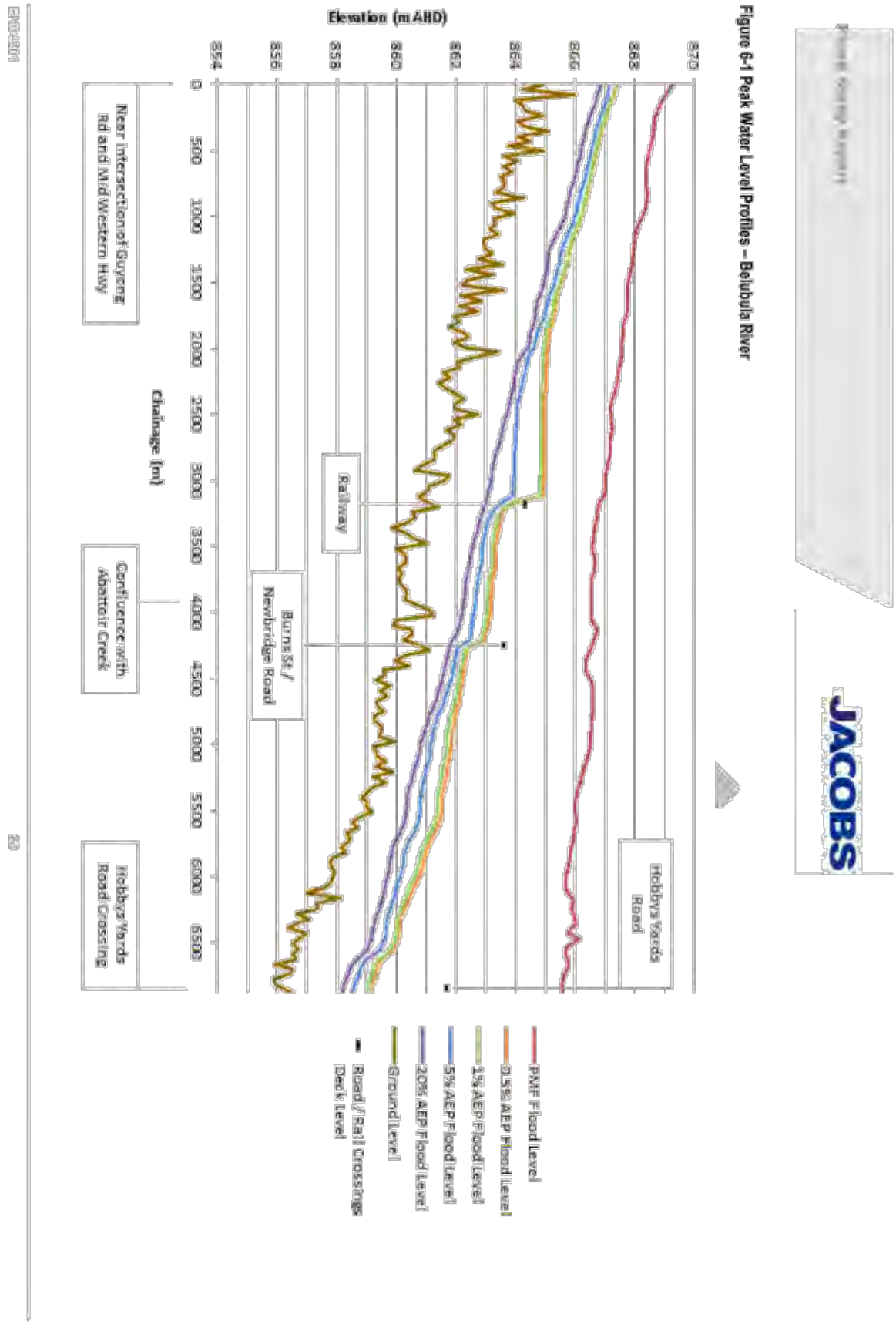


Figure 6-1 Peak Water Level Profiles – Belubula River

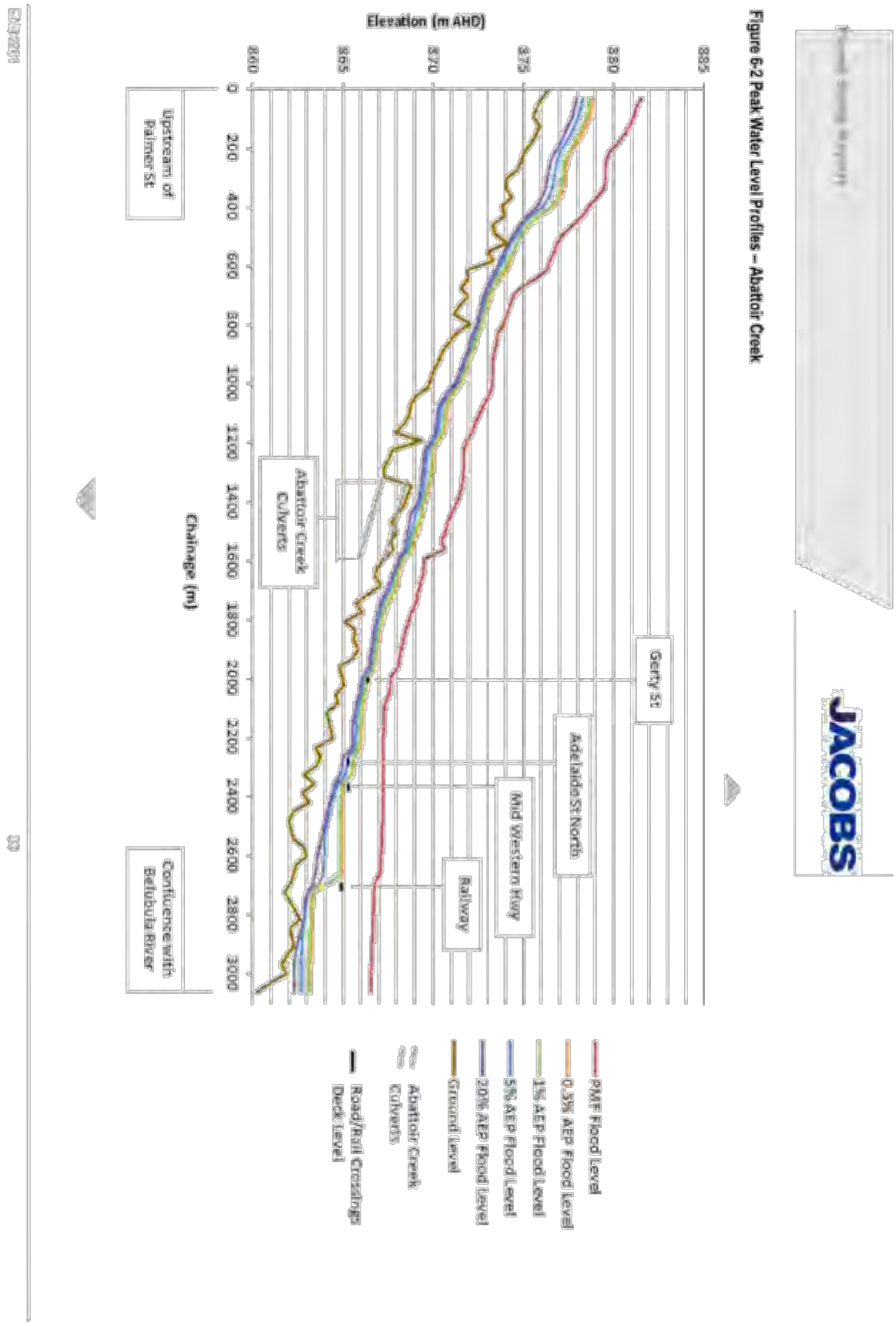

JACOBS
Figure 6-2 Peak Water Level Profiles – Abattoir Creek
Elevation (m AHD)
860
865
870
875
880
885
Chainage (m)
0
200
400
600
800
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
3000
Upstream of Palmer St
Confluence with Belubula River
Abattoir Creek Culverts
Gerty St
Adelaide St North
Mid Western Hwy
Railway
PMF Flood Level
0.5% AEP Flood Level
1% AEP Flood Level
5% AEP Flood Level
20% AEP Flood Level
Ground Level
Abattoir Creek Culverts
Road/Rail Crossings Deck Level

Table 6-1 Modelled Peak Water Levels at Major Waterway Crossings

Waterway Crossing	Deck Level (mAHD)	Soffit Level (mAHD)	Peak Water Levels (mAHD)					
			Location	20% AEP	5% AEP	1% AEP	0.5% AEP	PMF
Abattoir Creek at Mid Western Highway	865.28	864.47	U/S	864.83	865.16	865.46	865.55	867.22
			D/S	864.46	864.69	864.90	865.03	867.23
Abattoir Creek at Railway	864.0	863.0	U/S	863.39	863.73	864.19	864.26	866.80
			D/S	863.01	863.11	863.29	863.37	866.75
Belubula River at Railway	864.3	863.13	U/S	863.01	863.55	863.98	864.06	866.82
			D/S	862.96	863.36	863.65	863.73	866.77
Belubula River at Burns Street	863	861.56	U/S	861.89	862.47	862.86	862.98	866.62
			D/S	861.76	862.01	862.28	862.37	866.51
Belubula River Floodplain at Newbridge Road	863.57	862.5	U/S	862.11	862.56	863.02	863.15	866.75
			D/S	861.58	861.90	862.19	862.25	866.41
Belubula River at Hobbys Yards Road	859.96	859.43	U/S	858.26	858.58	859.05	859.20	865.57
			D/S	858.21	858.55	859.03	859.18	865.56

6.4 Flow Velocities

The peak flow velocities for each of the modelled events are mapped in **Appendix E**. A number of streets in Blayney act as main overland flowpaths during significant flood events and hence velocities along a number of streets are higher than 1m/s in the 20% AEP event.

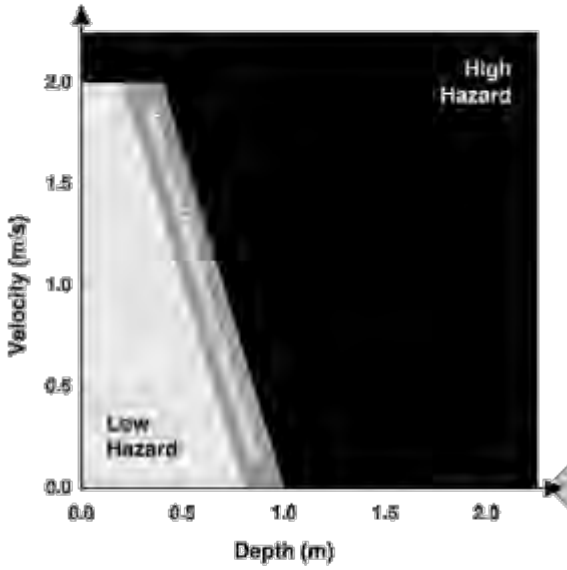
6.5 Summary of Peak Flows

Peak overland, piped and total flows are tabulated and mapped for selected locations in **Appendix F** for the modelled design flood events.

6.6 Provisional Flood Hazard Mapping

The TUFLOW modelling results were used to delineate the preliminary flood hazard areas for the study area from interpretation of the 5% and 1% AEP event results, based on the hydraulic hazard category diagram presented in the *Floodplain Development Manual* (DECC, 2005), shown in **Figure 6-3**. The TUFLOW model calculates the hazard rating at each cell and computational time step, rather than calculating the rating based on the peak depth and peak velocity.

Figure 6-3 Hydraulic Hazard Category Diagram (reproduced from Figure L2 in *NSW Floodplain Development Manual*)



Hazard categories delineated in this study are based on depths and velocities of floodwaters and do not consider evacuation, isolation, flood damages and social impacts of flooding, hence, these categories are considered provisional. The provisional flood hazard mapping is presented in **Appendix G.**

6.7 Hydraulic Categories Mapping

The three flood hydraulic categories identified in the *Floodplain Development Manual* (NSW Government, 2005) are:

- Floodway, where the main body of flow occurs and blockage could cause redirection of flows. Generally characterised by relatively high flow rates, depths and velocities;
- Flood storage, characterised by deep areas of floodwater and low flow velocities. Floodplain filling of these areas can cause adverse impacts to flood levels in adjacent areas; and
- Flood fringe, areas of the floodplain characterised by shallow flows at low velocity.

There is no firm guidance on hydraulic parameter values for defining these hydraulic categories, and appropriate parameter values may differ from catchment to catchment. It was agreed that hydraulic categories mapping for Blayney is to be undertaken as part of the Floodplain Risk Management Study.

6.8 Provisional Flood Planning Area

The provisional flood planning area is defined by the extent of the area below the flood planning level (usually the 1% AEP flood plus 0.5m freeboard) and delineates the area and properties where flood planning controls are proposed, for example minimum floor levels to ensure that there is sufficient freeboard of building habitable floor levels above the 1% AEP flood. Other controls are considered, such as policies on fence construction, or rezoning at the floodplain risk management study stage. It was agreed that flood planning area mapping for Blayney is to be undertaken as part of the Floodplain Risk Management Study.

6.9 Sensitivity Analysis

A number of scenarios have been assessed for the 1% AEP flood event to test the sensitivity of the model results to changes in the adopted parameter values. The scenarios are described and the impacts summarised in **Table 6-2**.

6.10 Comparison of modelled flood levels

Modelled flood levels in this study are compared against recorded flood marks, floor levels and estimated flood levels in the previous studies which are discussed below:

- 76 Henry St, mark on concrete wall for 1972 flood: The modelled flood level in the 20% AEP event is 0.03m below the 1972 flood level (RL 862.39 mAHD) and the modelled 5% and 1% AEP flood levels are respectively 0.12m and 0.53m above the recorded 1972 flood level.
- 6 Smith Street (surveyed floor level 871.81mAHD): Ground levels within the property are located above RL 871 mAHD and the modelled 20% to 0.5% AEP events do not flood the property. Only in the PMF event is the property inundated to 871.94 mAHD. The owner of the property explained that the backyard of the property received rainfall runoff from the unnamed lane located behind Smith Street during the flood event of 2007. It is expected that the observed flooding in 2007 may have occurred due to local drainage issues.
- 7 Mt Erroll St (surveyed floor level 867.75 mAHD): The lowest ground level within the property is located above RL 868 mAHD and modelled flood levels at the property vary between 866.58 mAHD (20% AEP) to 867.20 mAHD (PMF) implying that property may have experienced below floor flooding in the past.
- 26 Hill Street (surveyed floor level 872.94 mAHD): Resident had no knowledge on the location of the flood mark. Modelled flood levels for the PMF are lower than ground levels within the property.
- 1% AEP modelled flood levels at Abattoir Creek culvert: The 1% AEP flood level estimated by Gilbert & Associates (2000) is similar to the 5% AEP flood level estimated in this study. Gilbert & Associate underestimated 1% AEP flood level up to 0.29m.
- Flood levels adopted by Cardno (2013) for the proposed upgrade of Belubula River Crossing for 5% and 1% AEP events are respectively 0.22m and 0.3m lower than that adopted in this study. This is due to the fact that the design discharges adopted in this study are higher than that adopted by Cardno.

Table 6-2 Sensitivity Analysis Description and Results

Scenario	Description	Change in Flood Level[1]
Hydraulic Roughness – increase	Increase Manning's n in TUFLOW 2D domain by 20%	• Typically negligible or minor change (up to 0.01m) in overland flow area and isolated new areas flooded • Typically between 0.02 – 0.05m increase in Adelaide Creek and Bebubula River upstream of Railway • Up to 0.1m increase in Bebubula River downstream of Railway
Hydraulic Roughness – decrease	Decrease Manning's n in TUFLOW 2D domain by 20%	• Typically negligible change in overland flow area, some localised increases up to 0.05m • Reductions of 0.02 – 0.05m in Adelaide Creek and Bebubula River upstream of Railway • Reductions of up to 0.12m in Bebubula River downstream of Railway
Tailwater Level – increase	Increase tailwater level by 0.5m	• No change in study area
Tailwater Level – decrease	Increase tailwater level by 0.5m	• No change in study area
Blockage	50% blockage of culverts and pits in TUFLOW	• Typically negligible or minor change (up to 0.03m) in overland flow area • Up to 0.02m increase in Bebubula River upstream of the Railway • Up to 0.05m increase in Adelaide Creek at Adelaide Street • Up to 0.2m increase in water levels along Adelaide Street, between Medway Street and Lower Farm Street. Some redistribution of flows with new areas flooded and (pink areas) and reduced overland flows (brown areas) around Morris Street and Queen Street and Adelaide Lane.

[1] Comparison of sensitivity case to design case peak flood level in 1% AEP event

7. Conclusions and Recommendations

In accordance with NSW Government Policy, Blayney Shire Council is committed to preparing a Floodplain Risk Management Plan for the township of Blayney. This report documents the first two stages of the process of preparing the Plan – that is, the preparation of a flood study report.

A community consultation process was undertaken to collect information on flooding from the community. Information provided by the community identified isolated minor flooding issues for the study area. The Local Flood Plan identifies the nature of historic flood damages in Blayney.

The available LiDAR survey undertaken by LPI was supplemented with a ground survey to capture the required topographic data for this flood study. The ground survey captured data on the selected stormwater pits and pipe systems, details of culverts and bridges for which adequate information was not available to this study. In addition, four flood marks and gauge zero of four streamflow gauges located in the vicinity of Blayney were referenced to AHD.

A calibrated RORB hydrologic model for the Belubula River catchment was available which was utilised to estimate catchment runoff from 108 km^2 upper catchment area of the Belubula River for the full range of flood events between 20% AEP and PMF. A detailed hydrologic model was formulated for the downstream catchments of the Belubula River and its tributaries to estimate catchment runoff for 20%, 5%, 1%, 0.5% AEP and PMF events for a range of storm durations.

A detailed 1D and 2D integrated hydrodynamic model was set up for this study using TUFLOW to represent flood behaviour in the main channel, on the floodplain and in the selected stormwater systems for 20%, 5%, 1%, 0.5% AEP and PMF events. The TUFLOW model generated flood behaviour within the study area which was generally consistent with observations made during significant flood events.

Detailed flood mapping was undertaken to define peak flood depths, maximum flood extents and peak flow velocities for the full range of flood events. Provisional flood hazard mapping was undertaken for the 5% AEP and 1% AEP events. A provisional hydraulic category map was prepared for the 1% AEP event. In addition a preliminary flood planning area map was created showing the extent of the 1% AEP flood level with a 0.5m freeboard. The flood behaviour shown in the flood maps is generally consistent with the flood behaviour experienced by the community.

A sensitivity analysis was undertaken and flood impact maps produced for the 1% AEP event due to changes in the adopted Manning's n value, tailwater conditions and blockage of pits and culverts.

Detailed hydrologic and hydraulic modelling undertaken in this study provide a sound platform for the flood modelling tasks that will be undertaken during preparation of the Floodplain Risk Management Study and Plan for Blayney.

8. Acknowledgement

The study was carried out by Jacobs with funding provided from Blayney Shire Council and NSW Government.

A number of organisations and individuals have contributed both time and valuable information to this study. The assistance of the following in providing data and/or guidance to the study is gratefully acknowledged:

- Residents of Blayney;
- Blayney Shire Council;
- Office of Environment and Heritage;
- SES; and
- NSW Office of Water.

