



Latrobe City Flood Emergency Plan

A Sub-Plan of the
Municipal Emergency Management Plan

For Latrobe City and VICSES Unit(s) Moe & Morwell

Version 1.5 September 2013

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Distribution List

The Distribution List for this sub plan is the same as in the Municipal Emergency Management Plan and the Latrobe City Flood Emergency Plan Sub-Committee.

Document Transmittal Form / Amendment Certificate

This Municipal Flood Emergency Plan (MFEP) will be amended, maintained and distributed as required by VICSES in consultation with the Latrobe City Council's MEMPC.

Suggestions for amendments to this Plan should be forwarded to:

VICSES East Regional Headquarters
82a Moore Street
MOE VIC 3825

Amendments listed below have been included in this Plan and promulgated to all registered copyholders.

Amendment Number	Date of Amendment	Amendment Entered By	Summary of Amendment

This Plan will be maintained on the Latrobe City Council website www.latrobe.vic.gov.au.

List of Abbreviations & Acronyms

The following abbreviations and acronyms are used in the Plan:

<u>AEP</u>	Annual Exceedance Probability
<u>AHD</u>	Australian Height Datum (the height of a location above mean sea level in metres)
<u>AIIMS</u>	Australasian Inter-service Incident Management System
<u>AoCC</u>	Area of Operations Control Centre / Command Centre
<u>ARI</u>	Average Recurrence Interval
<u>ARMCANZ</u>	Agricultural & Resource Management Council of Australia & New Zealand
<u>AV</u>	Ambulance Victoria
<u>BoM</u>	Bureau of Meteorology
<u>CEO</u>	Chief Executive Officer
<u>CERA</u>	Community Emergency Risk Assessment
<u>CERM</u>	Community Emergency Risk Management
<u>CFA</u>	Country Fire Authority
<u>CMA</u>	Catchment Management Authority
<u>RERC</u>	Regional Emergency Response Coordinator
<u>RERCC</u>	Regional Emergency Response Coordination Centre
<u>DHS</u>	Department of Human Services
<u>DH</u>	Department of Health
<u>DoI</u>	Department of Infrastructure
<u>DEPI</u>	Department of Environment and Primary Industries
<u>EMLO</u>	Emergency Management Liaison Officer
<u>EMMV</u>	Emergency Management Manual Victoria
<u>EMT</u>	Emergency Management Team
<u>EO</u>	Executive Officer
<u>FO</u>	Floodway Overlay
<u>FWS</u>	Flood Warning System
<u>FZ</u>	Floodway Zone
<u>IC</u>	Incident Controller
<u>ICC</u>	Incident Control Centre
<u>IMT</u>	Incident Management Team
<u>IMS</u>	Incident Management System
<u>LSIO</u>	Land Subject to Inundation Overlay
<u>MECC</u>	Municipal Emergency Coordination Centre
<u>MEMP</u>	Municipal Emergency Management Plan
<u>MEMPC</u>	Municipal Emergency Management Planning Committee
<u>MERC</u>	Municipal Emergency Response Coordinator
<u>MERO</u>	Municipal Emergency Resource Officer
<u>MFB</u>	Metropolitan Fire and Emergency Services Board
<u>MRM</u>	Municipal Recovery Manager
<u>PMF</u>	Probable Maximum Flood
<u>RCC</u>	Regional Control Centre
<u>RDO</u>	Regional Duty Officer
<u>SBO</u>	Special Building Overlay
<u>SCC</u>	State Control Centre
<u>SEWS</u>	Standard Emergency Warning System
<u>SHERP</u>	State Health Emergency Response Plan
<u>SOP</u>	Standard Operating Procedure
<u>VicPol</u>	Victoria Police
<u>VICSES</u>	Victoria State Emergency Service

Part 1. INTRODUCTION

1.1 Municipal Endorsement

The Latrobe City Council is the custodian of this Municipal Flood Emergency Plan (MFEP), as a sub plan of the Municipal Emergency Management Plan.

This MFEP has been prepared by the SES in conjunction with the Municipal Flood Planning Sub-committee with the authority of the Municipal Emergency Management Planning Committee (refer to section 1.6 endorsement of plan) pursuant to Section 20 of the Emergency Management Act 1986 (as amended).

The Latrobe City Council and VICSES will undertake consultations with the communities of Latrobe City about the arrangements contained within this plan.

This MFEP is a sub plan to the Latrobe City Municipal Emergency Management Plan (MEMP), is consistent with the Emergency Management Manual Victoria (EMMV) and the Victoria Flood Management Strategy (DNRE, 1998a).

The Municipal Flood Emergency Plan is consistent with the Regional Flood Emergency Plan and the State Flood Emergency Plan.

This Municipal Flood Emergency Plan is a result of the cooperative efforts of the Latrobe City Flood Planning Committee (MFPC) and its member agencies. The signatories below, on behalf of their respective agencies commit to the implementation of this plan as it applies to each agency.

Paul Buckley

Chief Executive Officer
Latrobe City Council

Date:

Jamie Twidale

Regional Manager
VICSES East Region

Date:

Ricky Ross APM

Regional Emergency Management
Inspector
Victoria Police

Date:

1.2 The Municipality Flood Risk Profile

An outline of Latrobe City Council in terms of its location, demography and other general matters is provided in the MEMP.

The 2011 CERM Review identified Flood as a medium risk within Latrobe City, as detailed in the MEMP. Further risk assessment processes have identified the risks in relation to River Basins, River Systems and Communities within Latrobe City.

Detailed flood threats, information and response information for each river system and identified at risk community is provided in the attachments and appendices to this plan.

1.3 Purpose and Scope of this Flood Emergency Plan

The purpose of this MFEP is to detail arrangements agreed for the planning, preparedness/prevention, response and recovery from flood incidents within Latrobe City.

As such, the scope of the Plan is to:

- Identify the Flood Risk to Latrobe City;
- Support the implementation of measures to minimise the causes and impacts of flood incidents within the Latrobe City;
- Detail Response and Recovery arrangements including preparedness, Incident Management, Command and Control and Co-ordination;
- Identify linkages with Local, Regional and State emergency and wider planning arrangements with specific emphasis on those relevant to flood.

1.4 Municipal Flood Planning Committee (MFPC)

Membership of the Latrobe City Municipal Flood Planning Committee (MFPC) will comprise of the following representatives from the following agencies and organisations:

- Victoria Police (i.e. Municipal Emergency Response Co-ordinator) (MERC) (**Chair**),
- VICSES, Regional Officer – Emergency Management
- Latrobe City Council, MERO
- Southern Rural Water
- West Gippsland Catchment Management Authority,
- Other agencies and community representatives or consultants as required.

