



City of Glen Eira Local Flood Guide

Flash flood information for: **McKinnon & Ormond**
Caulfield & Caulfield South
Glen Huntly & Carnegie





The Glen Eira Local Area

The City of Glen Eira is located in Melbourne's south-eastern suburbs, about 10 kilometres from the Melbourne Central Business District. It covers 15 suburbs, is approximately 39 square kilometres in size and has a population of 149,000.

European settlement dates from the 1840s when the land was swampy and used mainly for farming in the north and market gardening in the south.

Significant and frequently devastating flooding has occurred in this area over a long period of time. Recently, large flood events were experienced in February 2011 and December 2016, both of which resulted in wide-spread, above floor flooding of properties.

How the drainage system works in Glen Eira

Waterways within Glen Eira have undergone significant change and modification as the area has developed and natural waterways have been constructed into an underground drainage network.

There are some areas where there are no underground drainage pipes. These areas are generally in the older parts of the city and are drained by either private drainage pipes or by the kerbs and channels of the road network that drain stormwater into drainage pits.

Most flooding problems occur because older suburbs like Glen Eira were built to different drainage design standards to those that apply today.

- Suburbs developed before the mid to late 1970s did not plan for how water would flow over land when the drainage system was full. This means that the excess floodwater still follows natural valleys and drainage paths, which sometimes run through properties and buildings.
- When it rains heavily, the roads in these areas can carry a large flow of water. Floodwaters can rise very quickly, but generally only last a few hours before receding.

Sometimes during heavy rain, water can be seen coming out of drains rather than going into them.



This occurs because drains are designed to transport a limited capacity of water. See an example of this to the left.

When the rainfall in the catchment exceeds the capacity of the drains, flows will surcharge from pits as the drains are flowing under pressure. Any excess runoff will flow over land and into streets. In addition, when the Melbourne Water main drain capacity is exceeded, the back-water effect through the connecting council drains floods the streets and abutting properties.



Flash Flooding

The most frequent type of flooding in Glen Eira is 'flash flooding'. This occurs when the amount of rainfall from a storm is greater than the capacity of the existing drainage system to carry it away, resulting in backing up of the drains and water flowing overland and pooling in lower lying areas. Generally, average rainfalls of more than 20 millimetres in 30 minutes or so may lead to flash flooding.

Exact timings of flooding after rain are not available. However, it is likely to be short; in order of 30 minutes to an hour. So the time available to provide effective warnings of the occurrence of flash flooding is next to none. More often than not, you will be aware of local flooding before any warning can be issued.

In December 2016, 56 calls for assistance were received related to flash flooding. Flooding occurred about 1 to 1.5 hours after the start of heavy rain. Rises were rapid with peak levels reached within about 30 minutes.

Did you know?

The City of Glen Eira has been impacted by heavy rainfall resulting in flash flooding on several occasions, including 1996, 2003, 2004, 2005, 2006, 2010, 2011, 2013, 2015, 2016, 2017.

In February 2011, exceptionally high rainfalls, between 100-200 millimetres, resulted in flooding of numerous streets, properties and houses, some ending up with extensive damage. More than 150 homes and businesses were damaged and around 200 properties affected. A number of houses were rendered uninhabitable.

From flood modelling completed in Glen Eira in 2015, 8,800 properties are at risk of flooding during a 1% flood event and 1,288 properties are potentially at risk of over-floor flooding. A 1% event means there is a 1% chance of a flood this size happening in any given year.



Almond Street, Caulfield South



Ormond and McKinnon

The Ormond and McKinnon areas sit in the Elster Creek catchment, a large, relatively flat area that drains via Elster Creek and the Elwood Canal to Port Phillip Bay. The landscape and early development of this area (prior to more rigorous flood controls) has left this area prone to flooding.

The map below shows the impact of a 1% flood in the Ormond and McKinnon area. A 1% flood means there is a 1% chance of a flood this size happening in any given year. This map is provided as a guide to possible flooding within the area.



Disclaimer
 This map publication is presented by Victoria State Emergency Service for the purpose of disseminating emergency management information. The contents of the information has not been independently verified by Victoria State Emergency Service. No liability is accepted for any damage, loss or injury caused by errors or omissions in this information or for any action taken by any person in reliance upon it. Flood information is provided by Melbourne Water.



Are you at risk of flood?