9. References

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10. Glossary

Annual Exceedance Probability (AEP)	The chance of a flood of a given or larger size occurring in any one year, usually expressed as a percentage. In this study AEP has been used consistently to define the probability of occurrence of flooding. It is to be noted that design rainfalls used in the estimation of design floods up to and including 200 year ARI (ie. 0.5% AEP) events was derived from 1987 Australian Rainfall and Runoff. Hence the flowing relationship between AEP and ARI applies to this study. 20% AEP = 5 year ARI; 5% AEP = 20 year ARI; 1% AEP = 100 year ARI; 0.5% AEP = 200 year ARI
Australian Height Datum (AHD)	A common national surface level datum approximately corresponding to mean sea level.
Average Annual Damage (AAD)	Depending on its size (or severity), each flood will cause a different amount of flood damage to a flood prone area. AAD is the average damage per year that would occur in a nominated development situation from flooding over a very long period of time.
Average Recurrence Interval (ARI)	The long-term average number of years between the occurrences of a flood as big as or larger than the selected event. For example, floods with a discharge as great as or greater than the 20 year ARI flood event will occur on average once every 20 years. ARI is another way of expressing the likelihood of occurrence of a flood event.
Catchment	The land area draining through the main stream, as well as tributary streams, to a particular site. It always relates to an area above a specific location.
Development	is defined in Part 4 of the EP&A Act In fill development: refers to the development of vacant blocks of land that are generally surrounded by developed properties and is permissible under the current zoning of the land. Conditions such as minimum floor levels may be imposed on infill development. New development: refers to development of a completely different nature to that associated with the former land use. Eg. The urban subdivision of an area previously used for rural purposes. New developments involve re-zoning and typically require major extensions of exiting urban services, such as roads, water supply, sewerage and electric power. Redevelopment: refers to rebuilding in an area. Eg. As urban areas age, it may become necessary to demolish and reconstruct buildings on a relatively large scale. Redevelopment generally does not require either re-zoning or major extensions to urban services.
Effective Warning Time	The time available after receiving advise of an impending flood and before the floodwaters prevent appropriate flood response actions being undertaken. The effective warning time is typically used to move farm equipment, move stock, raise

	furniture, evacuate people and transport their possessions.
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 local overland flooding associated with major drainage before entering a watercourse, and/or coastal inundation resulting from super-elevated sea levels and/or waves overtopping coastline defences excluding tsunami.
Flood fringe areas	The remaining area of flood prone land after floodway and flood storage areas have been defined.
Flood liable land	Is synonymous with flood prone land (i.e.) land susceptibility to flooding by the PMF event. Note that the term flooding liable land covers the whole floodplain, not just that part below the FPL (see flood planning area)
Floodplain	Area of land which is subject to inundation by floods up to and including the probable maximum flood event, that is flood prone land.
Floodplain risk management options	The measures that might be feasible for the management of particular area of the floodplain. Preparation of a floodplain risk management plan requires a detailed evaluation of floodplain risk management options.
Floodplain risk management plan	A management plan developed in accordance with the principles and guidelines in this manual. Usually includes both written and diagrammatic information describing how particular areas of flood prone land are to be used and managed to achieve defines objectives
Flood plan (local)	A sub-plan of a disaster plan that deals specifically with flooding. They can exist at state, divisional and local levels. Local flood plans are prepared under the leadership of the SES.
Flood planning levels (FPLs)	Are the combination of flood levels (derived from significant historical flood events or floods of specific AEPs) and freeboards selected for floodplain risk management purposes, as determined in management studies and incorporated in management plans. FPLs supersede the "designated flood" or the "flood standard" used in earlier studies.
Flood proofing	A combination of measures incorporated in the design, construction and alteration of individual buildings and structures subject to flooding, to reduce or eliminate flood damages.
Flood readiness	Readiness is an ability to react within the effective warning time.
Flood risk	Potential danger to personal safety and potential damage to property resulting from flooding. The degree of risk varies with circumstances across the full range of floods. Flood risk in this manual is divided into 3 types, existing, future and continuing risks. They are described below. Existing flood risk: the risk a community is exposed to as a result of its location on

	the floodplain. Future flood risk: the risk a community may be exposed to as a result of new development on the floodplain. Continuing flood risk: the risk a community is exposed to after floodplain risk management measures have been implemented. For a town protected by levees, the continuing flood risk is the consequences of the levees being overtopped. For an area without any floodplain risk management measures, the continuing flood risk is simply the existence of its flood exposure.
Flood storage areas	Those parts of the floodplain that are important for the temporary storage of floodwaters during passage of a flood. The extent and behaviour of flood storage areas may change with flood severity, and loss of flood storage can increase the severity of flood impacts by reducing natural flood attenuation. Hence, it is necessary to investigate a range of flood sizes before defining flood storage areas
Floodway areas	Those areas of the floodplain where a significant discharge of water occurs during floods. They are often aligned with naturally defined channels. Floodways are areas that, even if only partially blocked, would cause a significant redistribution of flood flow, or a significant increase in flood levels.
Freeboard	Provides reasonable certainty that the risk exposure selected in deciding on a particular flood chosen as the basis for the FPL is actually provided. It is a factor of safety typically used in relation to the setting of floor levels, levee crest levels, etc. Freeboard is included in the flood planning level.
Hazard	A source of potential harm or situation with a potential to cause loss. In relation to this manual the hazard is flooding which has the potential to cause damage to the community.
Local overland flooding	Inundation by local runoff rather than overbank discharge from a stream, river, estuary, lake or dam.
m AHD	Metres Australian Height Datum (AHD)
m/s	Metres per second. Unit used to describe the velocity of floodwaters.
m^3/s	Cubic metres per second or "cumec". A unit of measurement of creek or river flows or discharges. It is the rate of flow of water measured in terms of volume per unit time.
Mainstream flooding	Inundation of normally dry land occurring when water overflows the natural or artificial banks of a stream, river, estuary, lake or dam.
MIKE11	A computer program used for analysing behaviour of unsteady flow in open channels and floodplains.
Modification measures	Measures that modify either the flood, the property or the response to flooding.

Overland flowpath	The path that floodwaters can follow as they are conveyed towards the main flow channel or if they leave the confines of the main flow channel. Overland flowpaths can occur through private property or along roads.
Probable Maximum Flood (PMF)	The largest flood that could conceivably occur at a particular location, usually estimated from probable maximum precipitation coupled with the worst flood producing catchment conditions. Generally, it is not physically or economically possible to provide complete protection against this event. The PMF defines the extent of flood prone land, that is, the floodplain.
Risk	Chance of something happening that will have an impact. It is measured in terms of consequences and likelihood. In the context of the manual it is the likelihood of consequences arising from the interaction of floods, communities and the environment.
Runoff	The amount of rainfall which actually ends up as a streamflow, also known as rainfall excess.
Stage	The amount of rainfall which actually ends up as streamflow, also known as rainfall excess.
XP-RAFTS	XP-RAFTS is a computer program which is used to convert rainfall into runoff. XP-RAFTS is used for hydrologic analysis of stormwater drainage and conveyance systems. XP-RAFTS simulates both urban and rural catchments ranging in size between a single house allotment up to thousands of square kilometre river systems.

Appendix A. Questionnaire

Flood Study for the Town of Blayney

Blayney Shire Council has contracted the Consultant, Sinclair Knight Merz (SKM), to undertake a flood study for the Town of Blayney. The flood study area for the Town of Blayney is shown in the attached Map 1.

The study is aimed at addressing the flooding issues due to riverine (Belubula River and its tributaries) and overland flooding and their combined impacts on flooding within the Town of Blayney. The Consultant would like to receive feedback from the community on a number of issues and topics already highlighted by the Council with regard to flooding in the Town of Blayney.

If you cannot answer any question in the questionnaire, or do not wish to answer a question, then leave it unanswered and proceed to the next question. **Your input to this important study will be greatly appreciated.** If you need additional space, please add sheets. **Please send your response** to this questionnaire **by 31 August 2013 using the attached reply paid envelope.**

If you would prefer to provide a letter with your comments to the Consultant, this would also be welcomed. Contact details of the Consultant's Project Manager are provided below:

Akhter Hossain
P O Box 164
St Leonards, NSW 1590
email: [redacted]

Place a tick or write a number in the relevant box as per instruction or write answers.

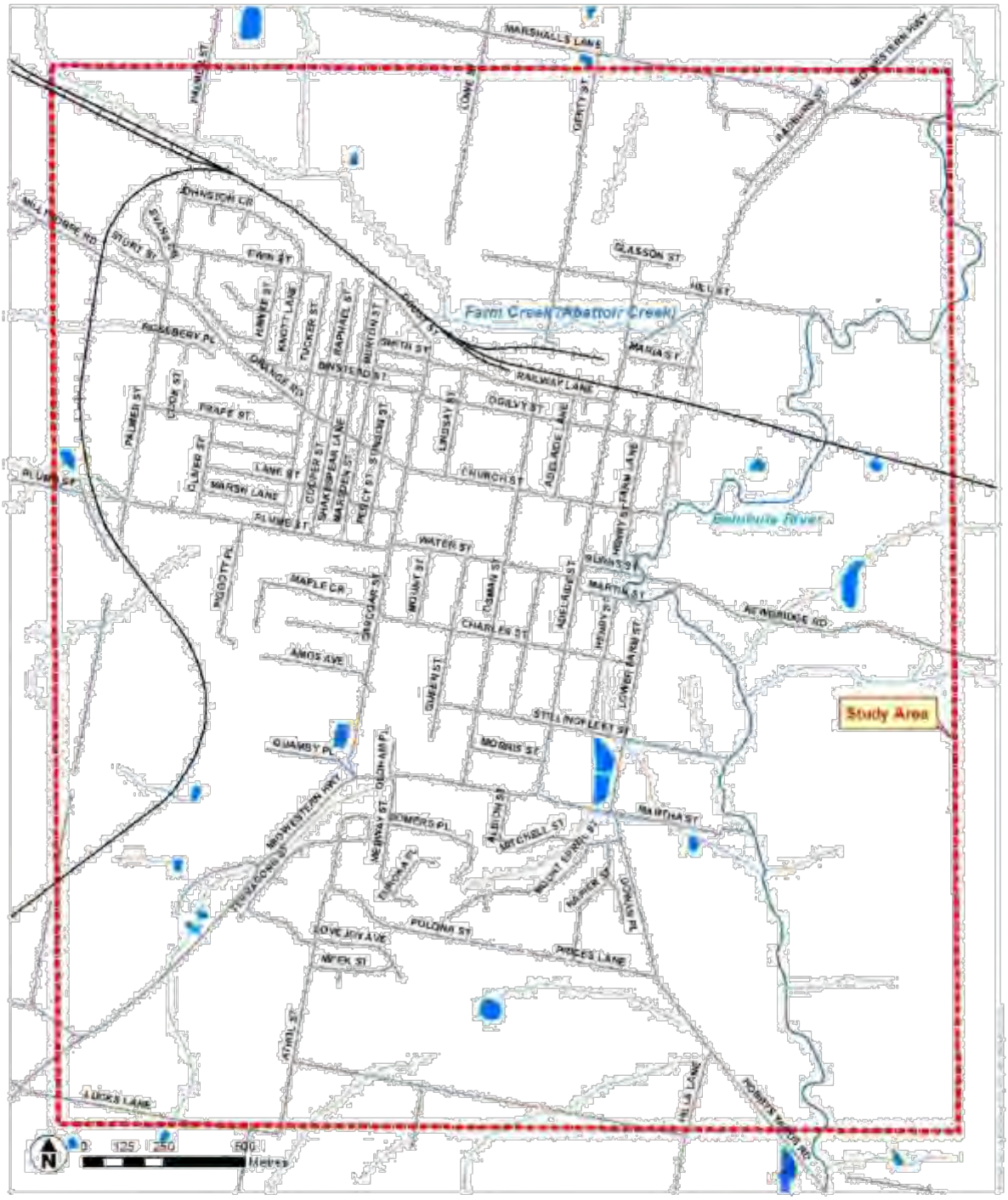
Question No.	Question and Answer
1.	**Do you live (reside) or have lived in the study area shown on Map 1?** A Yes (Please provide your address and put an 'X' on the relevant map) .... B No (Go to Question 3)
2.	**Do you own or rent your residence in the study area shown on Map 1?** A Own B Rent C How long have you lived in the study area? (Please write number of years)..... ***If you are not sure whether you are in the map or not, please provide address
3.	**Do you own or manage a business in the study area?** A Yes, For how many years? ..... B No (go to Question 5)
4.	**What kind of business is yours?**

Questionnaire No.	Question and Answer
	A Home based business B Shop/commercial premises C Light industrial D Heavy industry E Others, please write type of business .....
5.	**Have you had any experience of flooding (due to both Belubula River/ Farm Creek and/or storm events as well) in and around where you live or work?** A Yes B No (Go to Question 15)
6.	**How deep was the floodwater (from both Belubula River/ Farm Creek and/or storm water as well) in the worst flood/ storm event that you experienced?** Please estimate the depth ..... What was the year of this flood?..... Where was this flood? A At your house? B At work? C Elsewhere? Please provide the street address for this flood? .....
7.	**How long did the floodwaters stay up?** A Less than 2 hours B less than 6 hours C Approximately 1 day
8.	**What damage resulted from this flood in your residence?** (Please indicate either "none", "minor", "moderate" or "major". A Damage to garden, lawns or backyard B Damage to external house walls C Damage to internal parts of house (floor, doors, walls etc) D Damage to possessions (fridge, television etc) E Damage to car F Damage to garage G Other damage, please list..... H What was the cost of the repairs, if any?.....
9.	**What damage resulted from this flood in your business?** (Please indicate either "none", "minor", "moderate" or "major".) A Damage to surroundings B Damage to building C Damage to stock D Other damages, please list..... E What was the cost of the repairs, if any?.....
10.	**Was vehicle access to/from your property disrupted due to floodwaters during the worst flooding/ storm event?** A Not affected B Minor disruption (roads flooded but still driveable) C Access cut off
11.	**Did you or members of your family required assistance from SES during flood events?**

Quest-ion No.	Question and Answer
	A No B Yes, Please specify how many times (in total) members of your family required assistance? .....
12.	**What information can you provide on past floods/ storm events that created flooding?** (You can tick more than one item). Please write any descriptions at the end of the questionnaire A No information B Information on extent or depth of floodwater at particular locations, newspaper clippings or other images on the past floods C Any permanent marks indicating maximum flood level for particular floods D Memory of flow directions, depth or velocities
13.	**Do you consider that flooding of your property has been made worse by works on other properties, or by the construction of roads or other structures?** A Yes (please provide further details and attach extra pages if necessary. Please provide a sketch if possible). B Unsure C No
14.	**Do you have any photographs of past floods that would be useful for the consultant to help him understand the area flooded or other flood effects and are you willing to provide copies?** If possible please attach the photographs (with dates and location) which will be copied and returned. A Yes (either attach or the consultant will contact you to arrange for a copy to be made and returned) B No
15.	**Do you expect to undertake any further development on your land in the future?** A No B Minor extensions C New building D Unsure E Other (please specify) _____
16.	**Please rank the following development types according to what you consider should be assigned greatest priority in protecting from flooding** (1 = greatest priority to 7 = least priority). **Please identify specific items if necessary.** A Commercial B Heritage items, please specify _____ C Residential D Community facilities (schools, halls, etc.) _____ E Critical utilities (power substations, telephone exchanges, etc.) _____ F Emergency facilities (Hospital, Police Station, etc.) _____ G Recreation areas and facilities _____
17.	**Please rank the following by placing numbers from 1 to 6 (1 = greatest priority to 6 = least priority) next to A, B, C, D, E and F.** A Protecting residents/business from flooding B Protecting land of residents/businesses from flooding

Questionnaire No.	Question and Answer
	C Maintaining an emergency flood free access D Providing flood signage for public safety E Support from SES F Providing flood warning
18.	**Do you wish to comment on any other issues associated with this study? Please add comments at the end of the questionnaire or please indicate your willingness to answer questions over the phone?** _____ _____ _____ _____
19.	**Do you wish to remain on the mailing list for further details, Newsletters etc?** A Yes (please provide contact details, see next question) B No
20.	If you would like, please provide details of where you live and how we can contact you if we need to follow up on some details or seek additional comment. **Name:** _____ **Address:** _____ _____ **Telephone:** ..... **Fax:** ..... **Email:**.....
	Space for additional comments _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____ _____

Map 1 – Study Area for the Town of Blayney



Questionnaire for the Town of Blayney 5

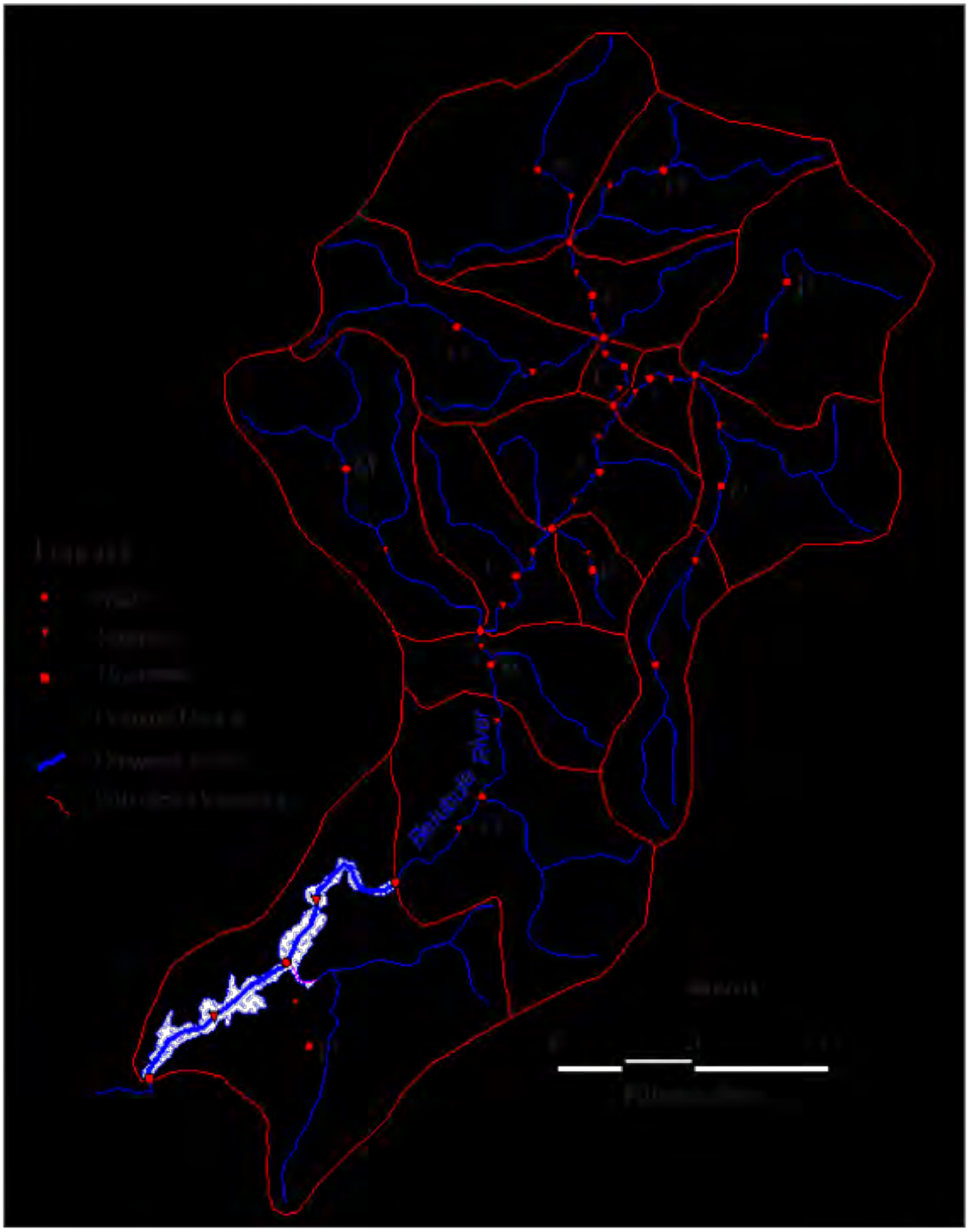
Do you have any information about flooding in your area?