1.5 Responsibility for Planning, Review & Maintenance of this Plan

This Municipal Flood Emergency Plan must be maintained in order to remain effective.

VICSES through the Flood Planning Committee has responsibility for preparing, reviewing, maintaining and distributing this plan.

The MFPC will meet at least once per year.

The plans should be reviewed:

- following any new flood study;
- any change in non-structural and/or structural flood mitigation measures; and
- after the occurrence of a significant flood event within the Municipality to review and where necessary amend arrangements and information contained in this Plan.

1.6 Endorsement of the Plan

The MFEP will be circulated to Municipal Flood Planning Sub-Committee members seeking acceptance of the draft plan.

Upon acceptance, the plan is forwarded to the MEMPC for endorsement as a sub-plan of the MEMPlan.

Part 2. PREVENTION / PREPAREDNESS ARRANGEMENTS

2.1 Community Awareness for all Types of Flooding

Details of this MFEP will be released to the community through local media, the FloodSafe program, websites (VICSES and the Municipality).

VICSES will co-ordinate community education programs for flooding within the Council area, with the support of Latrobe City Council, Southern Rural Water and West Gippsland CMA, eg StormSafe / FloodSafe.

2.2 Structural Flood Mitigation Measures

Subject to the provisions of the Latrobe City Council Planning Scheme, Latrobe City Council and SES encourages residents and business owners / operators in potentially flood prone areas to plan and put in place effective flood protection measures for their dwellings and business premises. This applies in particular to areas subject to flash flooding and overland flows. Prior to taking such measures, you should contact Latrobe City Council's Planning department to discuss whether any proposed measures would require a planning permit.

2.3 Non-structural Flood Mitigation Measures

2.3.1 Exercising the Plan

Arrangements for exercising this Plan will be at the discretion of the MEMPC and SES. This Plan should be regularly exercised, preferably on an annual basis.

2.3.2 Flood Warning

Arrangements for flood warning are contained within the State Flood Emergency Plan and the EMMV (Part 3.7) and on the BoM website.

Flood forecasting and warning systems are operated on several streams within Latrobe City by the Bureau of Meteorology.

Comments made on behalf of the Municipality relating to Council matters must be approved by the MERO or the Chief Executive Officer (CEO) or delegate with regard to response issues and by the Municipal Recovery manager (MRM) or the CEO or delegate with regard to recovery issues.

The method(s) used to disseminate information to communities, particularly recovery related information, will be decided at the time. Additional information on public information and warning and the methods that may be considered are detailed in the MEMP. This includes the details of appropriate media outlets.

2.3.3 Flood Information Providers

Latrobe City has flood information providers as listed in the attachments to this plan.

Part 3. RESPONSE ARRANGEMENTS

3.1 Introduction

3.1.1 Activation of Response

Flood response arrangements may be activated by the Regional Duty Officer (RDO) VICSES Region or Incident Controller.

The Incident Controller/RDO VICSES will activate agencies as required and documented in the State Flood Emergency Plan.

3.1.2 Responsibilities

There are a number of agencies with specific roles that will act in support of VICSES and provide support to the community in the event of a serious flood within Latrobe City. These agencies will be engaged through the EMT.

The general roles and responsibilities of supporting agencies are as agreed within the Latrobe City MEMP, EMMV (Part 7 'Emergency Management Agency Roles'), State Flood Emergency Plan and Regional Flood Emergency Plan.

3.1.3 Municipal Emergency Coordination Centre (MECC)

The function, location, establishment and operation of the MECC will be as detailed in the Latrobe City MEMP.

If a MECC is established for a flood event, VICSES will provide an EMLO. The VICSES RDO / ICC will liaise with the MECC directly. If an Incident EMT is established, the Municipality will also maintain involvement in the Incident EMT.

3.1.4 Escalation

Most flood incidents are of local concern and an appropriate response can usually be coordinated using local resources. However, when these resources are exhausted, the State's arrangements provide for further resources to be made available, firstly from neighbouring Municipalities (on a regional basis) and then on a State-wide basis.

Resourcing and event escalation arrangements are described in the EMMV ('State Emergency Response Plan' – section 3.5).

The six Gippsland Municipalities have a resource sharing agreement in place for emergency events as detailed in the MEMP.

3.2 Strategic Control Priorities

To provide guidance to the Incident Management Team (IMT), the following strategic control priorities shall form the basis of incident action planning processes:

1. Protection and preservation of life is paramount - this includes:
 - a. Safety of emergency services and other agency personnel, and;
 - b. Safety of community members including vulnerable community members and visitors/tourist located within the incident area.
2. Issuing of community information and community warnings detailing incident information that is timely, relevant and tailored to assist community members make informed decisions about their safety.;
3. Protection of critical infrastructure and community assets that supports community resilience;
4. Protection of residential property as a place of primary residence;
5. Protection of assets supporting individual livelihoods and economic production that supports individual and community financial sustainability
6. Protection of environmental and conservation values that considers the cultural, biodiversity, and social values of the environment;

Circumstances may arise where the Incident Controller is required to vary these priorities, with the exception being that the protection of life should remain the highest. This shall be done in consultation with the State Controller and relevant stakeholders based on sound incident predictions and risk assessments.

3.3 Command, Control & Coordination

The Command, Control and Coordination arrangements in this Municipal Flood Emergency Plan must be consistent with those detailed in State and Regional Flood Emergency Plans. For further information, refer to sections 3.4, 3.5 & 3.6 of the EMMV.

The specific details of the Command, Control and Coordination arrangements for this plan are provided in Appendix C in the river system attachments to this plan..

3.3.1 Control

Functions 5(a) and 5(c) at Part 2 of *the Victoria State Emergency Service Act 1986 (as amended)* detail the authority for VICSES to plan for and respond to flood.

Part 7.1 of the EMMV prepared under the *Emergency Management Act 1986 (as amended)*, identifies VICSES as the Control Agency for flood. It identifies DEPI as the Control Agency responsible for “*dam safety, water and sewerage asset related incidents*” and other emergencies

All flood response activities within Latrobe City including those arising from a dam failure or retarding basin / levee bank failure incident will therefore be under the control of the appointed Incident Controller, or his / her delegated representative.

3.3.2 Incident Controller (IC)

An Incident Controller (IC) will be appointed by the VICSES (as the Control Agency) to command and control available resources in response to a flood event on the advice of the Bureau of Meteorology (or other reliable source) that a flood event will occur or is occurring. The Incident Controller responsibilities are as defined in Part 3.5 of the EMMV

3.3.3 Incident Control Centre (ICC)

As required, the Incident Controller will establish an Incident Control Centre (ICC) from which to initiate incident response command and control functions. The decision as to if and when the ICC should be activated, rests with the Control Agency (i.e. VICSES).