Older suburbs which were built using different design standards to those that apply today tend to be prone to flooding problems because development has occurred without appropriate allowance for flood waters. The area around Murray Road, Cadby Avenue and Hawthorn Grove in Ormond and McKinnon is one of these areas.

In Ormond and McKinnon, the December 2016 rainfall event was very intense, particularly in the first 2-3 hours. Within this period, the rainfall pattern was similar to that in 2011. The intense rainfall was too much for the drainage system and the area experienced wide-spread flooding.

Areas at risk of flooding include:

- Tyrone Street
- McKinnon Road
- Prince Edward Avenue
- Wheeler Street
- Bailey Avenue
- South end of Glenorme Avenue
- South end of Cadby Avenue
- North end of Station Avenue
- Queen Street
- Intersection of Carcoola Court and Jasper Road
- Intersection of North Road and Malane Street
- Murray Rd between Wheatly Road and Jasper Road



Glen Orme Avenue, McKinnon

Did you know?

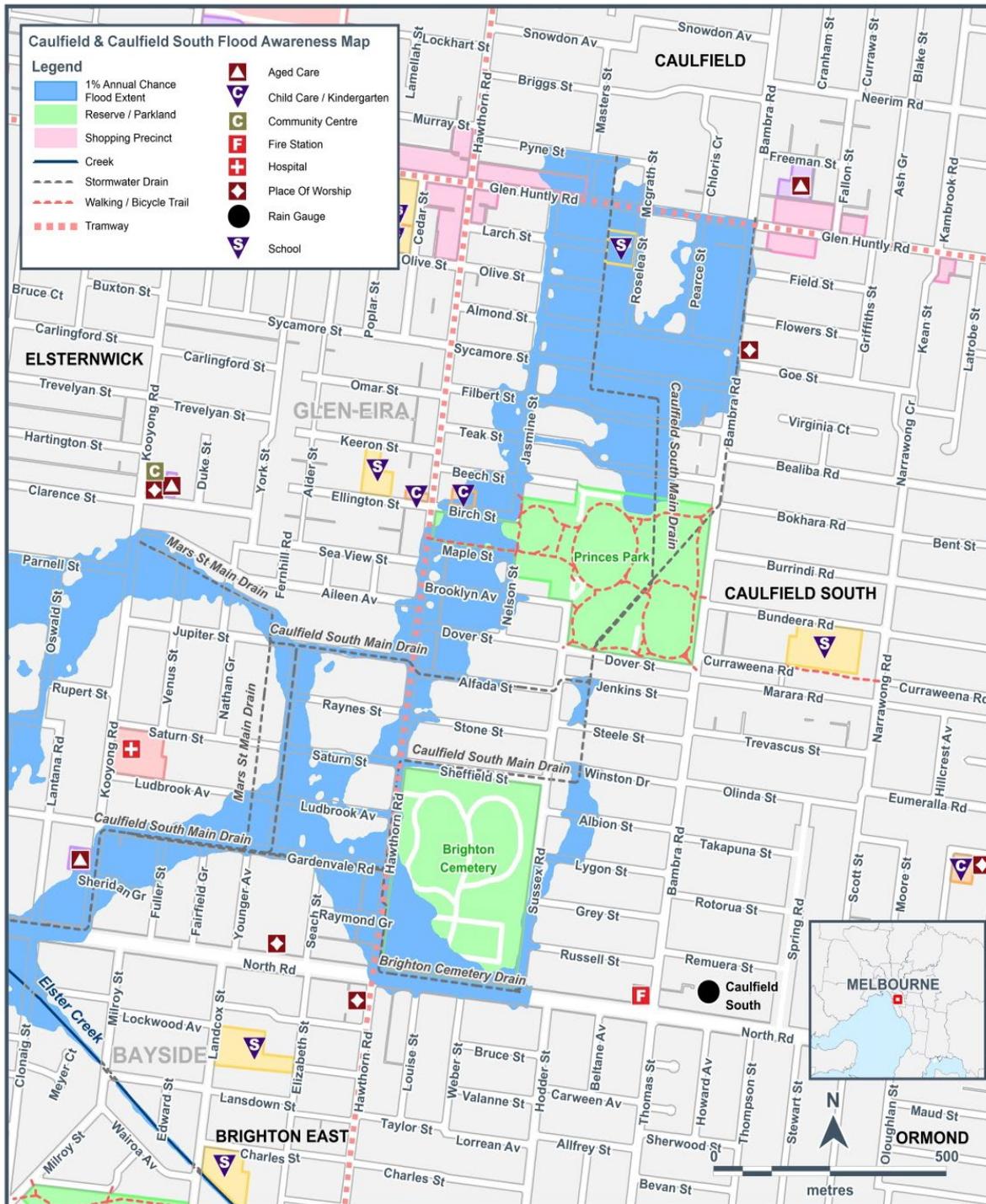
- In February 2011, flooding along Cadby Avenue, Murray Road, Station Avenue, Wheeler Street, Prince Edward Avenue and Glen Orme Avenue was severe.
- Water levels exceeded the estimated 1% flood levels east of the railway line and water was up to 1.5m deep.
- Twenty or so houses were flooded over-floor and 50 to 60 properties were flooded.
- In December 2017, there was waist-high water at some of the low-lying shops near the Shell Service Station on North Road Ormond and some pit lids blew off the drains from excess water pressure in Oakleigh Crescent.
- There are 302 properties potentially at risk of over-floor flooding in McKinnon and 137 in Ormond as a result of a 1% flood event.