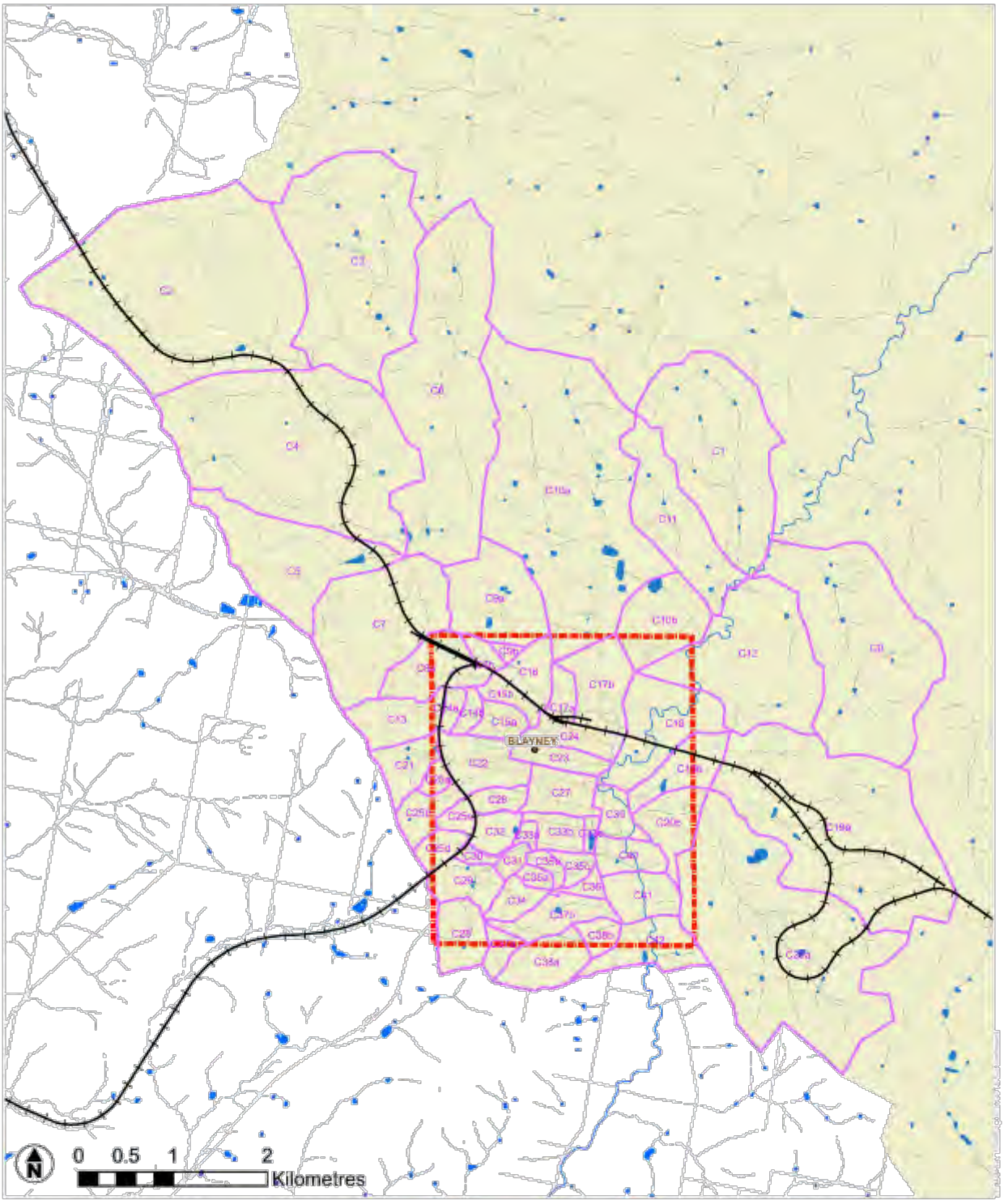
Appendix B. Topographic Survey


0
250
500
1,000
Metres
Legend
Railway
Surveyed Culverts
Surveyed Stormwater Pipe
Surveyed Stormwater Pit
Surveyed Flood Marks
JACOBS
Topographic Survey
Blayney Flood Study and FRMS&P
Blaney Shire Council

Appendix C. Hydrologic Modelling

Figure C001 RORB Model Schematic




BLAYNEY
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Kilometres
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Study Catchment
Study Area
Railway
XP-RAFTS Sub-catchments
JACOBS
XP-RAFTS Sub-Catchments
Blayney Flood Study and FRMS&P
Blayney Shire Council

Figure C003 XP-RAFTS Model Schematic

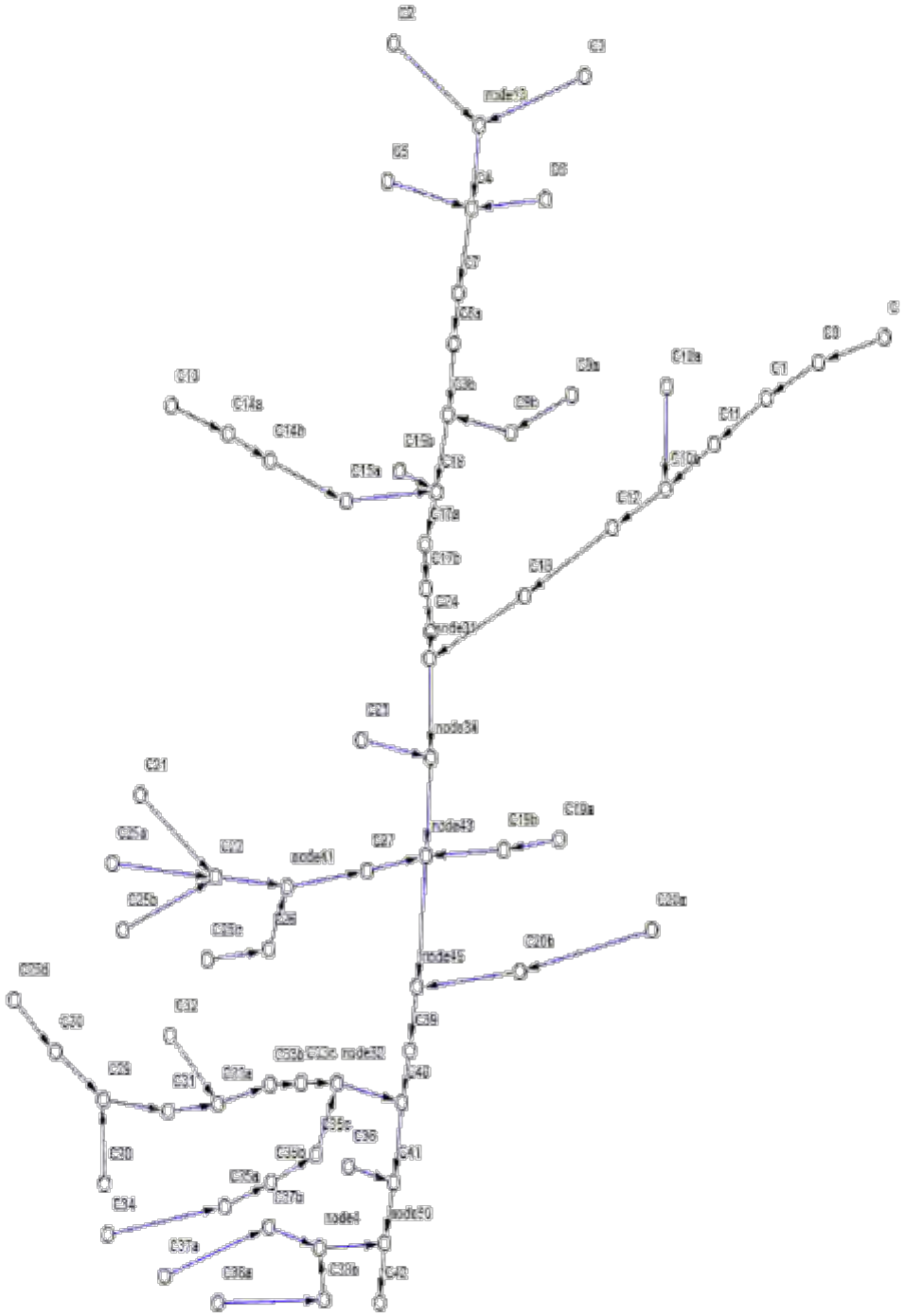
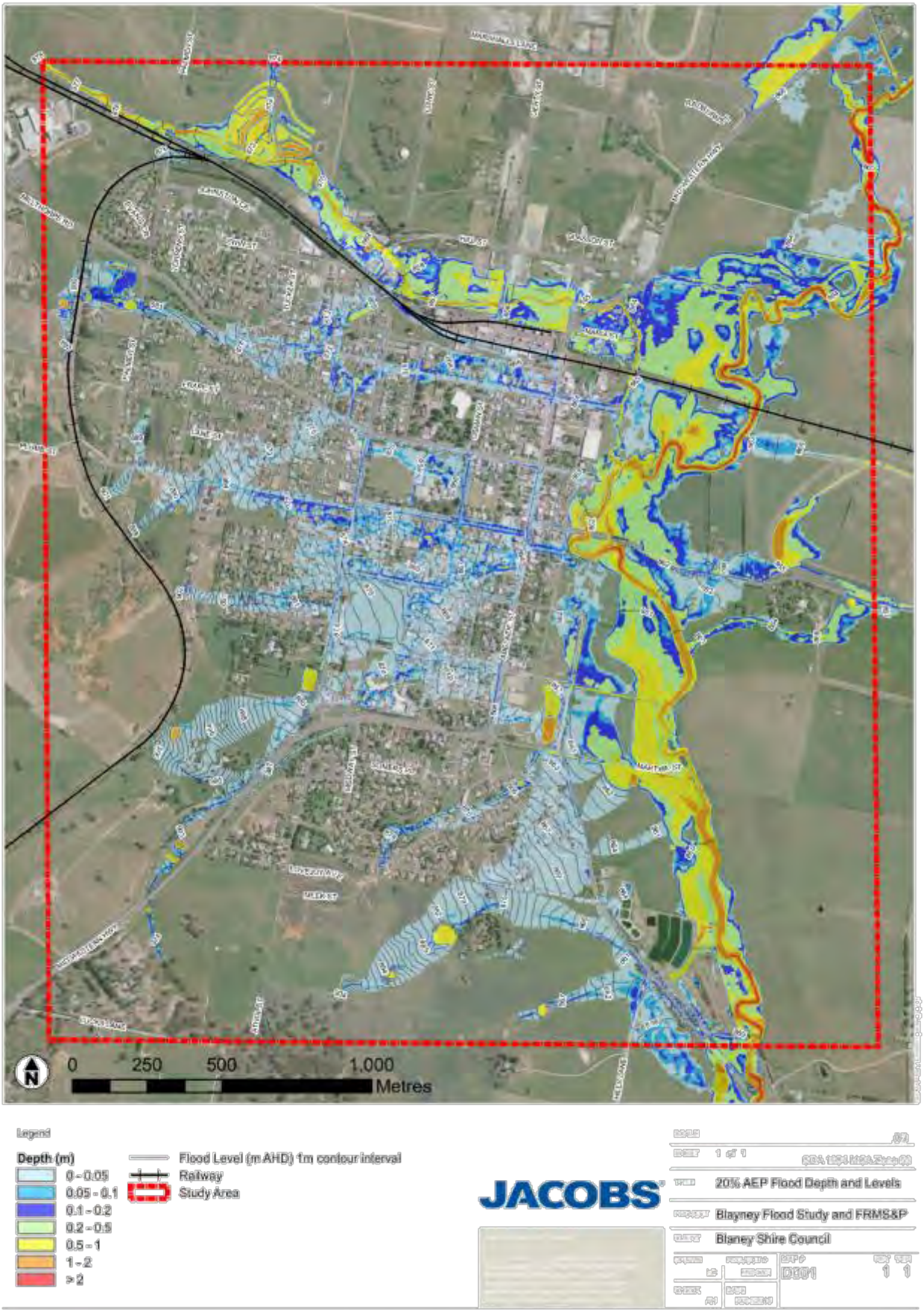


Table C001 XP-RAFTS Sub-Catchment Characteristics

Sub-Catchment	Catchment Area (ha)		Slope (%)	% Impervious	
	#1	#2	#1	#1	#2
C0	253.00		3.0	3	
C1	213.50		3.5	3	
C11	105.20		4.6	3	
C10a	407.60	11.33	2.1	3	100
C10b	58.50		2.1	3	
C12	107.50		4.5	3	
C13	80.00		7.6	5	
C2	441.50		3.5	5	
C3	231.40		3.1	5	
C4	302.90		2.4	5	
C5	132.50		5.5	5	
C6	370.70		3.5	5	
C7	184.40		5.1	3	
C8a	35.60	7.35	4.5	3	100
C8b	30.20		2.4	3	
C9a	4.50		2.4	3	
C9b	17.20	1.26	4.2	3	100
C10	42.90		7.2	5	
C14a	8.00	0.82	2.8	5	100
C14b	8.50	1.55	2.1	5	100
C15a	13.10	4.51	3.5	5	100
C15b	10.20	4.30	3.0	5	100
C19	23.50	4.02	6.1	5	100
C17a	10.30	4.55	4.2	5	100
C17b	45.70	9.66	2.1	5	100
C24	10.50	3.53	1.8	5	100
C23	17.50	3.67	1.5	5	100
C21	31.20		7.7	3	
C25b	25.40		6.5	3	
C25a	8.70		10.5	3	
C26	16.50	2.12	3.0	5	100
C25a	10.50		8.2	5	
C20	9.00	4.03	5.7	5	100
C27	27.80	7.05	1.3	5	100
C31a	330.40		2.4	5	
C31b	41.50		2.7	5	
C29a	170.40		5.0	3	
C29b	43.50		4.8	3	
C28	21.00		6.1	5	
C34	17.60	1.11	7.6	5	100
C35a	5.50	1.84	7.6	5	100
C35b	8.50	2.53	6.5	5	100
C35c	8.50	2.21	5.0	5	100
C35d	18.10		9.2	5	
C40	6.90		6.6	5	
C38	93.70		6.5	5	
C39	29.40	1.13	6.2	5	100
C31	7.70	3.58	6.6	3	100
C33	37.00		4.5	10	
C33a	9.00	2.47	2.4	5	100
C33b	13.60	7.24	1.5	3	100
C43a	9.50		2.4	3	
C46	26.10		2.0	3	
C39	7.30	1.58	6.5	5	100
C41	30.00		2.0	3	
C38a	42.50		11.3	5	
C38b	13.80		4.4	5	
C37a	14.10		9.5	5	
C37b	39.80		5.5	5	
C42	48.40		5.0	3	