Pre-determined Incident Control Centre locations are

- **Level 1** – Local VICSES Unit (Moe & Morwell)
- **Level 2** - VICSES East Region Headquarters, 82a Moore St Moe or VICSES East Region Office, 130 Macleod Street, Bairnsdale
- **Level 3** – Multi Agency control facility, Franklin Street, Traralgon

3.3.4 Divisions and Sectors

To ensure that effective Command and Control are in place, the Incident Controller may establish Divisions and Sectors depending upon the complexity of the event and resource capacities.

3.3.5 Incident Management Team (IMT)

The Incident Controller will form an Incident Management Team (IMT). Refer to 3.5 of the EMMV for guidance on IMT's and Incident Management Systems (IMS's).

3.3.6 Emergency Management Team (EMT)

The Incident Controller will establish a multi-agency Emergency Management Team (EMT) to assist the flood response. The EMT will consist of key personnel (with appropriate authority) from stakeholder agencies and relevant organisations who need to be informed of strategic issues related to incident control and who are able to provide high level strategic guidance and policy advice to the Incident Controller for consideration in developing incident management strategies.

Organisations required within the EMT will provide an Emergency Management Liaison Officer (EMLO) to the ICC if and as required as well as other staff and / or resources identified as being necessary, within the capacity of the organisation.

Refer to 3.5 of the EMMV for guidance on EMTs.

3.3.7 On Receipt of a Flood Watch / Severe Weather Warning

Latrobe City Council will operate as defined within their Standard Operating Procedures.

The **VICSES** Incident Controller/ RDO will:

- Ensure flood bulletins and community information are prepared and issued to the community;
- Notify and brief appropriate officers, this includes (if established) Regional Control Centre (RCC), State Control Centre (SCC), Council and other emergency services through the EMT;
- Assess ICC readiness (including staffing of IMT and EMT) and open if required;
- Review flood intelligence to assess likely flood consequences;
- Monitor weather and flood information – www.bom.gov.au;
- Assess Command and Control requirements;
- Review local resources and consider needs for further resources regarding personnel, property protection, flood rescue and air support;
- Monitor watercourses and undertake reconnaissance of low-lying areas;
- Ensure flood mitigation works are being checked by owners ie Southern Rural Water.
- Develop and issue incident action plan, if required; and
- Develop and issue situation report, if required.

3.3.8 On Receipt of the First and Subsequent Flood Warnings

Latrobe City Council will operate as defined within their Standard Operating Procedures.

The **VICSES** Incident Controller/ RDO will:

- Continue to review flood intelligence to assess likely flood consequences;
- Determine what the at-risk community need to know and do as the flood develops;
- Continue to warn the at-risk community including ensuring that an appropriate warning and community information strategy is implemented;
- Liaise with relevant asset owners as appropriate (i.e. water and power utilities);
- Implement response strategies as required based upon flood consequence assessment;
- Continue to monitor the flood situation – www.bom.gov.au/vic/flood/ and www.bom.gov.au, http://www.melbournewater.com.au/content/rivers_and_creeks/rainfall_and_river_level_data/rainfall_and_river_level_data.asp; and
- Continue to undertake reconnaissance of low-lying areas.

3.4 Community Information and Warnings

The Bureau of Meteorology has the responsibility for issuing Flood and Severe Weather Warnings.

VICSES, as the Control Agency, co-ordinates further community messaging.

Council has the responsibility to assist VICSES to warn individuals as required within the municipality.

Other agencies such as CFA, DEPI and VICPOL may be requested to assist VICSES with the communication of community flood warnings.

In cases where severe flash flooding is predicted, dam failure is likely or flooding necessitating evacuation of communities is predicted, the Incident Controller may consider the use of the Emergency Alert System and Standard Emergency Warning System (SEWS).

The Department of Health will coordinate information regarding public health and safety precautions.

Guidelines for the distribution of community information and warnings are contained in the State Flood Emergency Plan.

Community information and warnings will be targeted at local, regional and state wide needs and may include:

- Emergency Alert;
- Radio and Television;
- Verbal Messages (i.e. Doorknocking);
- Agency Websites;
- VICSES Flood Storm Information Line;
- Variable Message Signs (i.e. road signs);
- Community meetings & newsletters; and
- Social media.

Refer to Appendices C and E for the specific details of how community information and warnings may be provided.

3.5 Media Communication

The Incident Controller through the Information Unit established at the ICC will manage Media communication. If the ICC is not established the RDO will manage all media communication.

3.6 Rapid impact assessment

Rapid impact assessment will be conducted in accordance with part 3 of the EMMV to assess and record the extent and nature of damage caused by flooding. This information will then be used to provide the basis for further needs assessment and recovery planning by DHS and recovery agencies.

3.7 Preliminary Deployments

When flooding is expected to be severe enough to cut access to towns, suburbs and/or communities, the Incident Controller will consult with relevant agencies to ensure that resources are in place if required to provide emergency response. These resources might include emergency service personnel, food items and non-food items such as medical supplies, shelter, assembly areas, relief centres etc.

3.8 Response to Flash Flooding

Emergency management response to flash flooding should be consistent with the guidelines within the State Flood Emergency Plan.

3.9 Evacuation

VicPol is the control agency responsible for evacuations. The decision to recommend evacuation to VicPol rests with the Incident Controller.

Once the decision is made, VicPol are responsible for the management of the evacuation process. VICSES and other agencies will assist where practical.

VICSES is responsible for the development and communication of evacuation warnings.

VicPol and/or Australian Red Cross may take on the responsibility of registering people affected by a flood emergency including those who have been evacuated.

Refer to section 3.8 of the EMMV and the Evacuation Guidelines for guidance of evacuations for flood emergencies.

3.10 Flood Rescue

VICSES may conduct flood rescues. Appropriately trained and equipped VICSES units or other agencies that have appropriate training, equipment and support may carry out rescues.

Rescue operations may be undertaken where voluntary evacuation is not possible, has failed or is considered too dangerous for an at-risk person or community. An assessment of available flood rescue resources (if not already done prior to the event) should be undertaken prior to the commencement of Rescue operations.

Rescue is considered a high-risk strategy to both rescuers and persons requiring rescue and should not be regarded as a preferred emergency management strategy. Rescuers should always undertake a dynamic risk assessment before attempting to undertake a flood rescue.