Caulfield and Caulfield South

Caulfield and Caulfield South are established residential areas. Settlement of the area dates from the 1850s with the town becoming the centre of a market gardening and orchard district by the 1880s.

The map below shows the impact of a 1% flood event in the Caulfield and Caulfield South area. A 1% flood means there is a 1% chance of a flood this size happening in any given year. This map is provided as a guide to possible flooding within the area.



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Are you at risk of flood?

Areas at risk of flash flooding include:

- Larch Street
- Birch Street
- Roselea Street
- Almond Street
- Teak Street
- Olive Street
- Glenhuntly Road
- Hawthorn Road from North Road to Birch Street
- North Road from Spring Road to Sussex Street
- Intersection of Snowdon Avenue and Hawthorn Road
- Pyne Street and Masters Street
- Bambra Road and Caulfield South Main Drain areas
- The underpass on Normanby Road near the racecourse.
- Jasmine Street – park and house flooded here in recent flood event.



Masters Street, Caulfield

Did you know?

- Caulfield South received the heaviest rainfall in Glen Eira during the February 2011 rain event. At the Caulfield South rain gauge, 56 millimetres fell (with 34 millimetres in a 25 minute period), followed by 20 millimetres in 15 minutes.
- There are 251 properties potentially at risk of over-floor flooding in Caulfield South as a result of a 1% flood event.



No two floods are the same, floods like this or worse could occur again.

If you live in a low-lying area you may be at risk of flooding or need to detour around flooded areas.