Appendix D. Flood Extent Mapping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Metres
Legend
Depth (m)
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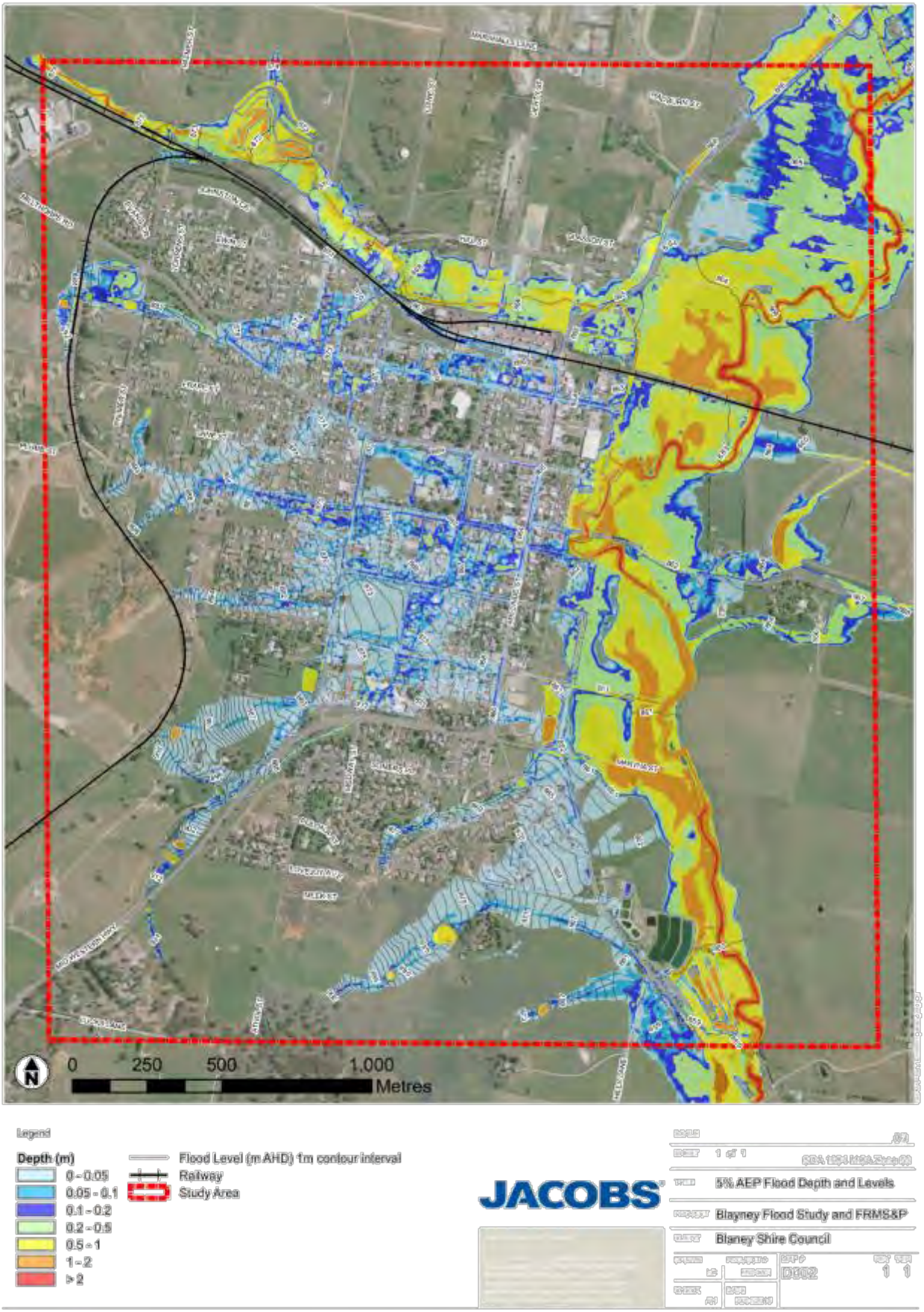
0.05 - 0.1
0.1 - 0.2
0.2 - 0.5
0.5 - 1
1 - 2
> 2
Flood Level (m AHD) 1m contour interval
Railway
Study Area
JACOBS
20% AEP Flood Depth and Levels
Blayney Flood Study and FRMS&P
Blayney Shire Council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Depth (m)
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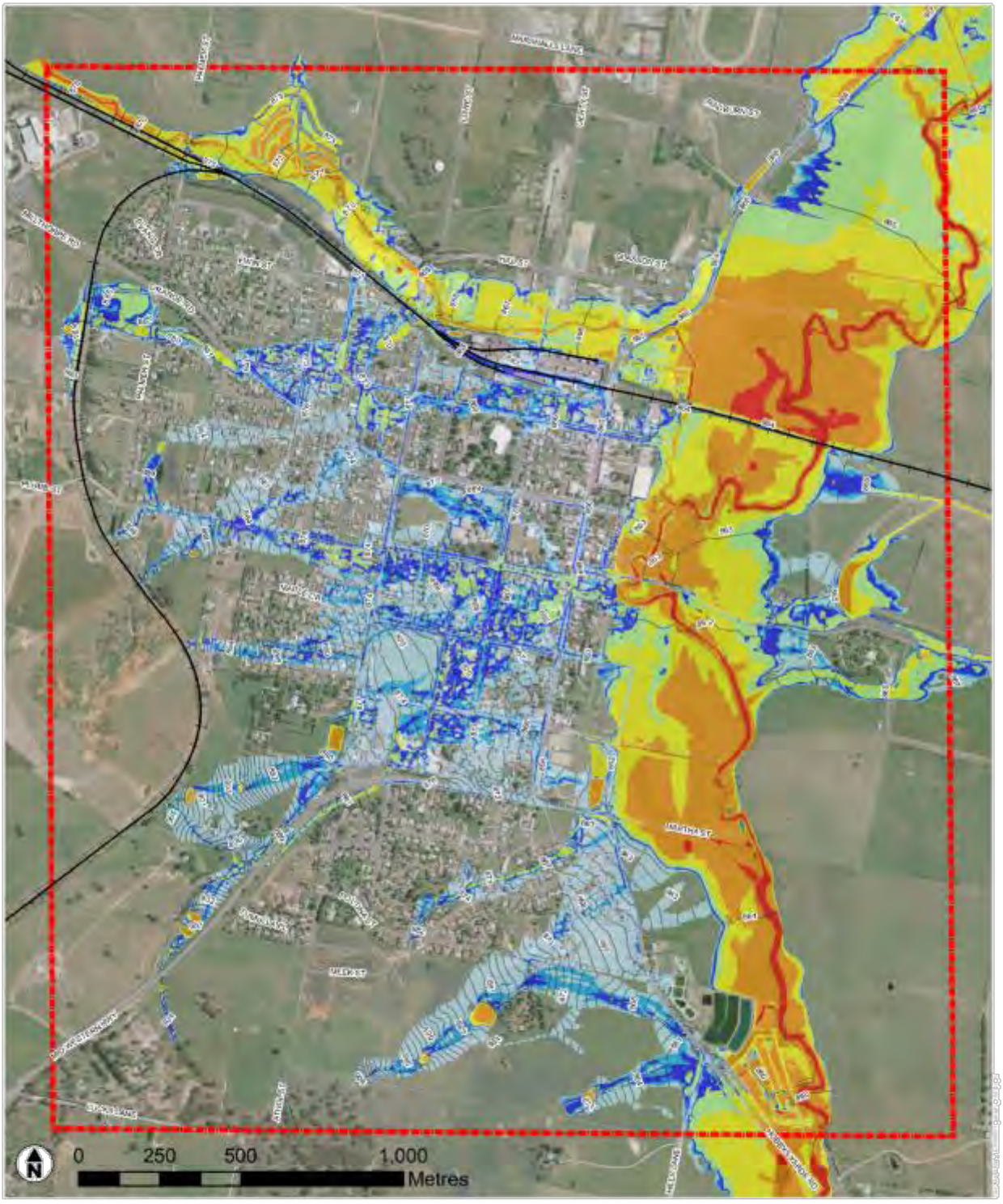
0.05 - 0.1
0.1 - 0.2
0.2 - 0.5
0.5 - 1
1 - 2
> 2
Flood Level (m AHD) 1m contour interval
Railway
Study Area
JACOBS
5% AEP Flood Depth and Levels
Blayney Flood Study and FRMS&P
Blayney Shire Council
D002


0
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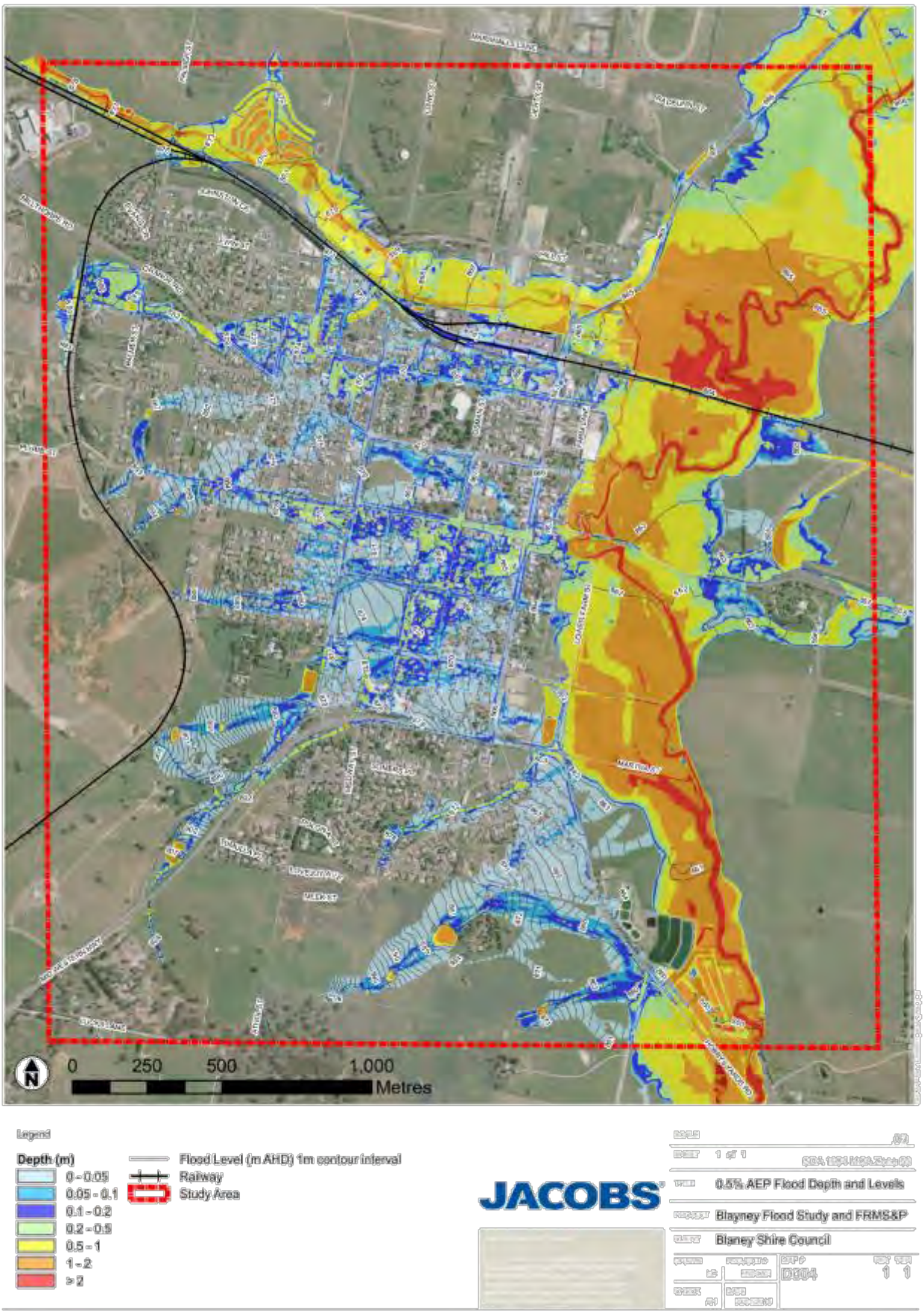
Metres
Legend
Depth (m)
0 - 0.05
0.05 - 0.1
0.1 - 0.2
0.2 - 0.5
0.5 - 1
1 - 2
> 2
Flood Level (m AHD) 1m contour interval
Railway
Study Area
JACOBS
1% AEP Flood Depth and Levels
Blayney Flood Study and FRMS&P
Blayney Shire Council


0
250
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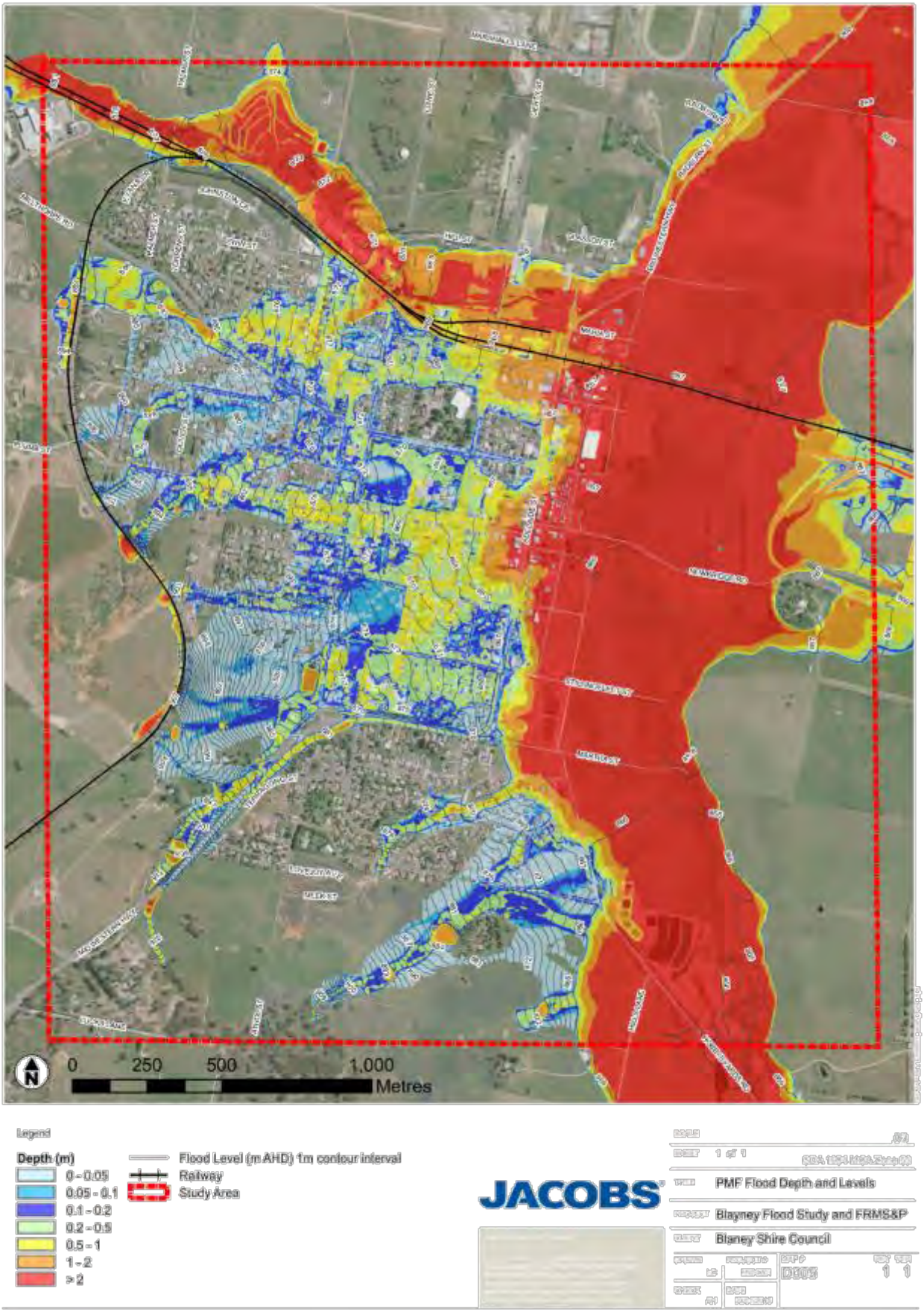
1,000
Metres
Legend
Depth (m)
0 - 0.05
0.05 - 0.1
0.1 - 0.2
0.2 - 0.5
0.5 - 1
1 - 2
> 2
Flood Level (m AHD) 1m contour interval
Railway
Study Area
JACOBS
0.5% AEP Flood Depth and Levels
Blayney Flood Study and FRMS&P
Blayney Shire Council


0
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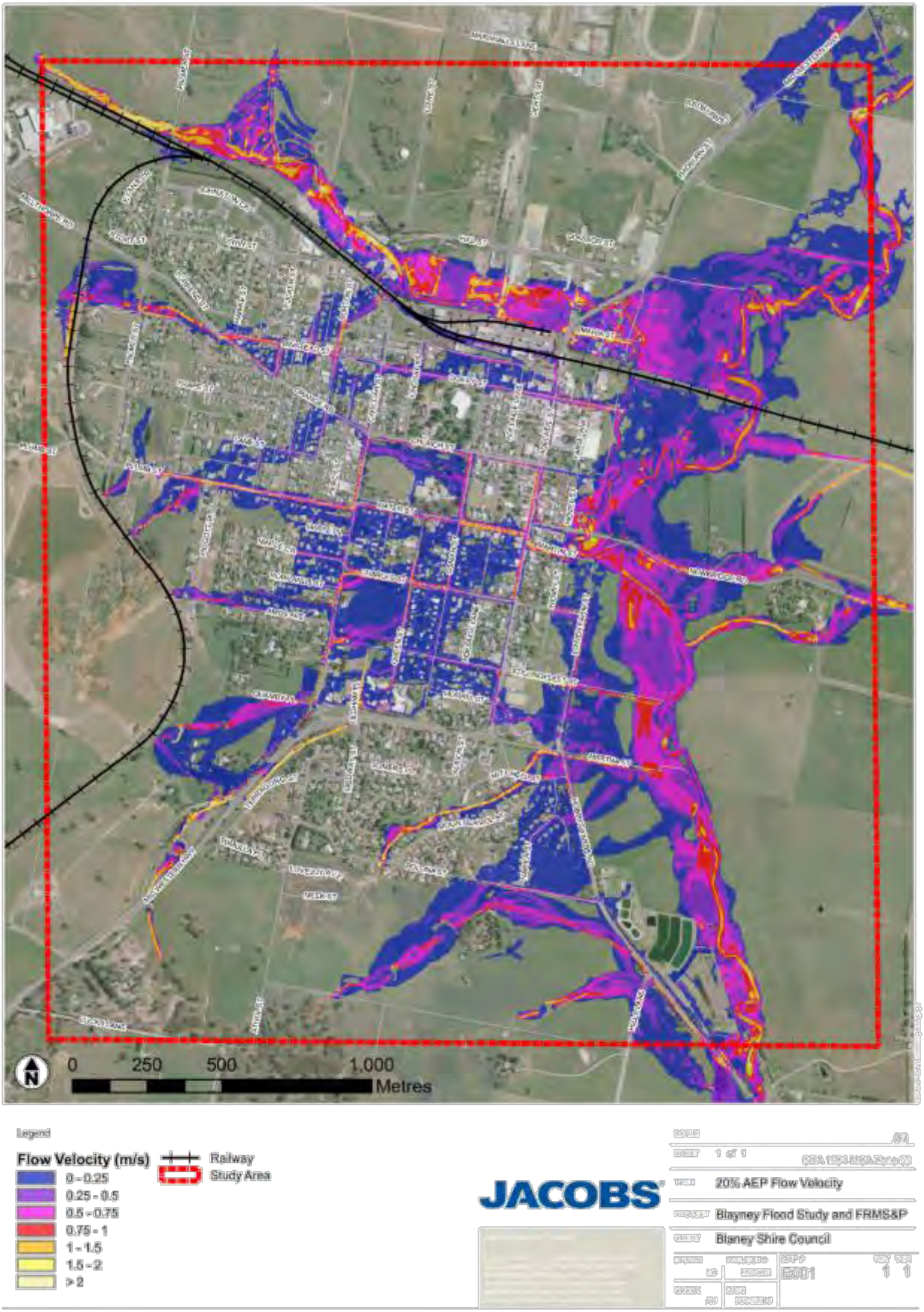
Metres
Legend
Depth (m)
0 - 0.05
0.05 - 0.1
0.1 - 0.2
0.2 - 0.5
0.5 - 1
1 - 2
> 2
Flood Level (m AHD) 1m contour interval
Railway
Study Area
JACOBS
PMF Flood Depth and Levels
Blayney Flood Study and FRMS&P
Blayney Shire Council

Appendix E. Mapping of Peak Flow Velocities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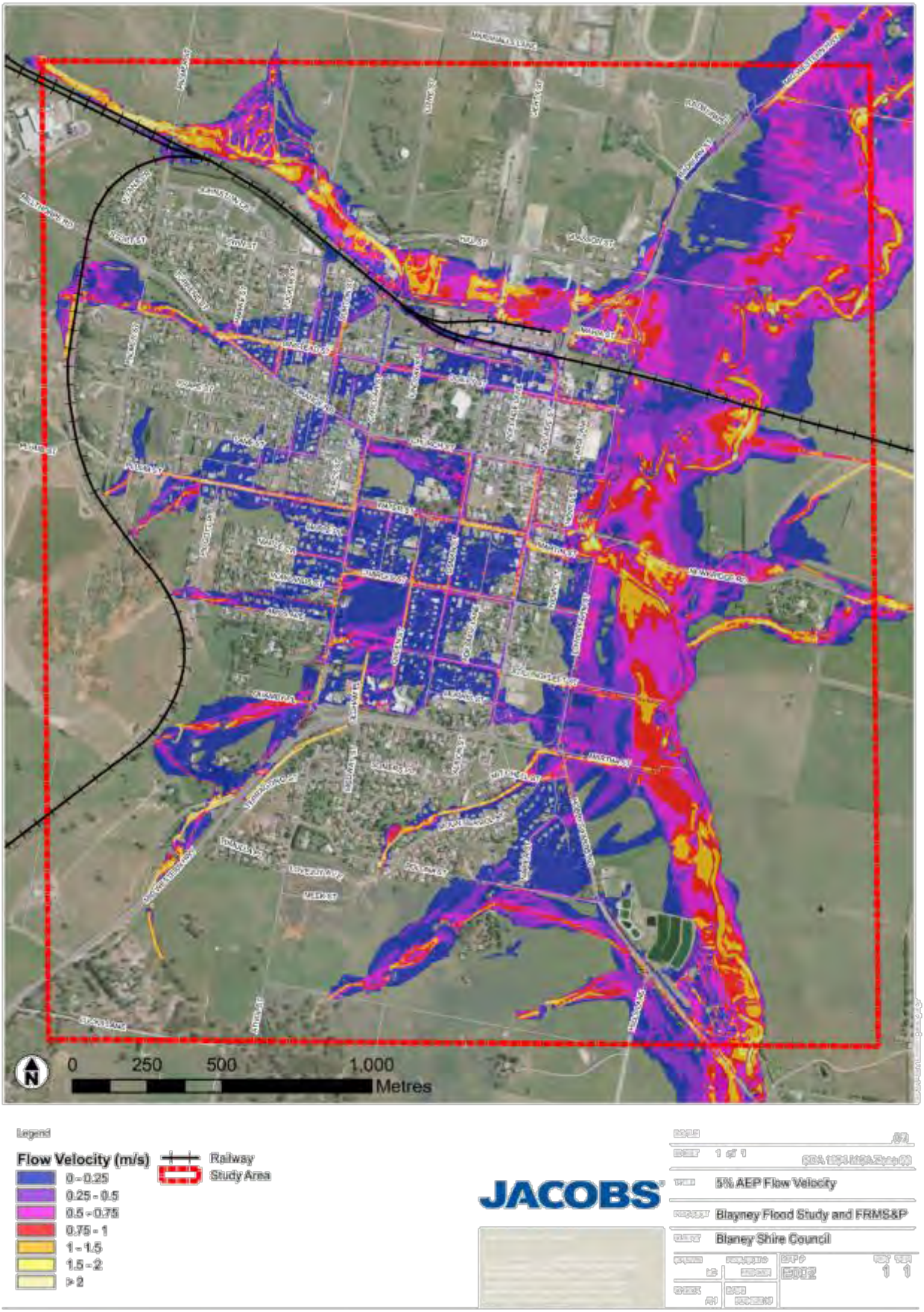
Metres
Legend
Flow Velocity (m/s)
0 - 0.25
0.25 - 0.5
0.5 - 0.75
0.75 - 1
1 - 1.5
1.5 - 2
> 2
Railway
Study Area
JACOBS
20% AEP Flow Velocity
Blayney Flood Study and FRMS&P
Blaney Shire Council