3.11 Aircraft Management

Aircraft can be used for a variety of purposes during flood operations including evacuation, resupply, reconnaissance, intelligence gathering and emergency travel.

Air support operations will be conducted under the control and approval of the Incident Controller.

There is an airfield located at Traralgon and heliport facilities are located at: Latrobe Regional Airport, Latrobe Regional Hospital (emergency only).

3.12 Resupply

Communities, neighbourhoods or households can become isolated during floods as a consequence of road closures or damage to roads, bridges and causeways. Under such circumstances, the need may arise to resupply isolated communities/properties with essential items.

When predictions/intelligence indicates that communities, neighbourhoods and/or households may become isolated, VICSES will advise businesses and/or households that they should stock up on essential items.

After the impact, VICSES can support isolated communities through assisting with the transport of essential items to isolated communities and assisting with logistics functions.

Resupply operations are to be included as part of the emergency relief arrangements with VICSES working with the relief agencies to service communities that are isolated.

3.13 Essential Community Infrastructure and Property Protection

Essential Community Infrastructure and Property (e.g. residences, businesses, roads, power supply etc.) may be affected in the event of a flood.

Each SES Unit maintains a small stock of sandbags, back-up supplies are available through the VICSES Regional Headquarters. The Incident Controller will determine the priorities related the use of sandbags, which will be consistent with the strategic priorities.

If VICSES sandbags are becoming limited in supply, then priority will be given to protection of Essential Community Infrastructure. Other high priorities may include for example the protection of historical buildings.

The Incident Controller will ensure that owners of Essential Community Infrastructure are kept advised of the flood situation. Essential Community Infrastructure providers must keep the Incident Controller informed of their status and ongoing ability to provide services.

Refer to Appendix C for further specific details of essential infrastructure requiring protection.

3.14 Disruption to Services

Disruption to services other than essential community infrastructure and property can occur in flood events. Refer to Appendix C for specific details of likely disruption to services.

3.15 Road Closures

Latrobe City Council and VicRoads will carry out their formal functions of road closures including observation and placement of warning signs, road blocks etc. to its designated local and regional roads, bridges, walking and bike trails.

Latrobe City Council will advise VicRoads as to the need or advisability of erecting warning signs and / or of closing roads and bridges under its jurisdiction.

Latrobe City Council will advise VicRoads of all road closures within Council's jurisdiction.

VicRoads are responsible for designated main roads and highways and Councils are responsible for the designated local and regional road network.

VicRoads will communicate community information regarding road closures.

3.16 Dam Failure

DEPI is the Control Agency for dam safety incidents (e.g. breach, failure or potential breach / failure of a dam), however VICSES is the Control Agency for any flooding that may result.

There are three main reservoirs in Latrobe City with the potential to cause significant rural inundation and possible agricultural damage.

- Newborough - Lake Narracan (Southern Rural Water)
- Willow Grove – Blue Rock Lake (Southern Rural Water)
- Moondarra – Moondarra Reservoir (Gippsland Water)

3.17 Waste Water related Public Health Issues and Critical Sewerage Assets

Inundation of critical sewerage assets including septic tanks and sewerage pump stations may result in water quality problems within the Municipality.

Where this is likely to occur or has occurred, it is the responsibility of Gippsland Water to undertake the following:

- Advise VICSES & Latrobe City Council of the security of critical sewerage assets to assist preparedness and response activities in the event of flood;
- Maintain or improve the security of critical sewerage assets;
- Check and correct where possible the operation of critical sewerage assets in times of flood;
- Advise the ICC in the event of inundation of critical sewerage assets.

It is the responsibility of the Latrobe City Council Environmental Health Officer to inspect and report to the MERO and the ICC on any water quality issues relating to flooding.

3.18 After Action Review

VICSES will coordinate the after action review arrangements of flood operations as soon as practical following an event.

All agencies involved in the flood incident should be represented at the after action review.

Part 4. EMERGENCY RELIEF AND RECOVERY ARRANGEMENTS

4.1 General

Relief and recovery arrangements within Latrobe City are detailed in the Latrobe City Council MEMP and/or the Relief and Recovery Sub-plan.

4.2 Emergency Relief

The decision to recommend the opening of an emergency relief centre rests with the Incident Controller. Incident Controllers are responsible for ensuring that relief arrangements have been considered and implemented where required under the State Emergency Relief and Recovery Plan (Part 4 of the EMMV).

The range and type of emergency relief services to be provided in response to a flood event will be dependent upon the size, impact, and scale of the flood. Refer to 4.4 of the EMMV for details of the range of emergency relief services that may be provided.

Details of the relief arrangements are available in the MEMP / Relief and Recovery Plan.

4.3 Animal Welfare

Matters relating to the welfare of livestock, companion animals and wildlife (including feeding and rescue) are to be referred to DEPI.

Requests for emergency supply and/or delivery of fodder to stranded livestock or for livestock rescue are passed to DEPI.

Matters relating to the welfare of wildlife are to be referred to DEPI.

4.4 Transition from Response to Recovery

VICSES as the Control Agency is responsible for ensuring effective transition from response to recovery. This transition will be conducted in accordance with existing arrangements as detailed in Part 3 Section 3.10 of the EMMV.

TRARALGON CREEK



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ASSOCIATED REPORTS

- | Traralgon and Rural Surrounds, MEMP Sub Flood Plan, LCC (August 1999)
- | Traralgon Creek Flood Forecasting Correlations, BoM (January 2000)
- | Traralgon Creek Floodplain Management Study, SKM (November 2000)
- | Traralgon and Rural Surrounds, Flood Response Guidelines for the Community, LCC (August 2006)
- | Traralgon Creek Flood Warning System, Flood Information Manual, LCC (August 2007)
- | Traralgon and Rural Surrounds, MEMP Sub Flood Plan, LCC (August 2007)
- | Flood Response Guidelines for the Community, Township and Rural Surrounds, LCC (August 2008)
- | State Flood Intelligence Report, VICSES (2012)

ACCURACY & CONFIDENTIALITY

Use this information as a guide to the possible effects of a flood. This card is based on estimates of flood behaviour and particular effects may occur at heights different from those indicated here. They may also occur at slightly different heights in different floods. This card may contain sensitive information about the effects of flooding on private property. Specific reference to private addresses or businesses must be made directly to owners or other emergency services but not via broadcast or print media.



APPENDIX A.07 – FLOOD THREATS

OVERVIEW OF RIVER SYSTEM

WEATHER PATTERNS

A slow moving low-pressure system over eastern Victoria and southern New South Wales (commonly referred to as an East Coast Low) is the weather pattern that normally produces the heaviest rainfall over the catchment areas of Gippsland, including Traralgon Creek.