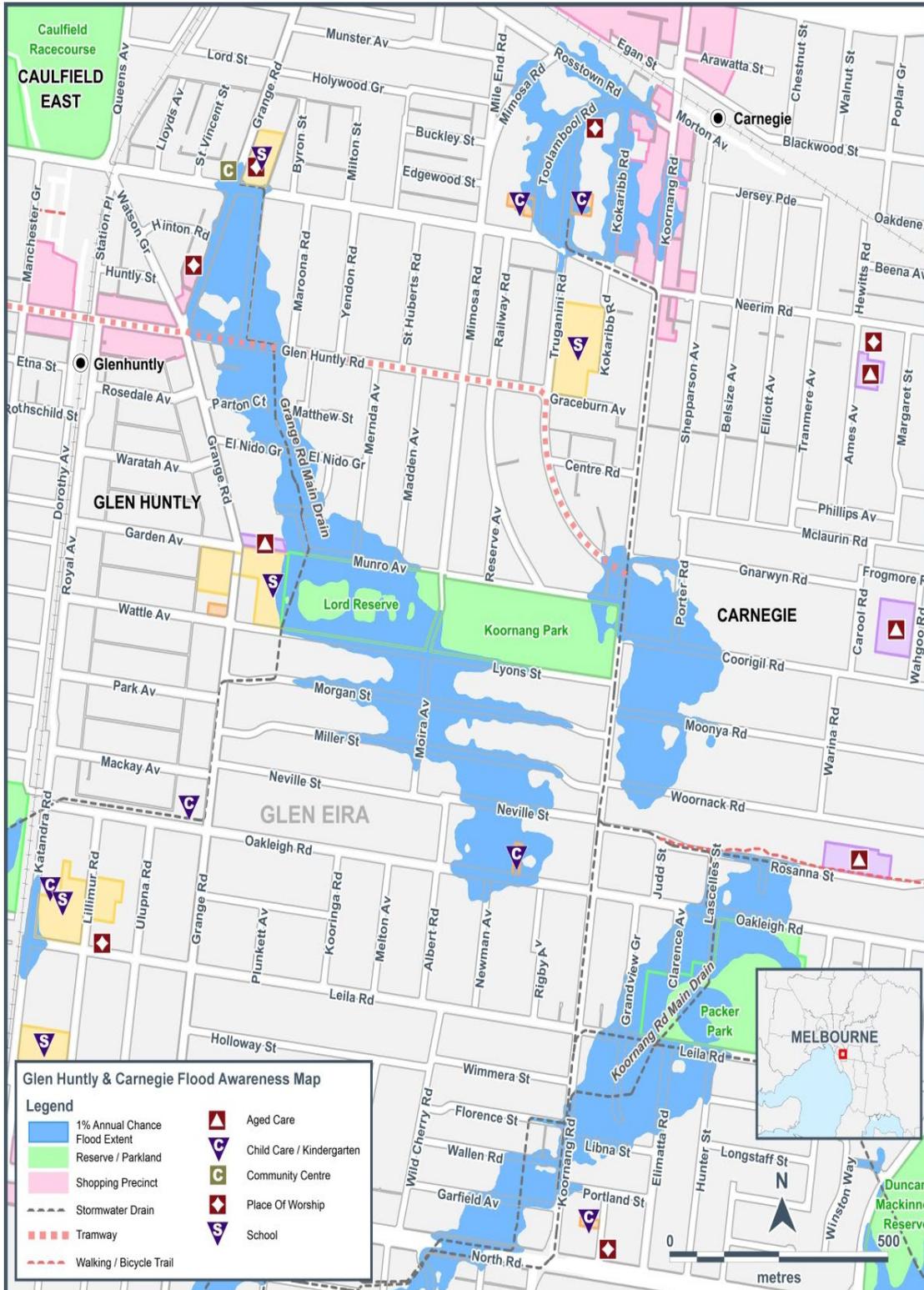
Knowing what to do can save your life and help protect your property



Glen Huntly and Carnegie

The suburbs of Glen Huntly and Carnegie have a history of flash flooding from heavy rainfall occurring over a short period of time causing waterways to overflow into surrounding areas.

The map below shows the impact of a 1% flood in the Glen Huntly and Carnegie area. A 1% flood means there is a 1% chance of a flood this size happening in any given year. This map is provided as a guide to possible flooding within the area.



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Are you at risk of flood?

Areas at risk of flash flooding include:

- Intersection of Neerim Road and Grange Road;
- Intersection of Hollywood Grove and Grange Road;
- Intersection of Garden Avenue and Grange Road;

Did you know?

- Houses flooded in Carnegie in both the February 2011 and December 2017 rain events.
- There are 176 properties in Carnegie potentially at risk of over-floor flooding as a result of a 1% flood event.



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If you live in a low-lying area you may be at risk of flooding or need to detour around flooded areas.

Knowing what to do can save your life and help protect your property

Staying Informed and Further Information

- | | | |
|-----------------------------------|--|--------------|
| ▪ Current warnings (VicEmergency) | emergency.vic.gov.au | 1800 226 226 |
| ▪ Bureau of Meteorology (BoM) | bom.gov.au/vic/warnings | 1300 659 217 |
| ▪ VicRoads Traffic | traffic.vicroads.vic.gov.au | |
| ▪ Emergency Broadcasters | ABC Radio 774 AM 3AW 693 AM SKY NEWS Television | |
| ▪ VICSES Social Media | facebook.com/vicses twitter.com/vicsesnews | |
| ▪ Preparing for Flood Emergencies | ses.vic.gov.au/get-ready | |
| ▪ Creating an Emergency Plan | redcross.org.au/prepare | |
| ▪ Melbourne Water | melbournewater.com.au | 131 722 |
| ▪ City of Glen Eira | gleneira.vic.gov.au | 03 9524 3333 |
| ▪ National Relay Service NRS | relayservice.gov.au | |

**Life-threatening
Emergency
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VICSES Warnings

VICSES utilises the VicEmergency app, website and hotline to distribute flood warnings and emergency information in Victoria. Communities can also access this information through our social media channels and emergency broadcasters.