0
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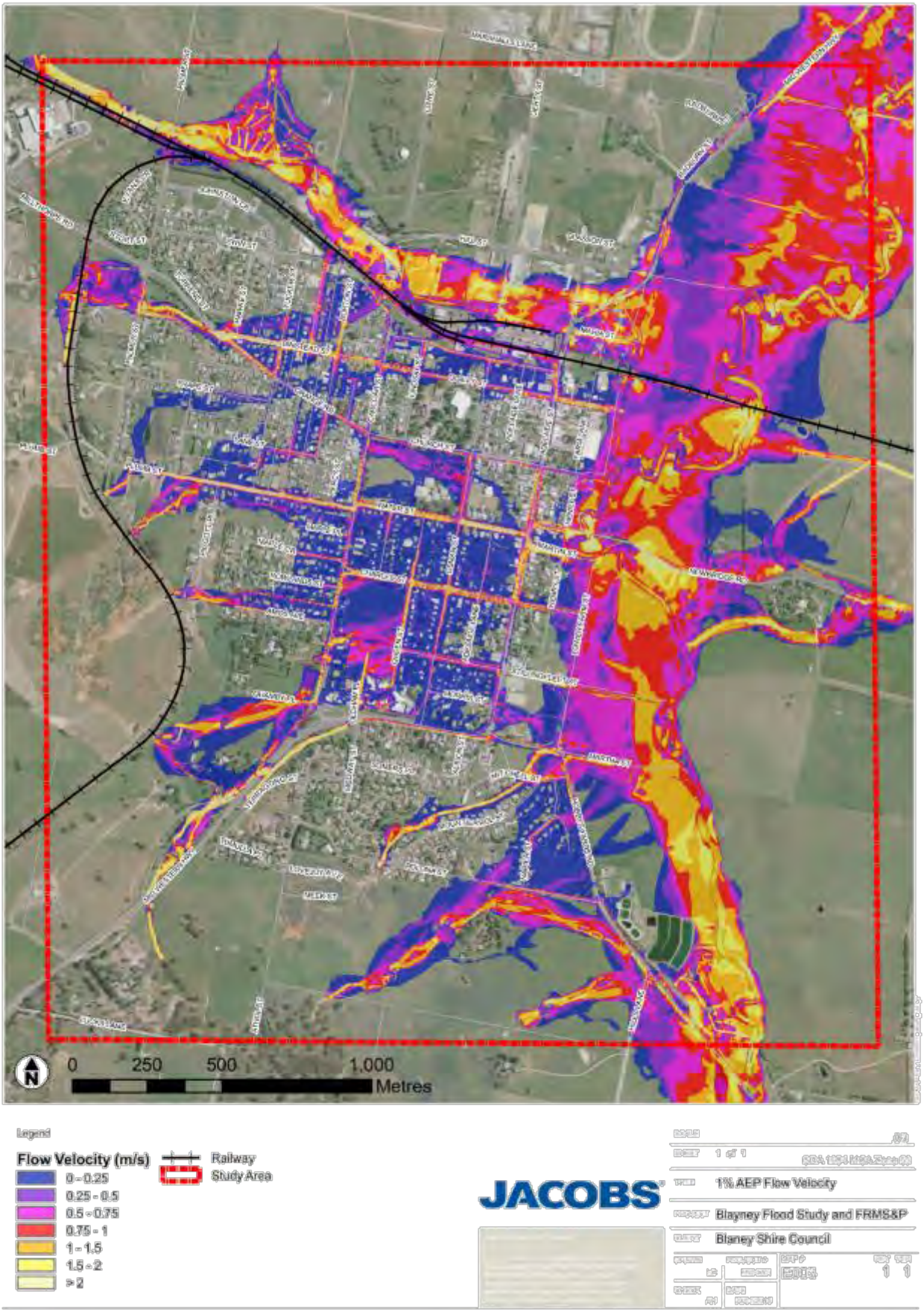
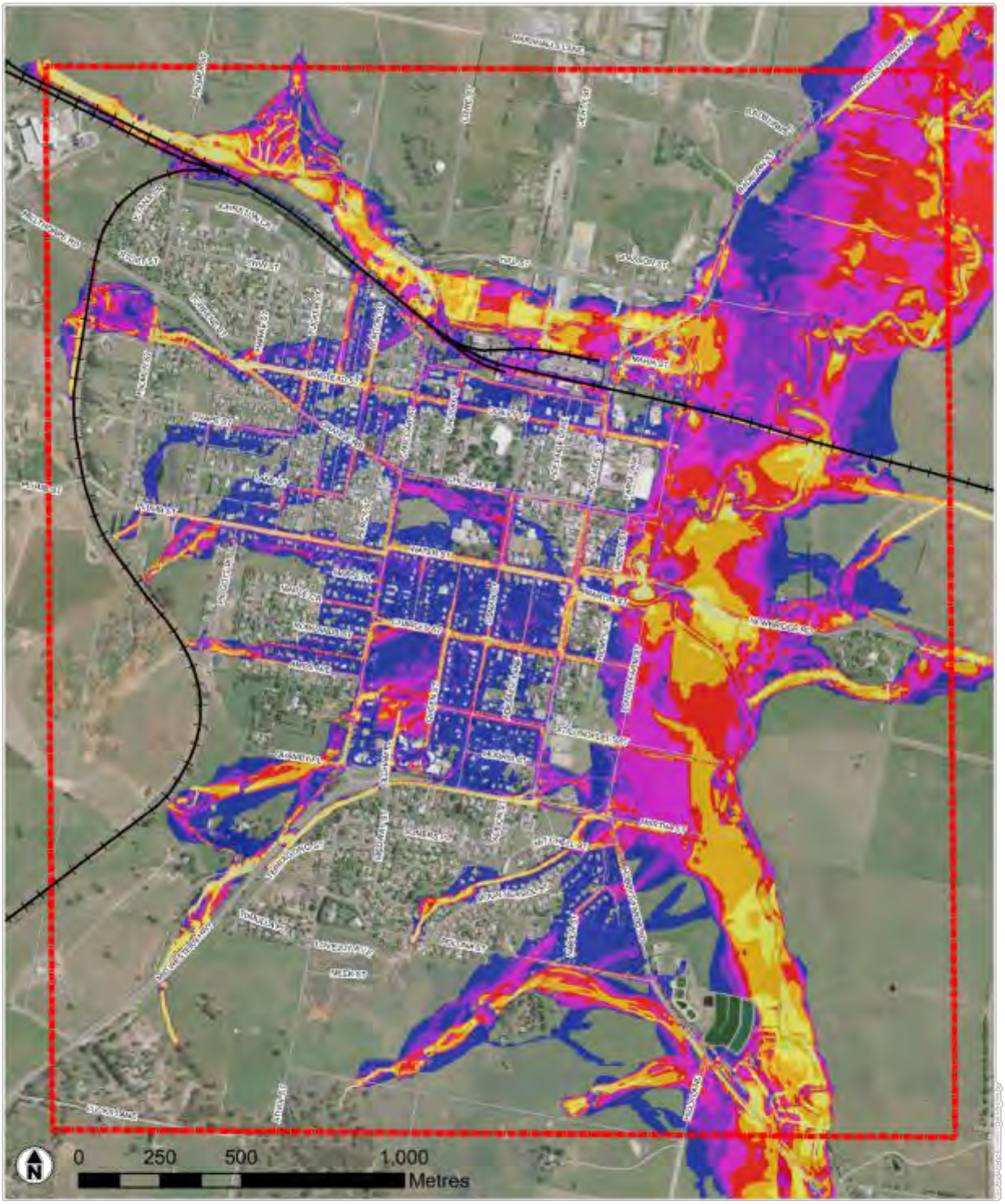
Metres
Legend
Flow Velocity (m/s)
0 - 0.25
0.25 - 0.5
0.5 - 0.75
0.75 - 1
1 - 1.5
1.5 - 2
> 2
Railway
Study Area
JACOBS
5% AEP Flow Velocity
Blayney Flood Study and FRMS&P
Blaney Shire Council


0
250
500
1,000
Metres
Legend
Flow Velocity (m/s)
0 - 0.25
0.25 - 0.5
0.5 - 0.75
0.75 - 1
1 - 1.5
1.5 - 2
> 2
Railway
Study Area
JACOBS
1% AEP Flow Velocity
Blayney Flood Study and FRMS&P
Blaney Shire Council



Legend

Flow Velocity (m/s)
- 0 - 0.25
- 0.25 - 0.5
- 0.5 - 0.75
- 0.75 - 1
- 1 - 1.5
- 1.5 - 2
- > 2

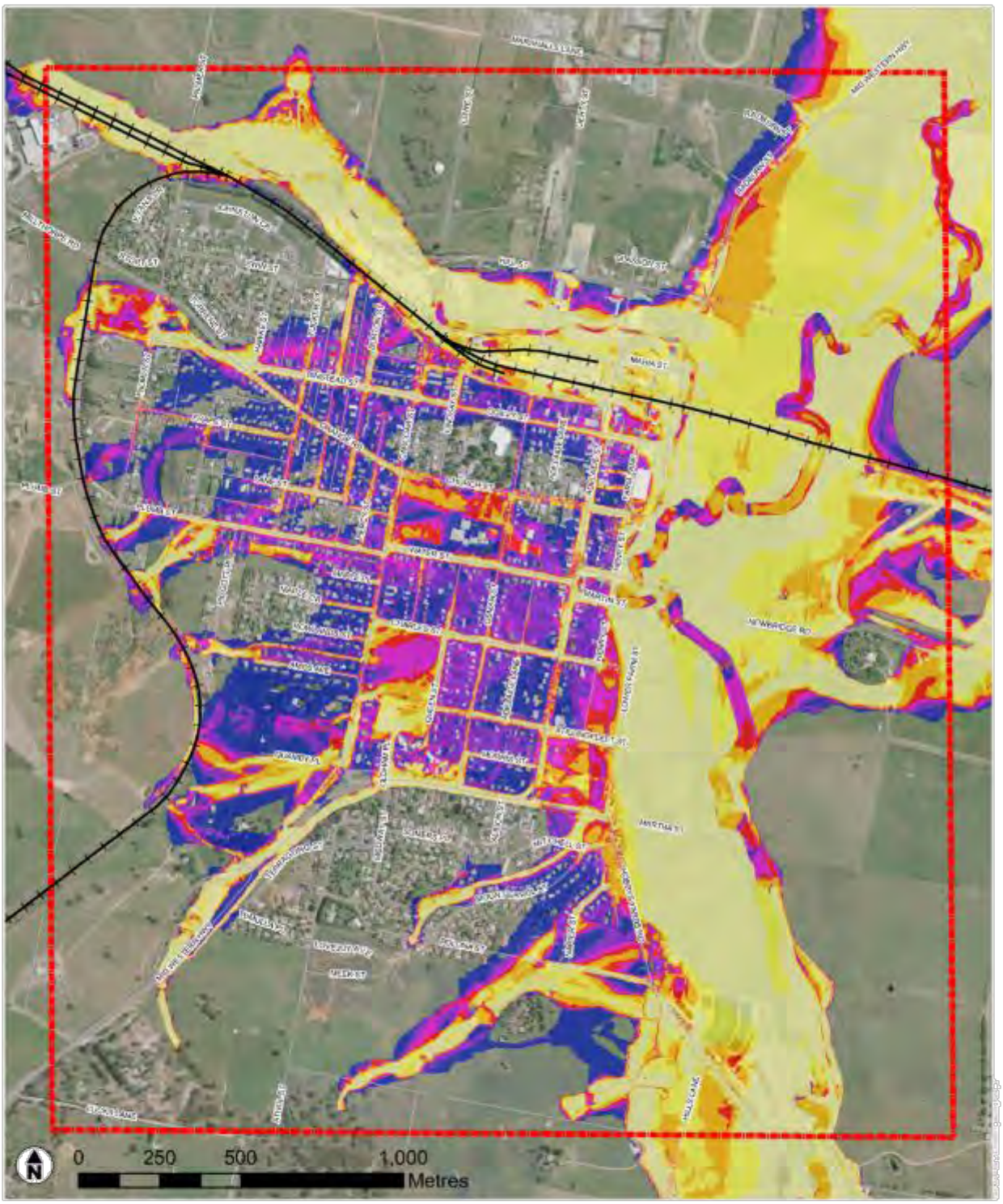
Railway
Study Area

JACOBS

0.5% AEP Flow Velocity

Blayney Flood Study and FRMS&P

Blaney Shire Council


0
250
500
1,000
Metres
Legend
Flow Velocity (m/s)
0 - 0.25
0.25 - 0.5
0.5 - 0.75
0.75 - 1
1 - 1.5
1.5 - 2
> 2
Railway
Study Area
JACOBS
PMF Flow Velocity
Blayney Flood Study and FRMS&P
Blaney Shire Council

Appendix F. Summary of Peak Flows

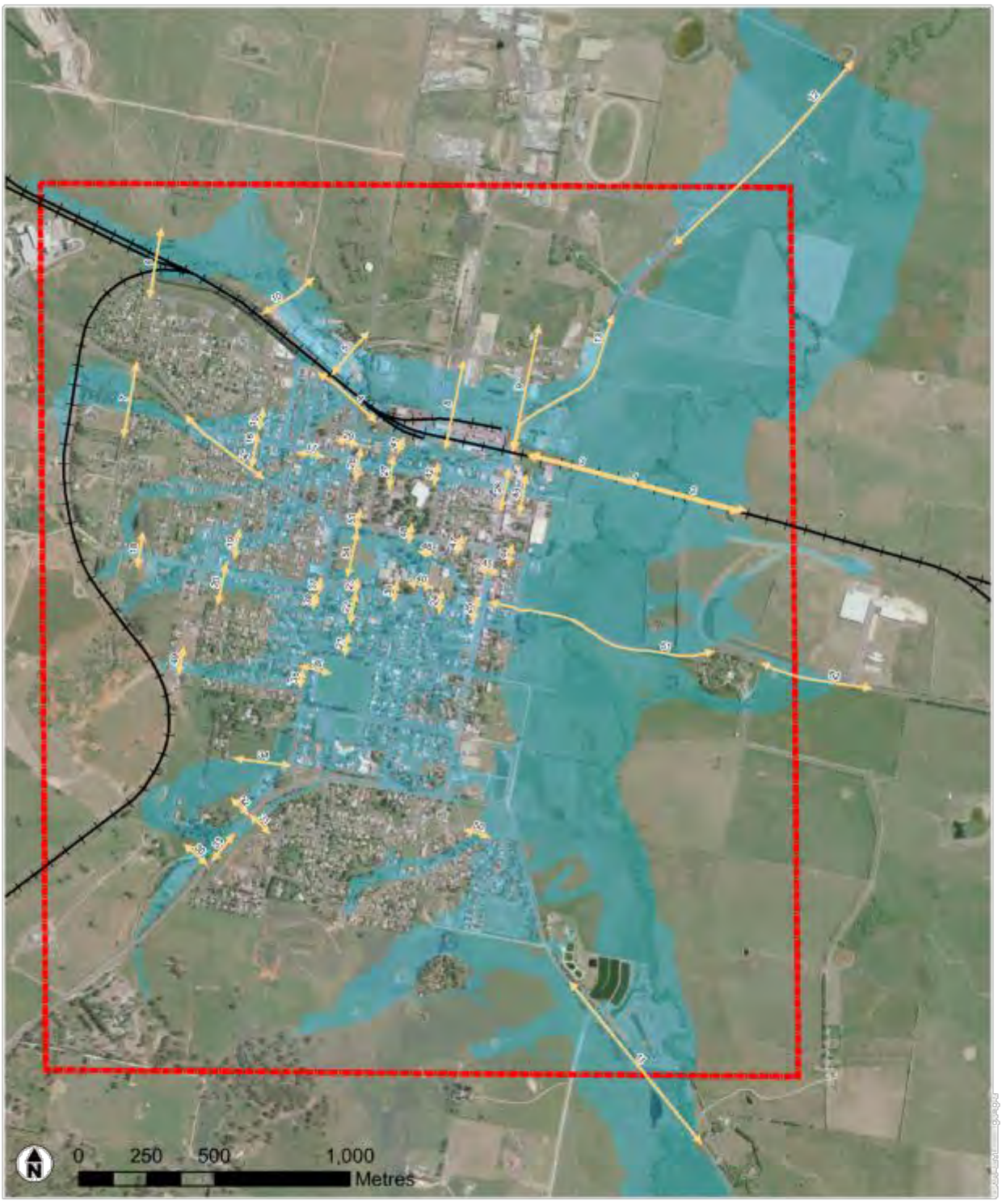
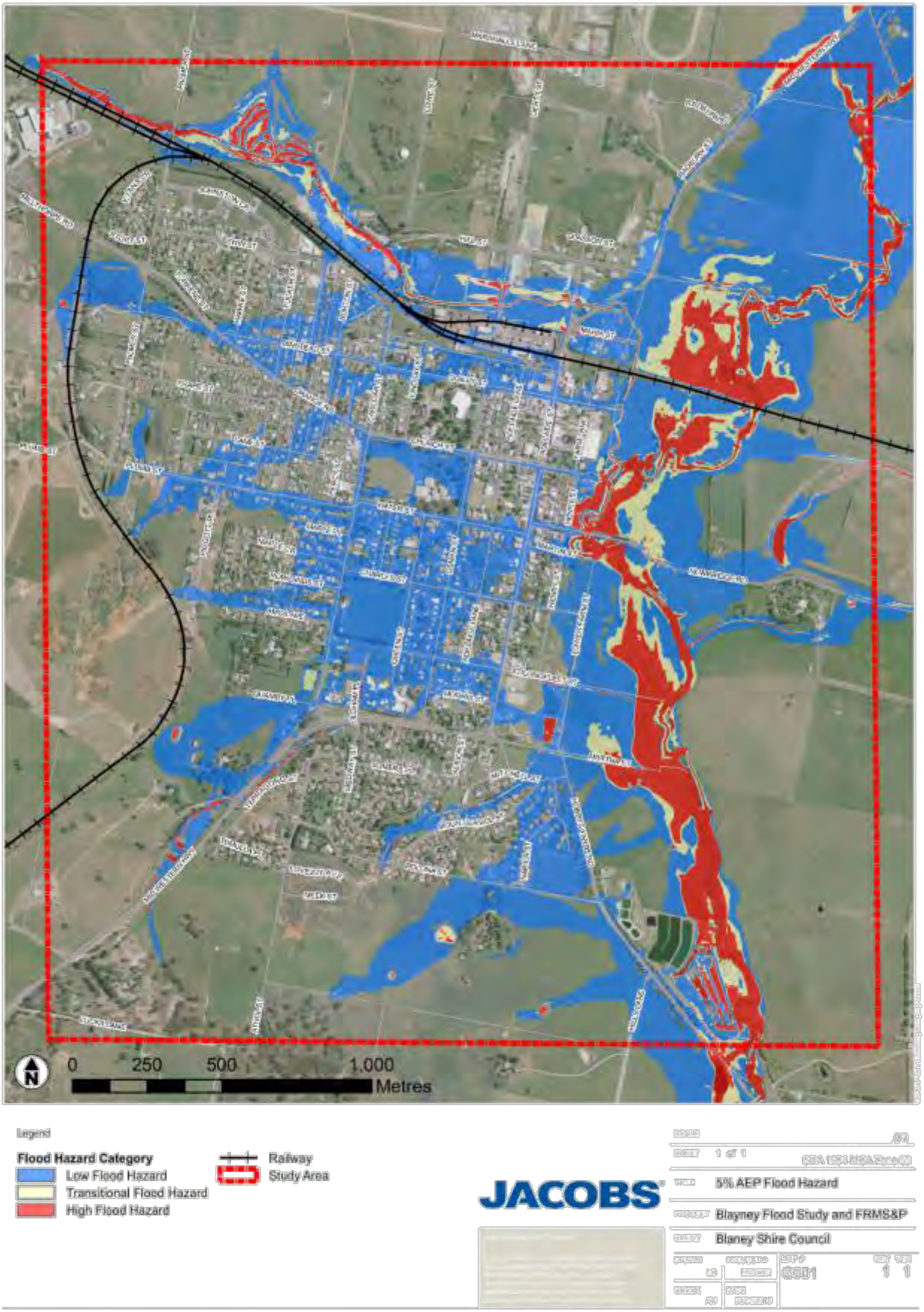