At other times, a series of cold fronts produce regular rain events that wet the system, fill on-stream storages and waterways, at which point a rain event containing normal levels of rain will produce a higher runoff and may produce flooding.

Severe thunderstorms can also produce heavy rainfall and flash flooding over small areas in addition to the above weather patterns.

RIVER SYSTEM

Traralgon Creek has a total catchment area of 178km² and is a tributary of the **Latrobe River**.

The Traralgon Creek catchment lies on the northern side of the **Strzelecki Ranges** and drains northwards to the Latrobe River. From the headwaters to **Koornalla** (15km), the catchment is narrow with steep sided valleys, is heavily forested and with little natural flood storage. It has a low infiltration capacity and when combined with the steep catchment slopes, results in a high rate of runoff.

From Koornalla to the confluence with the **Latrobe River** (20km) just downstream of the **Traralgon** township, the catchment opens out into a valley with gentle slopes and a wide floodplain with large natural storage capacity and soils that have a greater infiltration capacity.

Most of the runoff is generated in the upper part of the catchment with sharp flood peaks generated which are attenuated by the floodplain storage on their way to Traralgon. Once the Creek reaches Traralgon, there is a complex distribution of floodwaters with an ana-branch and minor levees coming into play. More specific discussion of this is detailed in the Traralgon Flood Plan at Annex C.

FLOOD RISKS

FLOODING FREQUENCY

Traralgon experiences localised flooding within the Township, along rural roads and within rural properties due to heavy inundations of rainfall throughout the year.

Since 1990 there have been 6 Minor events, nil Moderate events and 7 Major events recorded at Traralgon township. 75% of all Major flood events on record have occurred in the months May – Sep with June, Jul & Sep having the highest frequency.

FLASH FLOODING

There is a flash flooding risk in the Traralgon Creek catchment, specifically in and around Traralgon and at the eastern end of the township near the Princes Highway and Liddiard road where houses were inundated during the 2007 event.

RURAL FLOOD RISK

Throughout the Traralgon Creek catchment there a number of areas that have significant rural flood risk. Though these areas are not highly populated, rural properties are susceptible to isolation or inundation. Along the creek, removal of stock and equipment is necessary while some minor roads (eg Jones Road, Traralgon South) may be closed.

- **Traralgon Creek** – Koornalla, Traralgon South, downstream of the Traralgon township

HEALTH & ENVIRONMENTAL RISKS

Industrial areas and residential sheds may contain chemicals; there are also septic tanks in the rural areas upstream of the town that may be inundated by floodwaters. Gippsland Water operates a sewerage pumping facility in this area.

PROPERTIES AT RISK

The Traralgon Flood Study (2000) mentions 66 buildings flooded above floor, including 53 residential, and a further 175 properties flooded, including 157 residential in a 1% AEP riverine flooding event.

HISTORICAL FLOODS

Significant floods have occurred in the Traralgon Creek Catchment as shown in the table below. Only events post 1988 have been included in the table as there were substantial modifications made to the waterway and floodway of Traralgon Creek.

EVENT	KOORNALLA	TRARALGON STH	TRARALGON (Princes Hwy) with adjusted figures from Wright St gauge
1989 Oct	2.45		4.55
1993 Sep	4.20	4.85	4.90
1995 Nov	3.85		4.86
2001 Apr		4.20	3.53
2007 Jun	3.38	4.68	4.84
2011 Jul	3.15	4.52	4.54
2012 Jun	3.56	4.89	5.32
2013 Jun	2.40	4.36	4.32
Major	-	-	4.50
Moderate	-	-	4.00
Minor	-	-	3.50

■ < Minor
 ■ Minor
 ■ Moderate
 ■ Major

SEPTEMBER 1993

The September 1993 flood is the largest recorded gauge height reaching a height of 5.64m at Traralgon (adjusted to current gauge AHD would be 4.90m. There were substantial river modification works completed in the 1980's. During this event 24 residential properties and 3 commercial properties were flooded above floor. An additional 99 properties were flooded below floor. The estimated total flood damages were \$770 000 (HydroTechnology, 1995).

NOVEMBER 1995

The November 1995 flood is the second largest in modern times, reaching a height of 5.60m at Traralgon (4.86m adjusted height). The flood inundated 24 residences, 3 public buildings and 99 residential allotments, commercial and public building areas as well as low lying creek frontage farm and recreation land.

JUNE 2012

A detailed summary of the June 2012 event will be included once analysis has been completed.

MAJOR WATER STORAGEES

There are no water storages over 1,000ML within this catchment although Traralgon Railway Reserve / Dead Horse Canyon needs further assessment.

LEVEES

Name	River	Location	Condition	Operator
Peterkin St Levee	Traralgon Ck	Traralgon	Good	Latrobe shire
Includes a floodway upstream of Shakespeare St. 100 yr design standard				

MAJOR ROAD CLOSURES

Riverine Flooding	Flash Flooding
Princes Hwy - @ Grey St, Traralgon Highland Hwy – u/s of Traralgon	Princes Hwy – near Liddiard Rd and further east

RURAL ROAD CLOSURES

SOUTH OF TRARALGON	
Riverine Flooding	Flash Flooding
Highland Hwy Traralgon Creek Rd Jones Road Downies Lane Taylors Road	

GAUGE LOCATIONS

Gauge Name	Location	Gauge Zero m AHD	No.
Traralgon Ck @ Koornalla	Approx 1.6km u/s Stoney Ck Junction	86.00	226410
Traralgon Ck @ Traralgon Sth	Jones Road	60.00	226415
Traralgon Ck @ Traralgon (Wright St)*	@ footbridge, 800m d/s of Princes Highway Bridge	29.929*	226023a
Traralgon Ck @ Traralgon (Wright St)*	@ footbridge, 800m d/s of Princes Highway Bridge	31.929*	223023a
Traralgon Ck @ Traralgon (Princes Hwy) **	@ Princes Hwy bridge	32.673	226023b
Rain @ Jeeralang	Dobbins Road		226829a
Rain @ Balook	85007		
Rain @ Mt Tassie	858186		226814
Rain @ Taylors Rd Quarry	85006 - no longer operational		
Rain @ Mt Hooghly	85005 - no longer operational		
Rain @ Callignee North	85236		
Rain @ Koornalla	85281		226410
Rain @ Traralgon Sth	858014		
Rain @ Traralgon EPA	85009		

* 22 April 1987 - Traralgon Creek @ Wright St gauge was changed which increased the gauge zero from 29.929m AHD to 31.929m AHD.