VICSES warnings aim to provide you with as much information to help you make good decisions to protect yourself and your family

WARNING LEVELS

| | |
|--|--|
| | EMERGENCY WARNING You are in imminent danger and need to take action immediately. You will be impacted. A Major flood warning usually fits into this category |
| | WARNING (WATCH AND ACT) An emergency is developing nearby. You need to take action now to protect yourself and others. A Moderate flood warning usually fits into this category. |
| | ADVICE An incident is occurring or has occurred in the area. Access information and monitor conditions. Can also be used as a notification that activity in the area has subsided and is no longer a danger to you. A Minor flood warning or Flood Watch usually fits into this category. |

ADDITIONAL MESSAGES

| | |
|--|--|
| | PREPARE TO EVACUATE/ EVACUATE NOW An evacuation is recommended or procedures are in place to evacuate. |
| | COMMUNITY INFORMATION A newsletter containing updates for communities affected by an emergency. Can also be used as a notification that an incident has occurred but there is no threat to community. |
| | EMERGENCY ALERT During some emergencies, we may alert communities by sounding a local siren, or by sending an SMS to mobile phones or a voice message to landlines. |

Your emergency plan

Emergencies can happen at any time, with little warning. People who plan and prepare for emergencies reduce the impact and recover faster.

Taking the time to think about emergencies and make your own plan helps you think clearly and have more control to make better decisions when an emergency occurs.

Visit redcross.org.au/prepare start creating your plan.



- Remember, you may not receive any official warning.
- Emergency assistance may not be immediately available. Be aware of what is happening around you to stay safe.
- Never wait for a warning to act.



Emergency Checklist

- Check if your insurance policy covers flooding.
- Keep this list of emergency numbers in your mobile phone
- Download the Vic Emergency app on your mobile phone.
- Put together an emergency kit and prepare a home or business
- Emergency plan, see [redcross.org.au/prepare](https://www.redcross.org.au/prepare)

Before Flooding

- Leaving early before flooding occurs is always the safest option. Evacuating through floodwater is very dangerous and you may be swept away.**
- Stay informed- monitor weather warnings, forecasts and river levels at the [bom.vic.gov.au](https://www.bom.vic.gov.au) and warnings through [emergency.vic.gov.au](https://www.emergency.vic.gov.au)
- Secure objects likely to float and cause damage.
- Listen to the radio and check the VICSES website for information and advice.
- Go over your emergency plan. Pack clothing and other extra items into your emergency kit and take this with you if you evacuate.

During Flooding

- Make sure your family members and neighbours are aware of what is happening.
- Conditions change rapidly; roads and escape routes can be covered or blocked.
- Put household valuables and electrical items as high as possible.
- Turn off water, gas and electricity at the mains.
- If you are staying in a caravan, move to higher ground before flooding begins.
- Seek shelter indoors, away from floodwater.
- If floodwater comes inside, move to a higher point such as a kitchen bench or second storey.
- Stay away from trees, drains, low-lying areas, creeks, canals, culverts and floodwater.

Evacuating in Flooding

- Flood water is dangerous. Stay safe by never entering flood water. It can take just 15cm of water to float a car.**
- Find alternative travel routes if roads or underpasses are flooded.
- Be aware of driving hazards, such as mud, debris, damaged roads and fallen trees. If driving conditions are dangerous, safely pull over away from trees, drains and floodwater.

After Flooding

- For recovery information, contact your local council, go to the VicEmergency Relief and Recovery- [emergency.vic.gov.au/Relief](https://www.emergency.vic.gov.au/Relief) page or call the VicEmergency Hotline (1800 226 226).
- Have all electrical and gas equipment professionally tested before use.
- Stay away from damaged and flooded buildings, fallen trees and powerlines, and damaged roads until authorities advise they are safe.
- Drive slowly, obey all road signs and never drive through floodwater.
- When cleaning, protect your health and safety. Wear strong boots, gloves and protective clothing and wash your hands and clothes regularly.

For VICSES emergency assistance, call 132 500, or Triple Zero (000) in life threatening emergencies.