0
250
500
1,000
Metres
Legend
Flow Transect Location
1% AEP Flood Extent
Railway
Study Area
JACOBS
Flow Transect Locations
Blayney Flood Study and FRMS&P
Blaney Shire Council
FD01

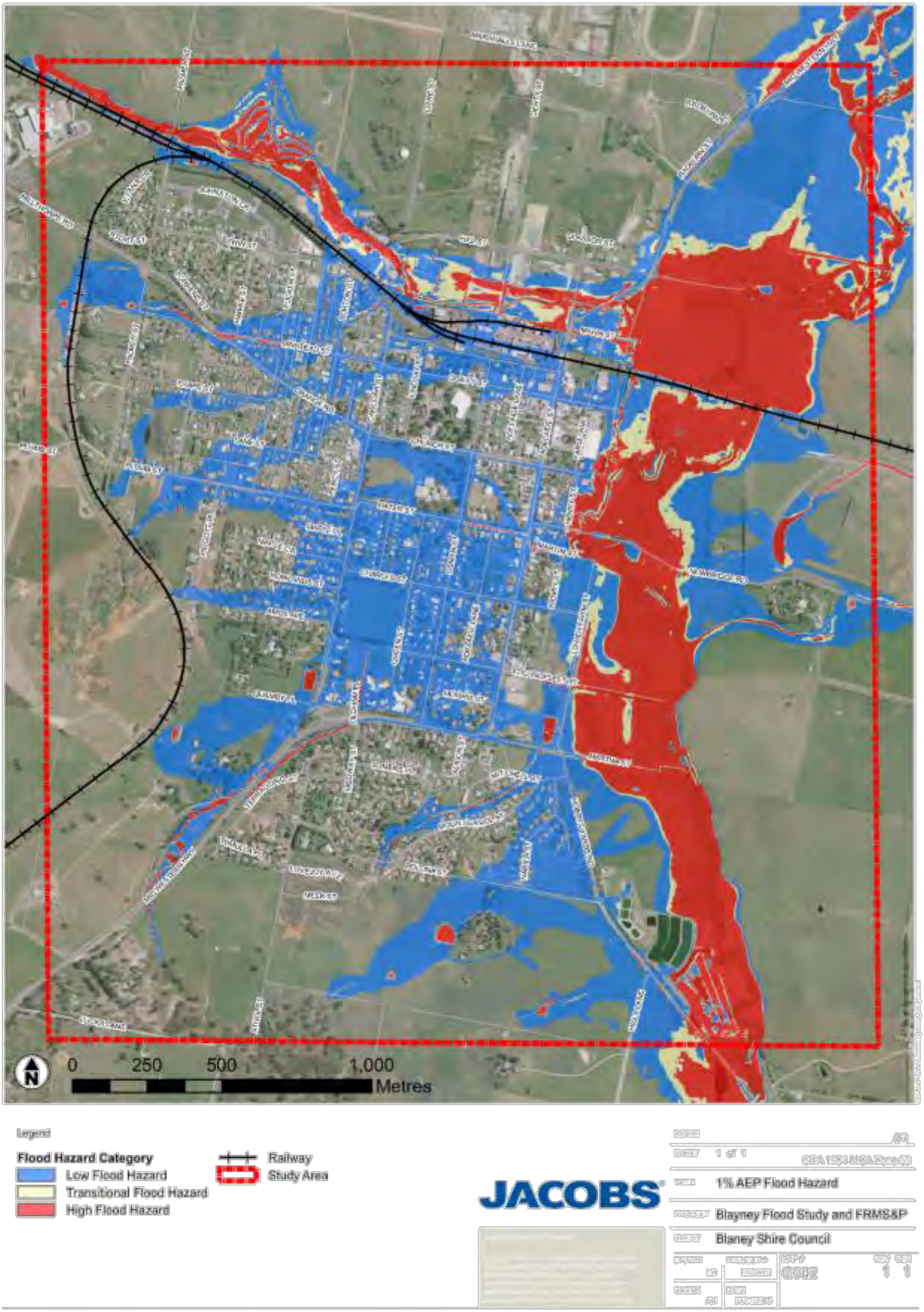
Table F601 Summary of Peak Flows

Control Line	Peak Flow (m^3/s)				
	20% AEP	5% AEP	1% AEP	0.5% AEP	PMF
1	47.9	137.4	297.1	366.9	4848.0
2	45.2	127.4	263.0	314.3	2487.7
3	2.9	10.1	42.9	65.3	2126.9
4	2.8	4.0	7.1	8.5	40.1
5	27.7	46.0	83.2	105.0	972.6
6	19.1	27.2	50.3	68.6	955.0
7	2.4	4.5	10.4	13.0	67.0
8	30.1	48.6	85.8	108.6	1011.6
9	30.1	50.8	90.7	114.6	768.8
10	19.2	35.4	67.2	86.0	907.4
11	57.8	139.7	319.9	361.9	5593.4
12	0.1	32.3	85.3	97.1	1635.7
13	29.4	48.8	87.3	110.9	815.9
14	2.8	5.1	11.5	14.5	73.5
15	0.0	0.2	1.7	2.3	19.6
16	2.8	4.7	9.4	11.5	50.1
17	0.5	0.8	2.1	2.6	8.1
18	0.2	0.6	1.1	1.2	4.8
19	0.1	0.2	0.6	0.8	9.4
20	1.5	2.7	5.2	6.3	30.4
21	2.9	4.1	5.1	5.7	21.6
22	0.3	0.6	1.6	2.1	14.9
23	0.4	0.9	3.5	4.7	22.1
24	1.7	3.5	8.5	11.0	52.4
25	1.8	3.5	8.3	10.8	72.4
26	1.1	1.8	4.3	5.4	103.0
27	0.7	1.0	1.6	2.0	16.3
28	0.4	0.6	1.9	2.6	24.4
29	0.0	0.0	0.6	0.8	5.7
30	1.9	6.4	11.8	12.7	73.5
31	3.1	5.0	9.2	11.6	48.7
32	0.1	0.3	1.3	1.8	15.6
33	2.6	4.2	5.6	6.5	15.7

Control Line	Peak Flow (m^3/s)				
	20% AEP	5% AEP	1% AEP	0.5% AEP	PMF
34	0.9	2.0	4.4	5.6	31.0
35	0.2	0.4	0.9	1.1	4.1
36	0.4	0.8	1.5	1.9	7.3
37	1.8	3.2	5.6	6.8	26.4
38	0.4	0.7	1.3	1.6	6.8
39	0.5	1.1	4.0	5.5	38.4
40	0.8	1.7	2.3	2.6	6.9
41	0.1	0.2	0.9	1.3	6.4
42	0.3	0.4	0.9	1.2	10.2
43	1.1	1.8	4.3	5.5	140.5
44	0.2	0.2	0.3	0.3	13.2
45	0.6	0.9	1.2	1.3	33.2
46	0.6	0.8	1.0	1.1	8.9
47	0.2	0.2	0.3	0.3	2.3
48	0.5	0.6	0.8	0.9	5.0
49	0.3	0.8	1.7	2.2	7.7
50	3.5	5.6	8.4	9.9	37.6
51	52.3	138.8	311.7	379.4	4862.3
52	5.7	10.6	14.0	16.5	117.4
53	0.3	0.5	0.5	0.5	3.3
54	0.4	1.1	1.5	1.9	22.8

Appendix G. Flood Hazard Mapping


0
250
500
1,000
Metres
Legend
Flood Hazard Category
Low Flood Hazard
Transitional Flood Hazard
High Flood Hazard
Railway
Study Area
JACOBS
5% AEP Flood Hazard
Blayney Flood Study and FRMS&P
Blayney Shire Council


0
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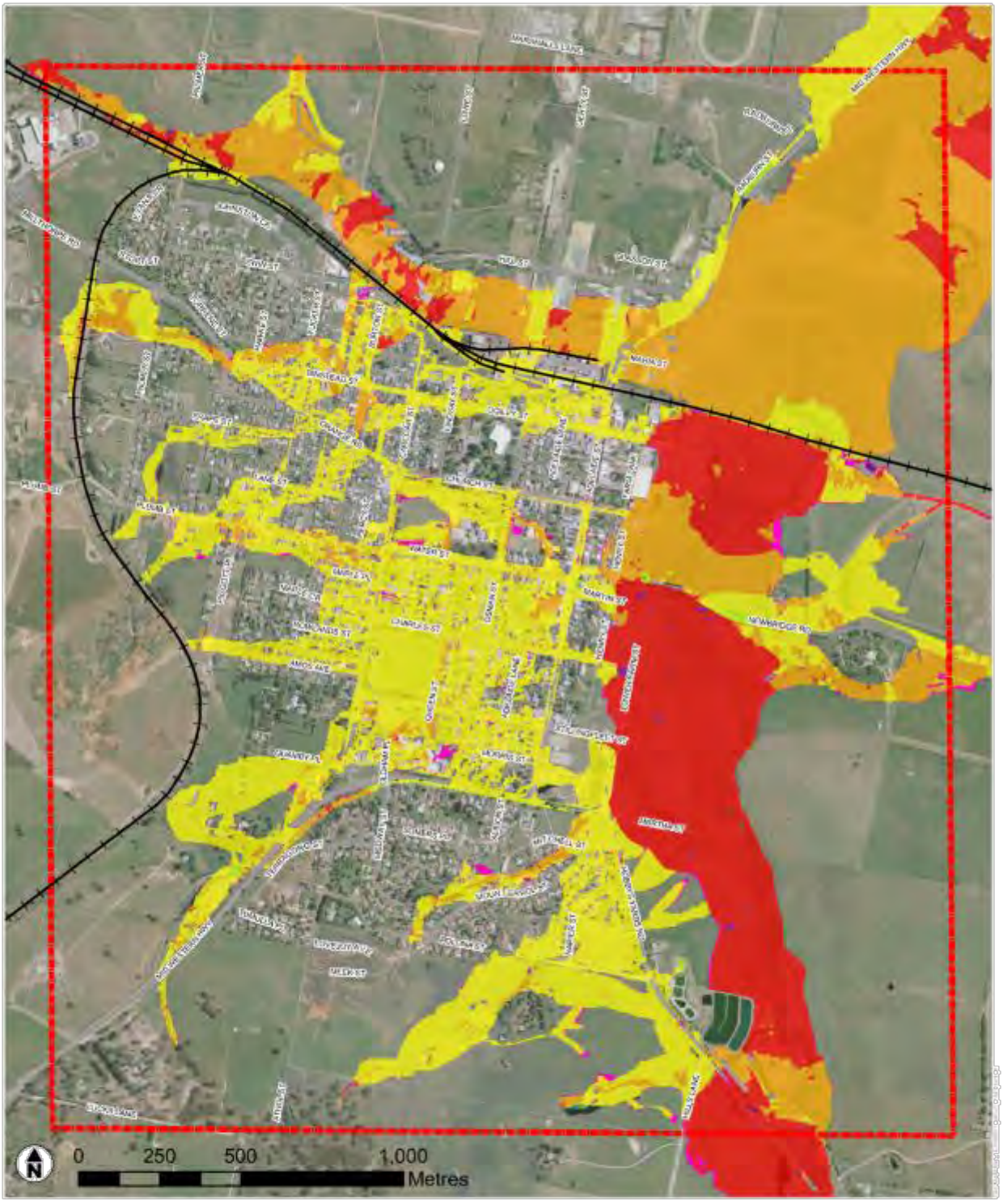
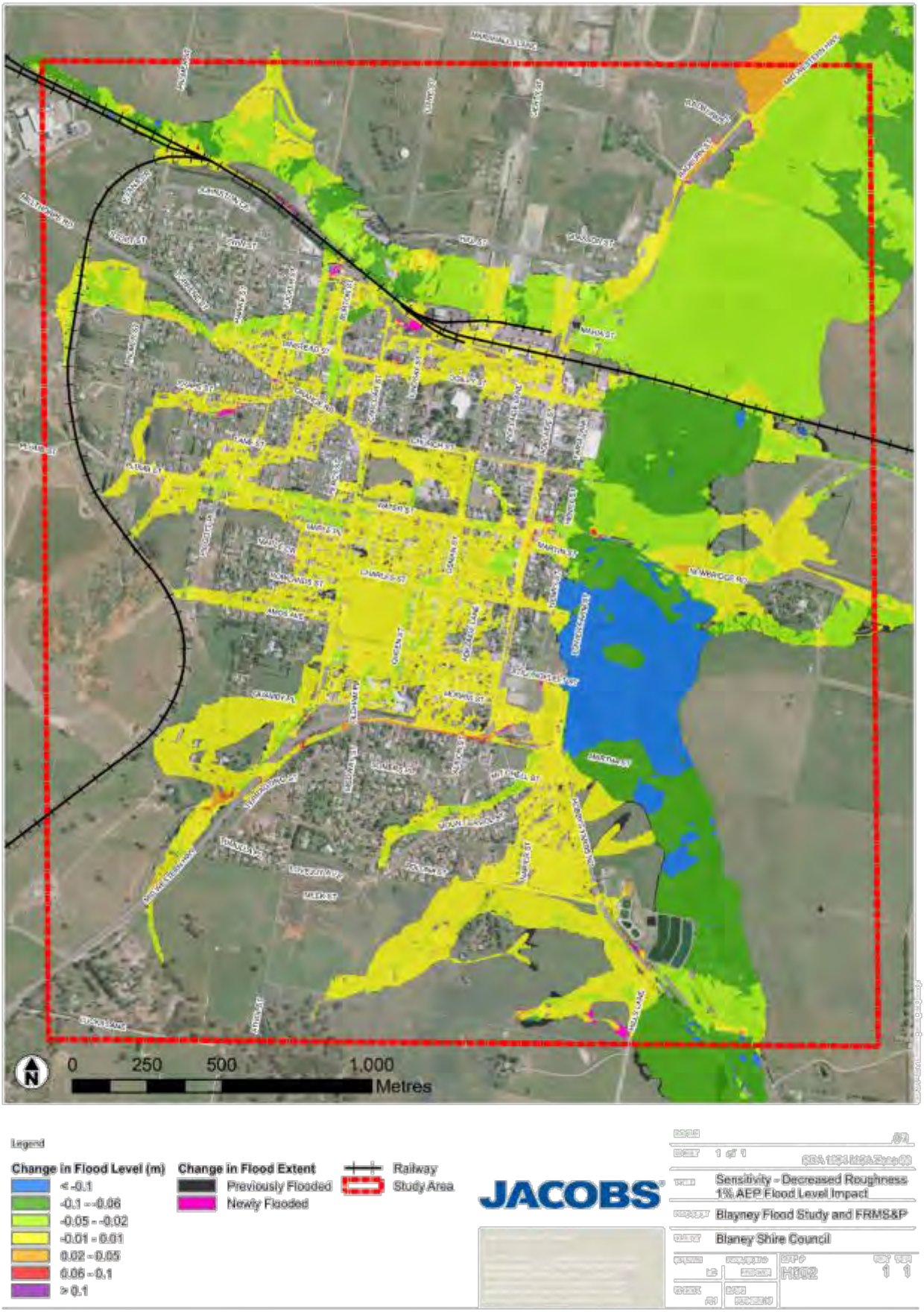
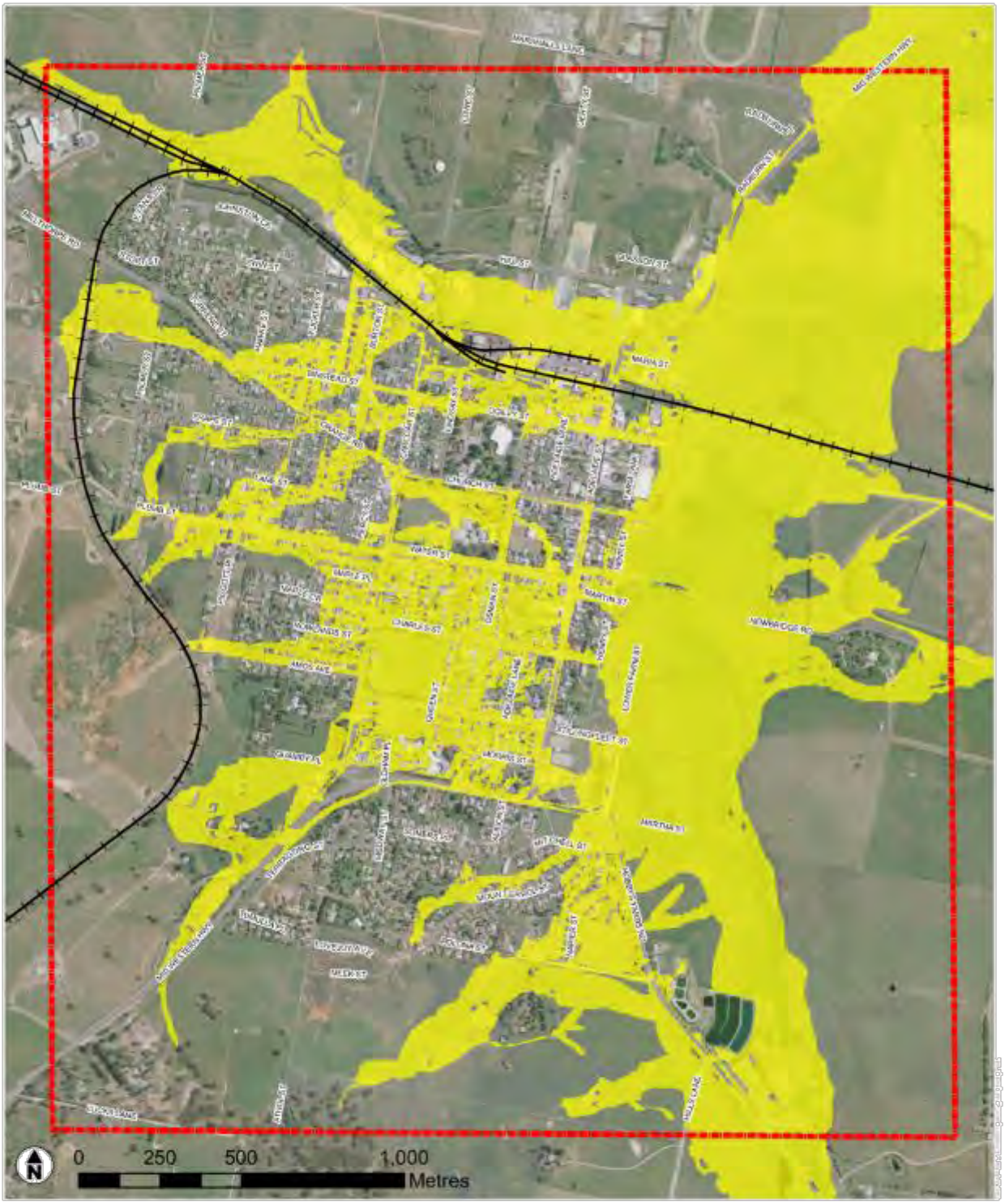
1,000
Metres
Legend
Flood Hazard Category
Low Flood Hazard
Transitional Flood Hazard
High Flood Hazard
Railway
Study Area
JACOBS
1% AEP Flood Hazard
Blayney Flood Study and FRMS&P
Blayney Shire Council