** August 1998 - Traralgon Creek @Princes Hwy gauge was installed 300m upstream of the Wright St Footbridge as the Wright St gauge didn't capture all Traralgon Creek flood flow during large events. This gauge is utilised for all flood warnings for Traralgon and all data in this document has been adjusted to this gauge.

GAUGE LEVEL INFORMATION

Gauge Name	Event	Gauge Height (m)	Flow (ML/d)	ARI (1 in X years)
Traralgon Ck @ Koornalla 226410		4.50	16,500	100
	1993 Sep	4.20	14,200	
		4.02	12,900	50
	1978 Jun	3.89	11,900	
	1995 Nov	3.85		
		3.61	9,900	25
	2007 Jun	3.38	8,433	
	2011 Jul	3.15		
		3.08	6,630	10
	2001 Apr	3.03		
	2005 Feb	2.89		
	1980 Jun	2.72		
		2.71	4,610	5
	1995 Oct	2.63		
	2007 Nov	2.58		
	2011 Apr	2.46		
	2009 Sep	2.45		
	1989 Oct	2.43		
	2012 May	2.37		
	1978 May	2.37		
1984 Jul	2.34			
2011 Aug	2.34			
2011 Jun	2.33			
Traralgon Ck @ Traralgon Sth 226415	2007 Jun	4.68		
	2011 Jul	4.52		
	2009 Sep	4.50		
	2001 Apr	4.20		
	2005 Feb	4.10		
	2007 Nov	3.97		
	2011 Apr	3.81		
	2011 Aug	3.78		
	2001 Aug	3.72		
	2011 Jun	3.70		
	2007 Jul	3.59		
	2009 Aug	3.41		
	2009 Oct	3.13		
	2010 Sep	2.95		
	2002 Jul	2.94		
1998 Nov	2.92			
Traralgon Ck @ Traralgon Wright St 226023a Historical gauge heights are listed below.		4.20	32,750	500
		5.60	21,170	100
		5.30		50
		4.80	11,840	
Traralgon Ck @ Traralgon (Princes Hwy) 226023b			****	
Gauge heights listed here include heights from the Traralgon Ck @ Wright St gauge (226023a). These figures have been adjusted to reflect both the change in AHD in 1987 and the location change to Princes Hwy in 1998.				
**** pre adjusted gauge height	2012 Jun	5.32	5.32	
	1978 Jun	5.01	7.75	
	1993 Sep	4.90	5.64	
	1995 Nov	4.86	5.60	
	2007 Jun	4.84	4.84	
	2011 Jul	4.54	4.54	
Major		4.50		
	2013 Jun	4.32	4.32	
Moderate		4.00		
	1983 Jul	3.87	6.61	
	1989 Oct	3.81	4.55	
	1980 Jun	3.68	6.42	
	2001 Apr	3.53	3.53	
	1983 May	3.53	6.27	
Minor		3.50		

FLOOD INFORMATION PROVIDERS

Latrobe City Council has identified Flood Information Providers as listed below. These contacts should be contacted twice per year in March and September.

Location	Name	Phone
Traralgon, 5 Atherly Close	Duff, Peter	5174-8415
Traralgon, 16 George St	Reidy, Michael	5174-4367
Traralgon South, "Glen Gordon"	Symons, Margaret	5195-5223
Koornalla, Traralgon Ck Road	Farmer, Charlie	5195-5263
Callignee, Symons Road	Symons, H	5195-5389



APPENDIX B.01 –FLOOD PEAK TRAVEL TIMES

- | Travel times are calculated as the time the peak of the event takes to move from one gauge to the next. Note the onset of flooding can occur before the peak water level occurs.
- | It is possible for flooding to commence at downstream locations prior to peak heights being reached in the upper parts of the catchment due to both locally heavy rainfall and the backwater effects mentioned earlier.
- | Due to the high level of variability in antecedent catchment conditions, flood travel times can vary significantly, as demonstrated in previous floods.
- | Travel times listed here are **INDICATIVE ONLY** and are **HIGHLY VARIABLE**.
- | Koornalla to Traralgon Sth is in the order of 1-10 hours
- | Traralgon Sth to Traralgon Wright St is in the order of 2-12hrs

Gauge Name	Jun 1978	Jun 1980	Oct 1990	Sept 1993	Nov 1995	Jun 2012
Traralgon Ck @ Koornalla	0	0	0	0	0	0
Traralgon Ck @ Traralgon	9 hrs	12 hrs	6.5 hrs	2hrs	2.75hrs	7.25hrs

APPENDIX C.01 – FLOOD EMERGENCY PLAN

TRARALGON



Traralgon Creek @ Traralgon (Princes Hwy)

Minor 3.50m

Moderate 4.00m

Major 4.50m

LOCATION

Traralgon is a major town of approximately 22,000 (ABS Census 2006) residents as well as a regional shopping, industrial and medical centre for north and east Gippsland residents. It is located near the confluence of Traralgon Creek and the Latrobe River which lies to the north of the town.

Parts of the existing residential and commercial precincts are located in the creek's floodplain.

The Princes Highway passes through the town and may be cut during significant floods, which splits the town in two and cuts all east/west traffic for the duration with no alternative access.

A number of floods have caused extensive damage in Traralgon. In particular the events were in December 1934, February and August 1951, June 1952, June 1978, September 1993 and November 1995.

FLOOD BEHAVIOUR

Traralgon experiences localised flooding within the township and along rural roads due to heavy inundation of rainfall, throughout the year. This type of localised flooding causes inconvenience, but is not usually a serious threat to life or property.

Riverine flooding in Traralgon occurs quickly as a result of heavy rainfall in the catchment of Traralgon Creek around Mt Tassie and Koornalla. **Latrobe River floods do not cause flooding in Traralgon via Traralgon Creek however they can increase impact by holding up outflows downstream of Traralgon at the confluence (joining) of Traralgon Creek and Latrobe River.**

Traralgon Creek can flood within approximately 6 to 8 hours of start of heavy rain with rapid rises and duration of 12-24hrs (medium floods) and up to 36 hours (large floods). Flooding can occur within town before upstream gauges have peaked.

Floodwaters enter Traralgon township from the South. Traralgon Creek is the main stream through the township however there are a number of other streams which also convey flows and a number of levee banks which result in quite a complex flow regime.

The creek begins to break its banks around 500m to 1km upstream (south) of Shakespeare St, between Dunbar Rd and Traralgon Creek Rd, near the cement works on Janette St. This break out starts the ana-branch flowing which crosses Traralgon Creek Rd (near the end of Ormond St) and Shakespeare St, runs east of the showground, breaks out into Whittakers Rd, through separate culverts under the railway line and rejoins the main flow just upstream of the Princes Highway Bridge. A levee along Peterkin St contains these flows between the railway and the Princes Highway. Franklin St also starts to flood near the bridge.

Downstream of the Princes Highway, flood flows can breakout and flow along Berry and George Sts, inundating a number of buildings. Franklin Street bridge, a little further downstream again, was one of the first locations in Traralgon to overtop, with some of the resulting breakout travelling north along Franklin Street, **however the Franklin St Bridge was raised in 2012 by 1m**, the impact of this on flood flows around this area and bridge closure is yet to be understood in an event.

In larger floods, these breakouts combine with breakouts from Traralgon Creek downstream of Franklin Street to inundate largely vacant land downstream of Davidson Street. Beyond this area, flood flows become more confined between Macquarie Place and Traralgon Creek. The area between Castlereagh Court and Wentworth Place in the new subdivision is inundated by backwatering; however no houses in this area should be inundated above floor level in a 1% AEP event.

CONSEQUENCES AND IMPACTS SUMMARY

Areas of Traralgon require evacuation with some houses being impacted above floor. Many roads around the town are flooded, causing much disruption.

FLOOD MITIGATION SYSTEMS

Various levees and floodways have been constructed in Traralgon and are listed below:

- Peterkin St Levee
- Floodway upstream of Shakespeare St - a “connecting floodway” was constructed to divert flows away from the east branch and into Traralgon Creek
- The eastern ana-branch itself is a floodway and assists in reducing water levels in Traralgon Creek and diverts flow around the showground for small-medium floods
- minor levee has been constructed at Phelan Street

FLOOD WARNINGS

The Bureau of Meteorology provides warnings for Traralgon as part of the Traralgon Creek Flood Warning System and will attempt to provide at least 6 hours warning of flood peak at Traralgon.

The existing data collection network consists of (8) rain gauges and (3) creek gauges strategically placed throughout the Catchment

However, the fundamental geography of Traralgon and Traralgon Creek imposes a limitation on the flood warning time that can be made available. It is unlikely that reliable warning time of more than 12-24 hours can be guaranteed from the start of rainfall to the peak at Traralgon. Warning times will vary with storm characteristics.

The short warning time available and difficulties of access through floodwaters are also a constraint on the effectiveness of emergency response in Traralgon, and emphasises the advantage of having effective flood mitigation works in place.

Latrobe City Council currently provides a flood warning service to households and residents at risk of flood in Traralgon. The Flood Warning System will endeavour to provide early advice of flood events. It should be remembered however, that significant inundation might occur before the flood peak.

ROAD CLOSURES

Riverine Flooding	Flash Flooding
Princes Highway - @ Grey Street	Dunbar Rd - @ Rose Ave
Traralgon Ck Rd – near end of Ormond St	Hickox St – just sth of Rose Ave
Whittakers Rd – Shakespeare St to railway underpass	Shakespeare St - @ High St
Franklin St Bridge	Ormond St – between Mapleson Dr & Liddiard Rd
Franklin St – Bridge to Macquarie Pl	Bradman Blvd -
Davidson St – Peterken St to western end	
Paul St – west of Alfred Cl to western end	
Railway Bridge underpass - @ Whittakers Rd	
Shakespeare St – between Mapleson Dr & Atherley Cl	
George St - all	
Berry St - all	
Hyland Highway	
Munro St – near Berry St	
Phelan St - all	
Mapleson Dr - @ Ormond Rd	
Atherley Cl - all	
Tennyson St - all	
Booth Crt- all	
Milton Crt- all	
Moonabeal Crt- all	
Raymond St - all	
Howitt St – west of show grounds	
Couchs Lane - all	
Peterkin St – sth of Gwala St	
Marshalls Rd – western end	

GAUGE LEVEL INFORMATION

Traralgon Ck @ Traralgon

Flood Class	Flood Event	Gauge Height (m)
	2012 Jun	5.32
	1993 Sep	4.90
	1995 Nov	4.86
	2007 Jun	4.84
	1989 Oct	4.55
	2011 Jul	4.54
Major		4.50
	2013 Jun	4.32
Moderate		4.00
	2001 Apr	3.53
Minor		3.50

These figures include gauge heights for both the Wright St and Princes Highway gauges with adjustments to cater for changes to gauge zero's.

DETAILED CONSEQUENCES & IMPACTS - FLOOD INTELLIGENCE CARD

Gauge	No.	Location	Datum Type
Traralgon Ck @ Traralgon			

NB Depths quoted are above ground level. Properties are considered isolated when 20cm of water is across the road

Height (m)	Consequences	Operational Considerations
------------	--------------	----------------------------

3.50 **MINOR FLOOD LEVEL** LCC - Inspect flood gates and Whittakers Rd

- ▷ Ana-branch commences to flow
- ▷ Breakout of river on floodplain below old Cement Works on Janette St

PROPERTIES

- ▷ Low lying agricultural land beside the river
- ▷ Properties on Mapleson Dr

ROADS

Water over Road

- ▷ Whittakers Rd

Road Closed

- ▷ Franklin St Bridge approaches submerged* the height of this bridge was increased by 1m in 2012 however the approaches were not
- ▷ Traralgon Ck Rd – opposite Ormond Rd

PUBLIC INFRASTRUCTURE

- ▷ Low lying areas of the Bert Thompson Reserve and Victory Park near old Pizza Hut building

4.00 **MODERATE FLOOD LEVEL** LCC - Inspect Shakespeare Bridge debris

- ▷ Ana-branch is running

PROPERTIES

- ▷ Paul Street

ROADS

Water over Road

- ▷ Franklin St - @ Davidson St
- ▷ Davidson S
- ▷ Paul St
- ▷ Railway Bridge underpass

Road Closed

- ▷ Shakespeare St (Hyland Hwy)
- ▷ Whittakers Rd viaduct
- ▷ Traralgon Ck Rd
- ▷ Stocklands Shopping Centre Car park

PUBLIC INFRASTRUCTURE

- ▷ Sports oval/area commences flooding

4.32 JUNE 2013 FLOOD LEVEL**PROPERTIES**

- ▷ There was no over floor inundation
- ▷ Evacuations were conducted
- ▷ 80 houses were doorknocked
- ▷ 6 persons relocated

4.50 MAJOR FLOOD LEVEL**PROPERTIES**

- ▷ George St
- ▷ Berry St
- ▷ Milton Crt
- ▷ Tennyson St
- ▷ Whittakers Rd
- ▷ Willow Court
- ▷ Moonabel Court
- ▷ Booth St
- ▷ Jackson St