Appendix H. Sensitivity Analysis Flood Impact Mapping


0
250
500
1,000
Metres
Legend
Change in Flood Level (m)
< -0.1
-0.1 - -0.06
-0.05 - -0.02
-0.01 - 0.01
0.02 - 0.05
0.06 - 0.1
> 0.1
Change in Flood Extent
Previously Flooded
Newly Flooded
Railway
Study Area
JACOBS
Sensitivity - Increased Roughness
1% AEP Flood Level Impact
Blayney Flood Study and FRMS&P
Blayney Shire Council


0
250
500
1,000
Metres
Legend
Change in Flood Level (m)
< -0.1
-0.1 - -0.06
-0.05 - -0.02
-0.01 - 0.01
0.02 - 0.05
0.06 - 0.1
> 0.1
Change in Flood Extent
Previously Flooded
Newly Flooded
Railway
Study Area
JACOBS
Sensitivity - Decreased Roughness
1% AEP Flood Level Impact
Blayney Flood Study and FRMS&P
Blayney Shire Council



Legend

Change in Flood Level (m)
- < -0.1
- -0.1 - -0.06
- -0.05 - -0.02
- -0.01 - 0.01
- 0.02 - 0.05
- 0.06 - 0.1
- > 0.1

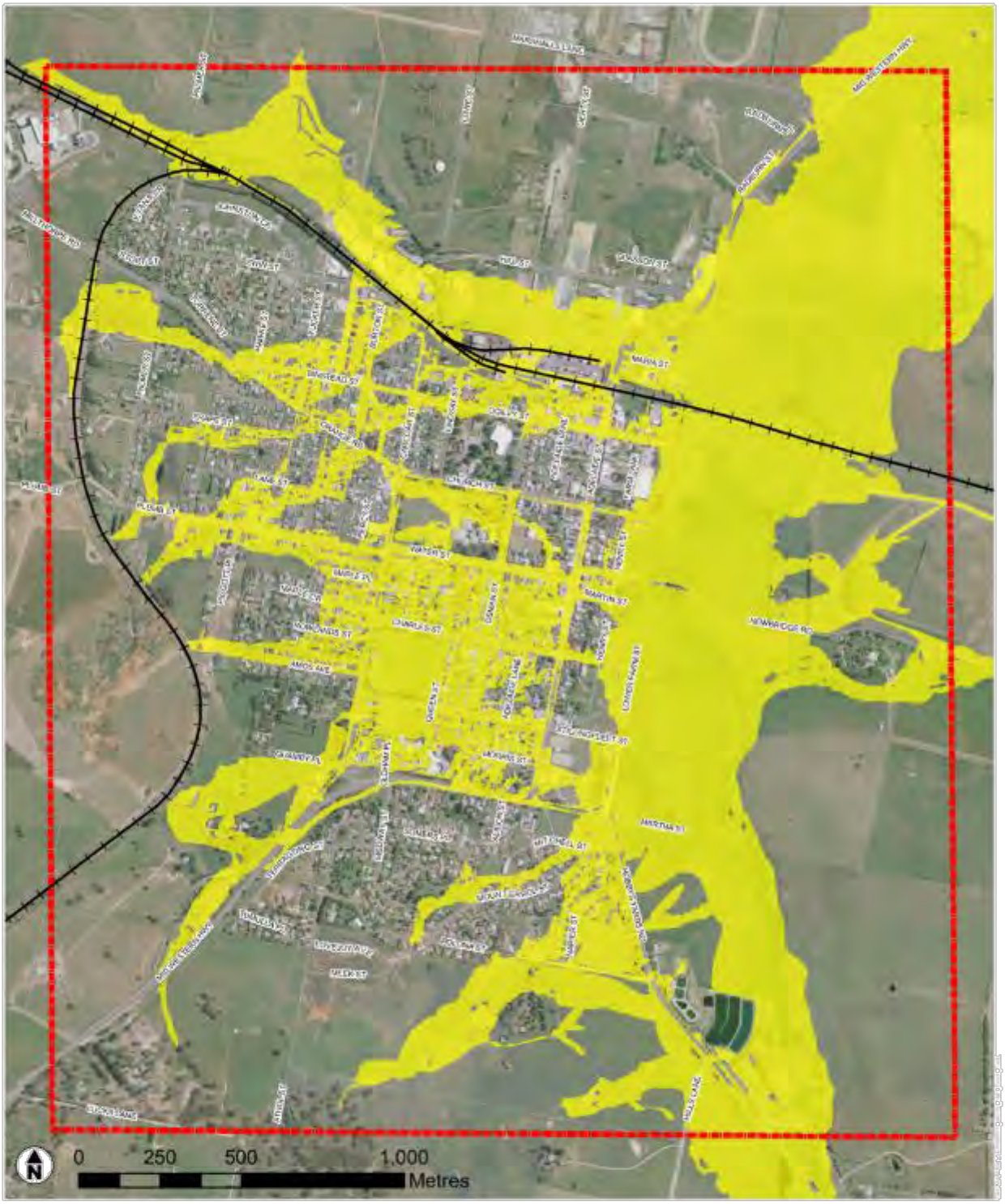
Railway
Study Area

JACOBS

Sensitivity - Increased Tailwater 1% AEP Flood Level Impact

Blayney Flood Study and FRMS&P

Blayney Shire Council



Legend

Change in Flood Level (m)
- < -0.1
- -0.1 - -0.06
- -0.05 - -0.02
- -0.01 - 0.01
- 0.02 - 0.05
- 0.05 - 0.1
- > 0.1

Railway
Study Area

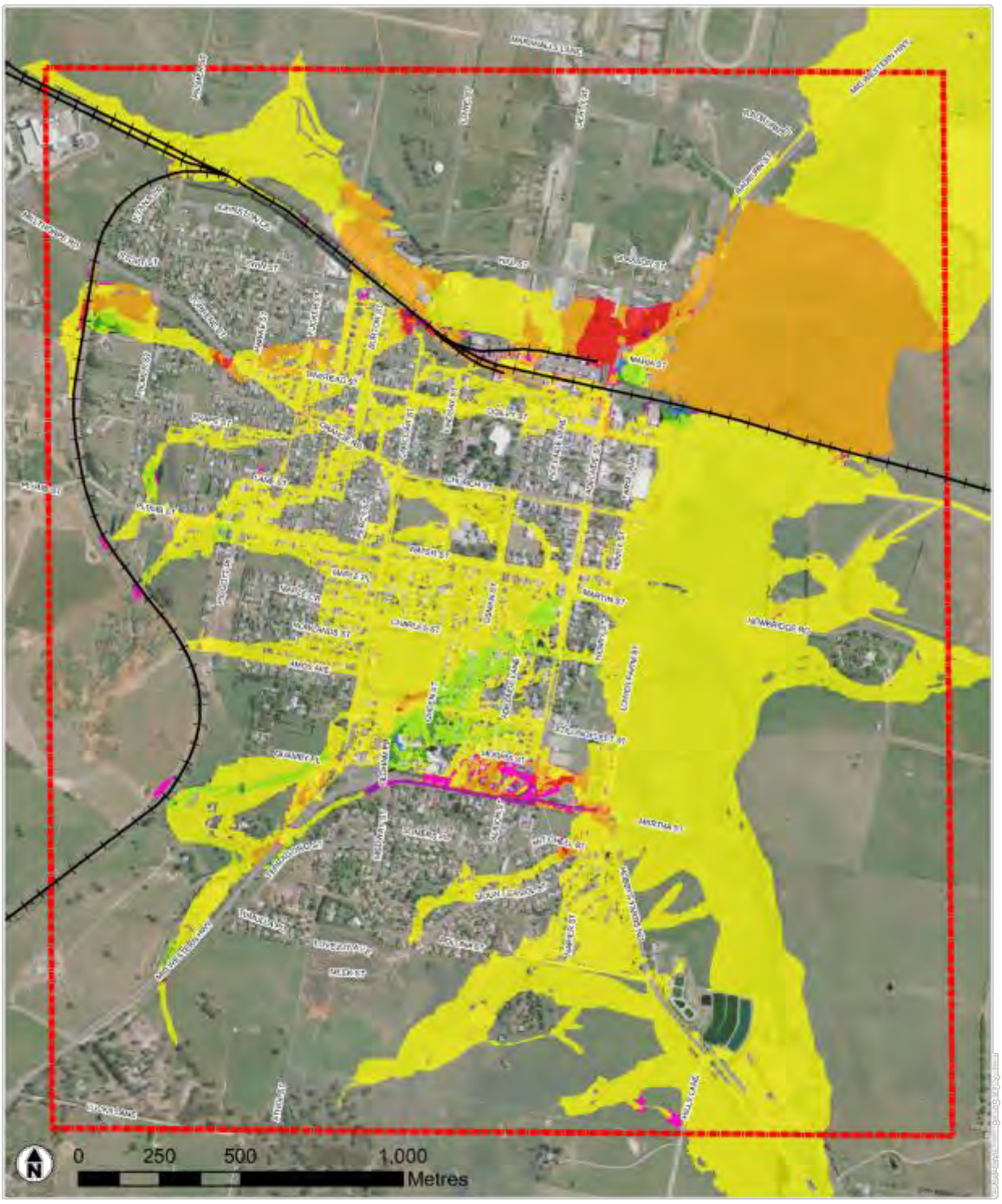
JACOBS

Sensitivity - Decreased Tailwater 1% AEP Flood Level Impact

Blayney Flood Study and FRMS&P

Blayney Shire Council

H804


0
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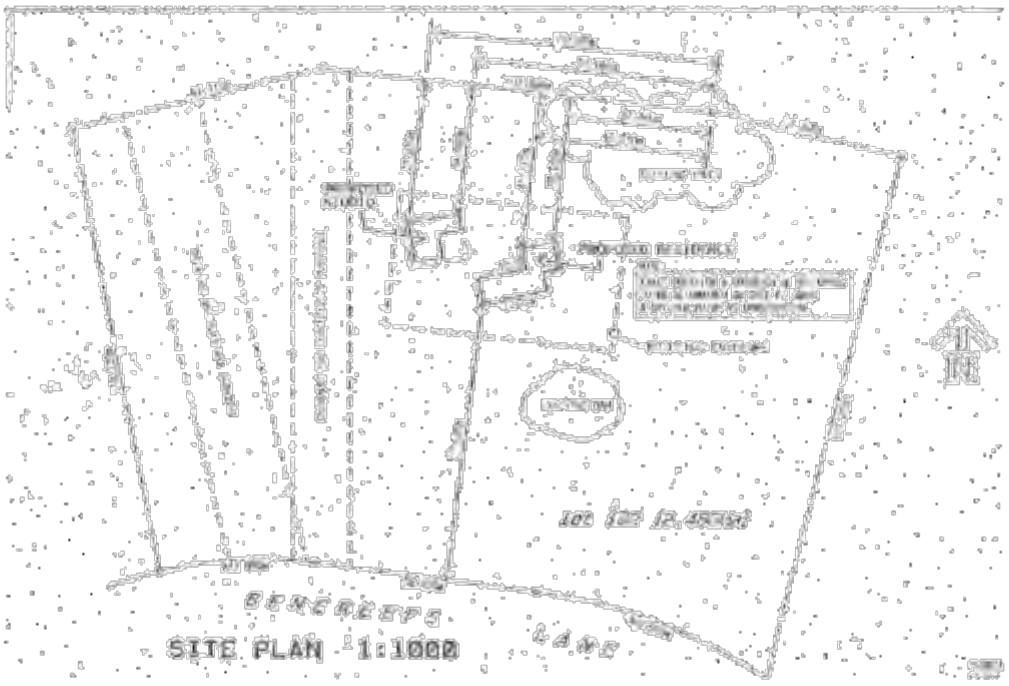
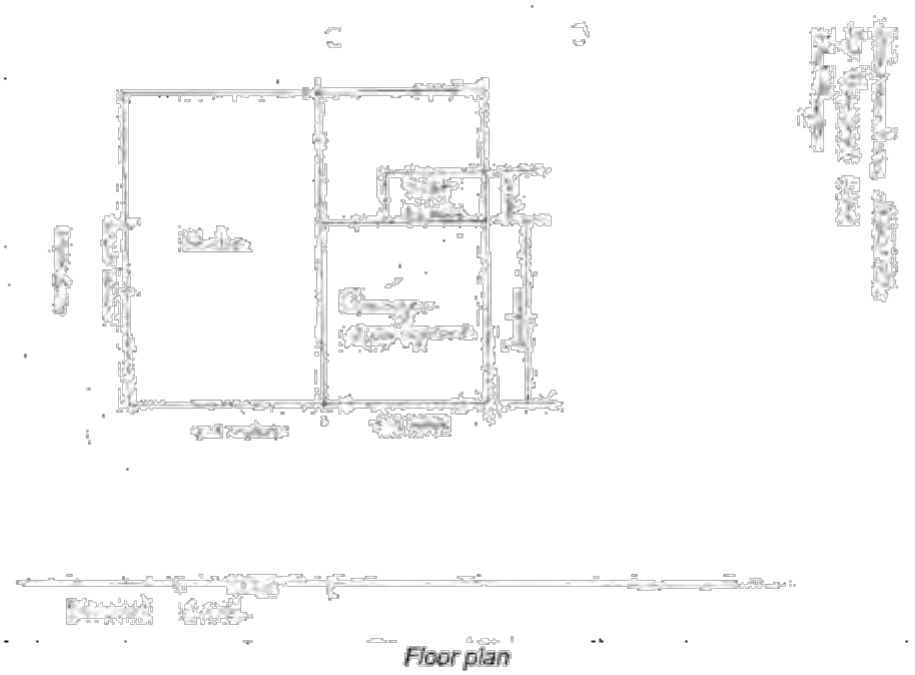
Metres
Legend
Change in Flood Level (m)
< -0.1
-0.1 - -0.06
-0.05 - -0.02
-0.01 - 0.01
0.02 - 0.05
0.05 - 0.1
> 0.1
Change in Flood Extent
Previously Flooded
Newly Flooded
Railway
Study Area
JACOBS
Sensitivity - 50% Pit and Culvert Blockage 1% AEP Flood Level Impact
Blayney Flood Study and FRMS&P
Blayney Shire Council

Attachment
Plans

Location plan



Site plan



Floor plan

Schedule B
Conditions of Consent

CONDITIONS ISSUED WITH DEVELOMENT APPLICATION No. 122/2014

STATUTORY
REASON: To comply with legislative statutory requirements.

1. Development is to take place in accordance with the attached stamped plans for Development Application No. 122/2014, documentation submitted with the application and subject to the conditions below, to ensure the development is consistent with Council's consent.
   Note: Any alterations to the approved development application plans must be clearly identified ***WITH THE APPLICATION FOR A CONSTRUCTION CERTIFICATE****. The Principal Certifying Authority (PCA) for the project may request an application for modification of this consent or a new application in the event that changes to the approved plans are subsequently made.*

2. The building be maintained in accordance with the requirements of the Building Code of Australia (BCA). In this regard the following is required;
   - A hold open device/s are to be installed on the required exit doors in accordance with part D2.20 of the BCA,
   - The door/s which for the required exit are have a latch complying with part D2.21 the BCA,
   - The building is to have a portable fire extinguisher in accordance with part E1.6 of the BCA.

3. The approved studio must not be used for any other purpose other than in the approval being a tattoo/art studio. Any proposed change of use to the approved studio shall be only permitted by further application to Council.

4. All required licenses and/or permits are to be obtained prior to commencement of operations. Copies are to be supplied to Council prior to commencement of operations and also displayed on the premises at all times.

5. Before commencement of operations the development is to be inspected by Council's Senior Health Surveyor prior to issue of a final Occupation Certificate.

6. Prior to the occupation of the building the owner of the building in accordance with Clause 170 of the Environmental Planning and Assessment Regulation 2000 shall submit to Council, a final fire certificate in relation to each essential fire safety measure specified in the fire safety schedule.

7. The owner of the building in accordance with Clause 175 of the Environmental Planning and Assessment Regulation 2000, must cause the Council and NSW Fire Commissioner to be given an annual fire safety statement, within 12 months after the last such statement or final fire safety certificate was issued.

ENVIRONMENTAL
REASON: To comply with Council's statutory requirements.

8. The operation of the development is limited to 9.30am to 5.30pm, Monday to Friday.

HEALTH
REASON: To comply with legislative statutory requirements.

9. The activity is to be managed and operated in a manner that demonstrates compliance to Part 4 of the *Public Health Regulation 2012*.

10. All medical waste (excluding sharps) shall be placed in yellow heavy duty plastic bags bearing the Bio-Hazard symbol, prior to disposal.

11. No sharps or other medical waste are to be disposed of via Council's domestic or general commercial waste collection services.

12. All medical waste is to be stored and secured on site prior to collection and must be transported to an approved disposal facility by a licensed contractor.

ADVICE AND NOTES

13. Prior to opening a business that conducts a skin penetration activity must notify Council in writing and obtain a registration pursuant to the *Public Health Regulation 2012* (form attached).

    The *Public Health Regulation 2012* will require regular (annual) inspection by Council's Senior Health Surveyor.