ROADS**Water over Road**

- ▷ Argyle St (at Post office Place)
- ▷ Peterkin St
- ▷ Campbell St

Road Closed

- ▷ George St
- ▷ Berry St
- ▷ Shakespeare St
- ▷ Argyle Street @ Campbell St
- ▷ Gwallia St
- ▷ ASIC carpark

PUBLIC INFRASTRUCTURE

- ▷ Tennis Complex
- ▷ Showgrounds

4.54 JULY 2011 FLOOD LEVEL**4.84 JUNE 2007 FLOOD LEVEL****PROPERTIES**

- ▷ No over-floor residences flooded
- ▷ Allotments close to Traralgon Creek begin flooding

ROADS

- ▷ Shallow flooding of local roads causing some isolation

Height (m)	Consequences	Operational Considerations
4.86	NOVEMBER 1995 FLOOD LEVEL	
4.90	SEPTEMBER 1993 FLOOD LEVEL <ul style="list-style-type: none"> ▷ 24 homes and 3 public buildings were flooded above floor level plus a further 99 allotments. 	
5.32	JUNE 2012 FLOOD LEVEL <hr/> PROPERTIES <ul style="list-style-type: none"> ▷ 2-3 residential properties on the north side of the Franklin Street Bridge had over floor flooding. ▷ Evacuations were conducted 	
5.60	100 yr ARI	
6.20	500 yr ARI	
7.75	JUNE 1978 FLOOD LEVEL	

APPENDIX D.07 – EVACUATION ARRANGEMENTS

The Incident Controller may make the decision to evacuate an at-risk community. Evacuation is the responsibility of VICPOL and will be conducted as per the EMMV and the MEMP.

An evacuation plan is being constructed with appropriate stakeholders.

APPENDIX E.07 - FLOOD WARNING SYSTEM

The Bureau of Meteorology issues Flood Warnings and River Height Bulletins for the Traralgon Creek Catchment regularly during floods.

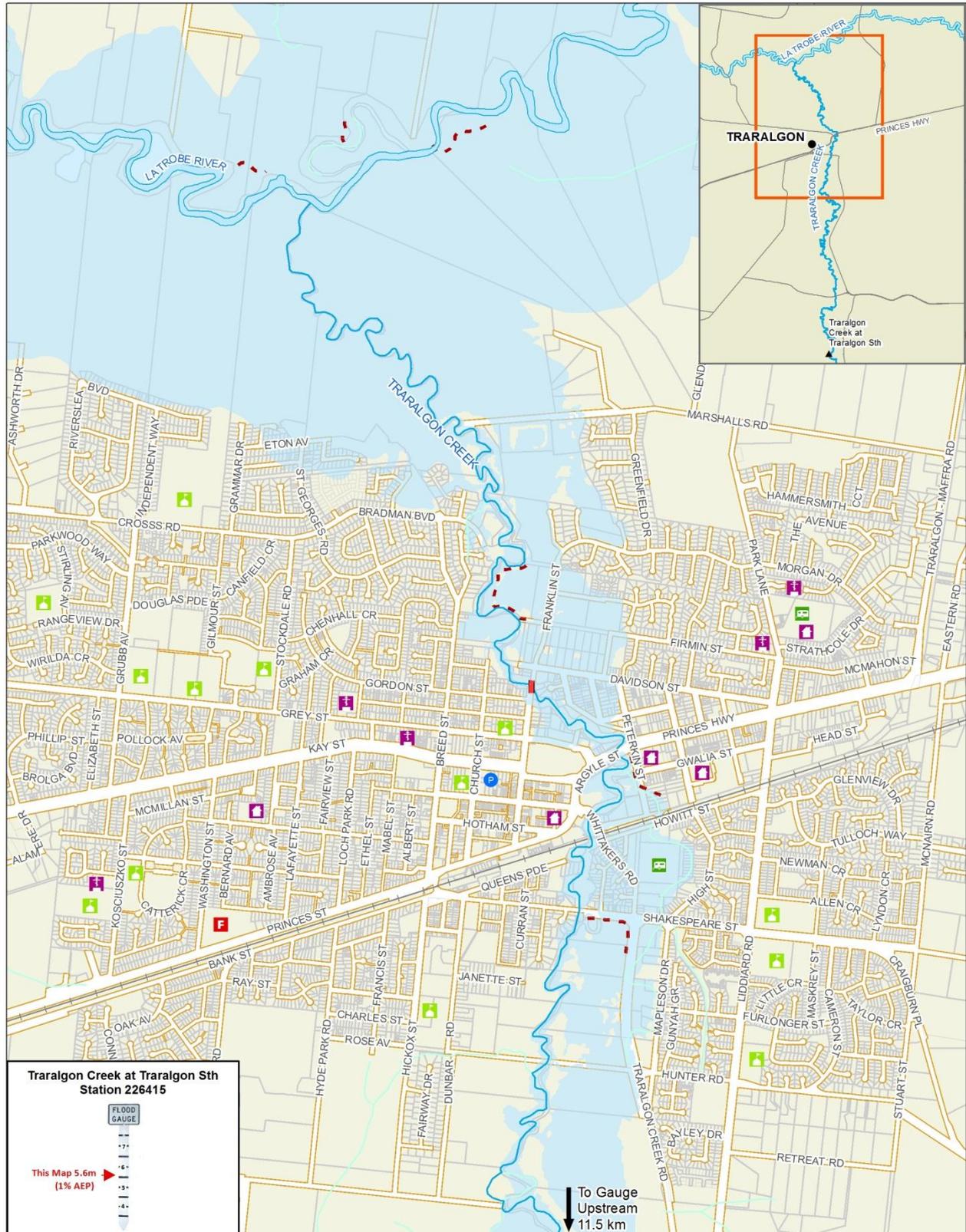
APPENDIX F.07 – MAPS

| Traralgon Township Map

Traralgon Township Map

LATROBE SHIRE COUNCIL

Traralgon

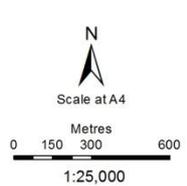


Traralgon Creek at Traralgon Sth Station 226415

FL000 GAUGE

This Map 5.6m (1% AEP)

To Gauge Upstream 11.5 km



- ▲ River Gauge
- 🚒 Fire Station
- 🚓 Police Station
- 🏠 Nursing Home
- 🎓 School
- 🏛️ Church
- 🏕️ Camp Ground
- Rail Line
- Road
- River/Creek
- Creek/Stream
- - - Levee
- - - Extent of Flood Data
- Franklin St Bridge
- 5.6m at the Gauge (1% AEP)
- Cadastre



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