Schedule of Essential Fire Safety Measures

Portable Fire Extinguishers	AS 2444 - 2001

MINUTES OF THE BLAYNEY SHIRE ACCESS ADVISORY COMMITTEE MEETING HELD ON THURSDAY 12 FEBRUARY 2015 AT THE BLAYNEY SHIRE COMMUNITY CENTRE

Meeting commenced at 5.51pm.

PRESENT

Councillor Shane Oates, Jenny McMahon, Tom Williams, Marlena Hayhow and Mark Dicker

APOLOGIES

Sharon Kearney and Iris Dorsett

CONFIRMATION OF PREVIOUS MINUTES

The minutes of the previous meeting held on 27 November 2014 were confirmed to be a true and accurate record of that meeting (Tom Williams/Jenny McMahon).

DISCLOSURES OF INTEREST

Nil.

BUSINESS ARISING FROM PREVIOUS MEETING

Millthorpe Church
Mark Dicker explained that the Millthorpe Anglican Church had received a Heritage Grant from Blayney Shire Council to assist in the installation of a ramp and carpark.

Liberty Swing
Discussion was had about how to proceed to obtain the necessary funding to install a Liberty Swing at Heritage Park Blayney. Mark Dicker advised he would make initial approaches to contacts at both Cadia and Nestle.

NEW BUSINESS

Charter
General discussion was had about the current charter of the committee. Cr Oates detailed concern about the word "specialist" being within the charter. It was discussed that due to Development Application only having to comply with the legislative provisions that it not appropriate for the committee to have input into design requirements. It was agreed that the charter would remain until required to be reviewed, most likely after the 2016 Local Government elections.

GENERAL BUSINESS

Work at Blayney Showground
Jenny McMahon raised that new fencing work was being installed by Council at the Blayney Showground. It was asked if "wide gates" were being installed in accessible locations. Mark Dicker advised that he would ask Infrastructure Services the size of gates being installed.
Marlena Hayhow raised that there were previously accessibility issues at Blayney Showground. The committee advised substantial works had been undertaken and access has significantly improved.

RECOMMENDED: That Infrastructure Services are asked what size gates and their location within the new fence at the showground.

Millthorpe Oval
Jenny McMahon raised that there is an accessibility issue at the entrance into Redmond oval from Boomerang Street grass car park. The narrow gateway has an old concrete strip under it and the dirt either side of this strip has washed away creating a step. It is a potential trip hazard and wheelchair have to be lifted over it. Millthorpe markets are scheduled to be held in March 2015.

RECOMMENDED: That Council investigate options of rectifying this identified hazard.

Lyndhurst
Marlena Hayhow raised that there is an accessibility issue at the old Lyndhurst Post Office which is now a shop.

RECOMMENDED: That Council investigate options of rectifying this identified hazard.

Mandurama
Marlena Hayhow raised that there is an accessibility issue in front of the premise that has sandstone for sale.

RECOMMENDED: That Council investigate options of rectifying this identified hazard.

Blayney
Chair Oates raised that the pavers at the corner of Millthorpe Road and Adelaide Street have sunken quite badly and are not only creating an accessibility issue but also a trip hazard.

RECOMMENDED: That Council inspect this pavement and assess the condition.

Marlena Hayhow advised that the accessible carpark car park in Adelaide St Blayney (in front of Hill & Croft CRT) is not as practical or user friendly for rear loading accessible vehicles.
Tom Williams raised whether the accessible carpark on the eastern side of Adelaide St Blayney in front of Hill & Croft CRT could be made wider so that people did not have to go around the front of vehicles to get to the layback placing them in a dangerous position close to traffic in Adelaide Street. The layback is no longer used on a regular basis so it should not be a problem. Mark Dicker advised he would meet Tom onsite to discuss.

RECOMMENDED: That Council investigate the possibility of making the accessible carpark in Adelaide Street Blayney wider to enable use of the layback from either side of a car.

FUTURE AGENDA ITEMS
Liberty Swing
Wheelchair day

NEXT MEETING
The next meeting of the Access Advisory Committee will be held on Thursday 14 May 2015 commencing at 5.45pm.

MEETING CLOSE
The meeting closed at 7pm.

MINUTES OF THE MEETING OF BLAYNEY SHIRE AUDIT COMMITTEE HELD IN THE COMMUNITY CENTRE WEDNESDAY 15 FEBRUARY 2015

The meeting commenced at 9:06 am.

1. Present

Cr. Ferguson	(Councillor)
Phil Burgett	(Independent)
Jennie Robson	(Risk Officer)
Anton Franze	(Director Corporate Services – secretariat)
Steve Kent	(Chair – Independent)
Rebecca Ryan	(General Manager)

2. Apologies

Cr. Somervaille	(Councillor - reserve)
Cr. Ewin	(Councillor)

3. Declarations of Interest

Nil.

4. Adoption of Previous Minutes

Recommendation: Amendment to item on page two: Internal Review Summary of Outcomes should read:

- Effectiveness considerations: Harshest assessment. Need to position Audit Committee to be able to satisfy requirements of Office of Local Government, if required, that we exist and while work needs to occur that we are progressing in the right direction.

5. Risk Management Update

- Action plan circularised.
- Risk training was undertaken by Inconsult. As part of process identified some gaps and that council needs to set and endorse risk appetite. A Councillor Risk Management workshop is proposed to be held in the future.
- Staff have been engaged with Risk Identification and Management as part of strategy to build awareness. Manex will need to also provide its high level risks with a view to ensuring these are not overlooked.
- A draft risk register developed by 30/6/2015 and presented to the next Audit Committee meeting would be an ideal timeframe.

6. External Audit Management Letter

- No significant issues.
- Discussion of issues raised.

7. Major Developments since last meeting

- Fit For the Future: At the January 2015 Council meeting Council adopted to prepare and submit an improvement proposal and community engagement strategy.

- ARC Blue Procurement Project: Exercise in the review of Procurement Practices and Governance. Three year action plan developed.
- "How Do I Do Business with Council" workshop: Information session to occur on policies; doing business etc. with Council.

7. Status of Prior Report Recommendations

- With no audits undertaken an opportunity exists to escalate development of a business continuity plan. The engagement of a facilitator for development would be an effective means to progress plan. A project plan and timeframe be circulated to Committee as matter progresses.

8. Other Business

Nil

11. Meeting Dates

Next meeting is to be held 22 July 2015 at the Blayney Shire Community Centre.

Future meeting dates are as follows:

- 21 October 2015
- 17 February 2016

There being no further business the meeting closed at 11.00 am.

MINUTES OF THE BLAYNEY SHIRE ECONOMIC DEVELOPMENT COMMITTEE MEETING HELD ON THURSDAY 19 FEBRUARY 2015 AT THE BLAYNEY SHIRE COMMUNITY CENTRE

Meeting commenced at 5.00pm.

PRESENT

Cr Shane Oates; Cr Kevin Radburn; Rebecca Ryan (General Manager); Cathy Griffiths; Bruce Gordon; Leslie Morris; Elizabeth Russ and Rebecca Price.

GUEST

Russel Meadley – Business Enterprise Centre

APOLOGIES

Nil

FORESHADOWED GENERAL BUSINESS

Nil

DISCLOSURES OF INTEREST

Nil

CONFIRMATION OF PREVIOUS MINUTES

RECOMMENDED: That the minutes of the meeting held on 9 October 2014 be received and noted as a true and accurate record.

(B Gordon/C Griffiths)

BUSINESS ARISING

- Footpath Policy

Action: GM to follow up

BUSINESS ENTERPRISE CENTRE

- Referrals, Grants for Business Growth, export markets
- Visit once a month servicing Bathurst / Lithgow / Oberon / Blayney
- Buz Bus will be in in Blayney 27 March 2015
    - Business information
    - Business planning
- Benchmark business opportunities

CENTRAL NSW TOURISM REPORT

- CNSW report was presented to Council meeting in February
- Focus on tourism events eg. Weddings

CONTRACTOR INFORMATION SESSION

- Wednesday 26 March 2015 – 'How do I do Business with Council' aimed at contractors and local tradespeople. WHS, eTendering, procurement policy, regulations etc.

- Council are planning Quarterly Business Forums eg. Trades and Building Code information
- Suggestion: 'How do I set up a Food Stall'

OTHER GENERAL BUSINESS

- Congratulations to inaugural Blayney Farmers Market - 33 stalls of great quality and variety, crowd and day was very pleasing
- B to B Bike event – Sunday 12 April, opportunity for local businesses to capitalise on crowd. Blayney Town Association have sample bags to hand out

NEXT MEETING

Next meeting is scheduled for 9 April 2015 commencing 5pm.

Future meeting dates are as follows:
Thursday 9 July 2015
Thursday 8 October 2015

MEETING CLOSE

The meeting closed at 5.55pm.

MINUTES OF THE BLAYNEY SHIRE SPORTS COUNCIL MEETING HELD ON THURSDAY 19 FEBRUARY 2015, AT THE BLAYNEY COMMUNITY CENTRE

Meeting commenced at 5.30pm

PRESENT:
David Kingham (Chair, Blayney Shire Council), Grant Baker (Blayney Shire Council), Trevor Jones (Harness Racing Club), Michael Tyrrell (Golf club), Matthew Lewis (Little Athletics), Peter Wakem (Swimming Club), Rodney Corbett (Junior Soccer), Lisa Oborn, (Junior League), Roger Clark (Blayney Senior Soccer), Tom Willlams (Fishing), Andrew Russ (Rugby Union), Tony Burrell (Junior Rugby League), Michael Truloff (Millthorpe Junior Cricket), Chris Smith (HCS), Scott Ferguson (Blayney Shire Council).

APOLOGIES:
Adam Hornby (Senior League), Cheryl Rutherford (Junior Tennis), Rosemary Reid (Senior Tennis), Jodie Spencer (Central West Dressage Group), Shane Oates (Blayney Shire Council), Heather Fillery (Millthorpe Junior Soccer Club)
RESOLVED: That the apologies be accepted. (Rod Corbett /Trevor Jones).

MINUTES PREVIOUS MEETING (as circulated)
RESOLVED: That the minutes of the previous meeting be accepted. (T Jones/M Lewis).

BUSINESS ARISING:
No business arising.

MEMBERSHIP:
Andrew Russ and Tony Burrell welcomed as the delegates for Blayney Rugby Union Football Club and Blayney Junior League Football Club.

CORRESPONDENCE:
As emailed.

Request for skatepark: (ICUR/13751)
Not currently on project priority list, will be considered for inclusion upon annual review.
ACTION: Council to provide positive response.

Request from Little Athletics:
For the roller door at King George Oval to be checked by Council. It has had some work done to it but it still isn't working correctly.
ACTION: Council to follow-up.

EVENT CALENDAR UPDATE:

- Blayney to Bathurst (B2B) – 12 April, 2015. Some roads will be closed temporarily instead of rolling closures as has been done for prior B2Bs. There will be opportunity for people to cross roads but people manning checkpoints will need to be trained traffic controllers not just volunteers. There is also a need for increased provision of port-a-loos.

ACTION: Council to follow-up with B2B Committee.

GRANT FUNDING UPDATE

- Community Building Partnership $13,000 (1:1) Electronic Scoreboard- King George Oval. This will be done next year. A notice of motion from Lisa Obom and Tony Burrell will be presented at the next meeting requesting the purchase of the scoreboard from Junior and Senior Rugby League. It will be permanently mounted and excess money used for other projects at King George Oval.
  ACTION: Lisa Obom and Tony Burrell to provide Notice of Motion prior to May meeting.

- Senior soccer received a $10,000 grant to be used for irrigation of grounds at Blayney Showgrounds.

- PRMF Funding - $12,000 towards upgrade of kitchen and shower facilities at Lyndhurst Recreation Ground.

REPORTS:

Senior Soccer:
Have received a $10,000 grant toward irrigation. They are just waiting to hear if anymore grants are received to decide how much is to be done. The club would like to hear any objections or suggestions for sprinkler heads that will be used where stock will be using the same area. There will be some Sunday games this season due to lack of referees.
ACTION: Showground stakeholders to provide sprinkler comments to next meeting.

Swimming:
The club has additional members. They are happy with the upgrades to CentrePoint and are just waiting for the new starting blocks. The timing clock is operational.There will be an official opening of the facilities on the next market day.
ACTION: Council to provide update on starting blocks.

Harness Racing:
There is a meeting on Sunday 21st February with 6 events. The next meeting will be on 10th May. A few minor improvements will be done before meeting. Distance signs will be erected. Finish line signs will be replaced before the May meeting.
ACTION: Harness Racing Club to provide Council Communication's Officer with event details for internet promotion purposes.

Fishing:
Tom asked who to contact in regards to the Council website as some amendments need to be made in regard to the Fishing Club information.
ACTION: All updates to be provided to IT Systems Administrator.

Rugby Union:
Training has started and the competition will start in late April. The club will play in the Presidents Cup Southern Division.

Junior Soccer:

Training will start on 28th April and the games will start on 2nd May. Registration Days will start this weekend 21/22nd February. Just waiting for more information from Orange.

Millthorpe Cricket:
Going well.
ACTION: Advise Council when finished, so pitch can be covered for winter season.

Little Athletics:
Everything is going well and members attended the Regional Carnival at Parkes with 3 athletes qualifying for the State Carnival.

Blayney Golf Club:
The Junior Championships are on the weekend of the 21/22nd February. The club received a grant for $10,000 for the replacement of the clubhouse roof. Water storage is a major problem and there has been a meeting with the council to rectify this issue. New tables and chairs have been purchased for the Clubhouse.

Junior League:
Group 10 possible/probable will be held on 1st March at King George Oval. The Group 10 Grand Final will be held in Blayney on 12th September. Training has started and the 16s will not be combining with Cowra. There are new jumper sponsors this year.
ACTION: Blayney Junior League Club to provide Council Communication's Officer with major event details for internet promotion.

Senior League:
There are four teams – League tag, U18s, reserve and first grade. Training started at Dakers Oval to take the pressure off King George Oval. First grade have a trial at Umina and Manly Christian Brothers will come to Blayney on 14th March. There will also be a function on the same night.
ACTION: Blayney Senior League Club to provide Council Communication's Officer with Manly match details for promotion on the internet.

GENERAL BUSINESS
The Information Centre requested that Clubs send there draws to them so information is available for anyone that inquires.
ACTION: All clubs to provide visitors centre with club draws on routine basis.

PROJECT PRIORITY LIST
The Committee formally adopt the project priority list (February 2015) for use for funding opportunities and budget consideration, and that it be reviewed and updated on an annual basis. (T Burrell/A Russ)

King George Oval:

- Seats for King George Oval are to be picked up from Carrington Oval on Friday 20th February. Helpers will be needed to move them. Seats will be stored at ICR Engineering shed and ICR have been given approval to undertake the work to install them.

- Tony Burrell put forward a proposal that subject to funding being available, stage 1 of the canteen upgrade (quoted $26,100) should go ahead. Stage 2 will be reviewed in 2016.
- Lisa Obom asked if anything has been done in regards to drainage at King George Oval.
  ACTION: Council to investigate.
- All clubs using King George Oval need to have protocols in place for emergency helicopter landings. The council risk officer can be accessed to help plan these protocols. A sign has been erected to show the oval emergency assembly point.

Showground:

- Repairs to the pavilion ceiling and the main toilet block at the showground have been done. Tenders for the pace way fence will be looked at in the future.
- Blayney Showground Equestrian duel arena, pony club horse yards. This has been referred to the next meeting.
- Soccer - Work needs to be done to field 1 and it needs to be watered to make sure that it stays as it should.
- Questions had been asked about the health issues involved with the dual use of the soccer fields for games and for horse events at the show. As the show is only once a year the residue levels on the fields would be next to nothing.

Redmond Oval:

ACTION: Council to look into the removal of the bubbler at Redmond Oval and report back at the next meeting.

- The playing surface at Redmond Oval has become dangerous. An application for a grant to upgrade the playing surface has been applied for but if this isn't successful it will be necessary for the council to inspect the ground and see what needs to be done.

Community Banners:

- The newly erected Community Banner poles can be used to advertise events. Usage is free of charge but the cost of the banner is at the clubs expense. Bookings are necessary.

Sports Awards:

- More nominations are needed for Sports Awards.

NEXT MEETING

Thursday 21 May 2015.

Meeting closed at 7.13pm

MINUTES OF THE BLAYNEY SHIRE CEMETERY FORUM MEETING HELD ON THURSDAY 26 FEBRUARY 2015 BLAYNEY SHIRE COMMUNITY CENTRE

Meeting commenced at 5.00pm.

PRESENT

Councillor Geoff Braddon (chair), Kevin Radburn (Senior), Graham Mendham, Vicki Pulling, Hayley Lavers, Sylva Lovenfosse and Mark Dicker.

APOLOGIES

Councillor Kevin Radburn, Gerry Nolan, Geoff Avard and Candice Braddon

CONFIRMATION OF MINUTES

The minutes of the previous meeting held on 13 November 2014 were confirmed to be a true and accurate record of that meeting (Vicki Pulling/ Kevin Radburn (Senior)

DECLARATIONS OF INTEREST

Nil.

BUSINESS ARISING

Millthorpe

- Rabbit infestation is extremely bad and severely undermining the graves. Mark Dicker advised that Councils Ranger is assessing options regarding this matter, in particular the engagement of Local Land Services. Costs will be prepared for inclusion within the 2015/16 budget estimates.
  Mark Dicker advised an area adjoining the cemetery containing grass and blackberries also requires remediation in order to ensure reduce habitat for rabbits. Investigations will take place as to who owns this land with potential for referral to Upper Macquarie county Council.
- The access road still requires action. Council is to investigate options regarding this matter.

Media campaign

- It was advised that it is intended to put an advertisement in Councils weekly column. The wording will have to be carefully chosen.
- It was asked if Council could print a basic flyer and include; cemetery locations, prices, contact details. The flyer could be located in the post offices of the villages.

Lyndhurst

- Infrastructure Services have advised that grading in the Kings Plains area is subject to resources. The road side outside the Lyndhurst cemetery will be included when next within the area. Mark Dicker is to

liaise with Vicki Pulling to confirm the exact location and advise Councils Infrastructure Services section.

- Can the 80kmph signs on the Mid Western Highway be relocated further towards Cowra? This matter has been referred to RMS for review by Councils Traffic Committee.

GENERAL BUSINESS

- Graham Mendham asked if there are any records of people buried at Barry? Mark Dicker had to take the question on notice.

- Hayley Lavers asked if all the cemeteries have adequate capacity for future demand?
  Mark Dicker advised he was not aware that any cemetery did not have adequate capacity. Hayley asked is there potential for Millthorpe to expand into the land that has the long grass and blackberries?

  A general discussion was then had regarding how ownership can be complicated if individual churches owned specific areas of cemeteries.

- Kevin Radburn (Senior) advised that vegetation is starting to significantly grow back within the top corner of Neville cemetery. It was discussed that the ultimate solution would be to realign the adjoining road which would alleviate 2 bad corners and also remove the suckers.
  Mark Dicker advised any realignment of a road is unlikely as it would be an extremely costly option.
  Mark Dicker again advised it is hoped that funds will be made available within the budget for works to be undertaken at cemeteries including possibly the removal of these sucker trees.

NEXT MEETING

The next meeting of the Cemetery Forum will be held on Thursday 14 May 2015 commencing at 5.00pm.

MEETING CLOSE

The meeting closed at 5.54pm.