

# APPENDIX C1 – CARDINIA CREEK FLOOD EMERGENCY PLAN

## Overview of Flooding Consequences

*This Summary table is generated from Victorian Government data. The State of Victoria does not guarantee that the publication is without flaw of any kind or is wholly appropriate for your particular purposes and therefore disclaims all liability for error, loss or damage which may arise from reliance upon it. All persons access this information should make appropriate enquiries to assess the currency of the data.*

### Summary of Consequences in a 1% AEP (100yr ARI) flood along Cardinia Creek and its stormwater tributaries in Cardinia

Property					
Properties	58				
Residential	15				
Commercial	0				
Industrial	0				
Public Land	0				
Rural	43	Including Beaconsfield Berwick Pet Resort			
Community Infrastructure					
Essential Infrastructure					
Major Roads	4	Ballarto Rd; Beaconsfield-Emerald Rd; Princes Fwy; South Gippsland Hwy			
Bus Routes	3	836; 838; 896			
Sewerage Facilities	2	Pumping Stations			
Levees	6	Cardinia Creek			
Drainage Facilities	2	Retarding Basins			
Tourism / Recreation					
Government Boundaries					
Local Gov't Areas	1	Cardinia	CMA	1	Port Phillip & Westernport
Adjacent LGAs	2	Casey & Yarra Ranges	CFA District	1	District 08
SES Unit Area	2	Emerald & Pakenham	MFB District	0	

Table C1.1 – Consequence Summary of 1% AEP flood along Cardinia Creek in Cardinia

Beaconsfield, Officer & Cardinia are located approximately 45km southeast of Melbourne in a mixed environment with residential, business & industrial areas as well as both old and newly established precincts. Cardinia Creek is the prominent watercourse in the area, flowing from the Cardinia Reservoir to the north. High Intensity, short duration rainfall events can cause flash flooding in and around Beaconsfield & Cardinia, while prolonged rainfall may see Cardinia Creek flood. The area sees moderate to fast water movement in the areas north of Beaconsfield to slower water movement in and around Officer South, Cardinia & Dalmore. Flooding as a result may last for a number of days around Ballarto Road. See mapping in **Appendix F** for more insight into flooding in the area.

## Gauges and Warnings

Warnings are available for flooding expected along Cardinia Creek at Chasemore Road, Cardinia.

Flood class levels for the Cardinia gauge are detailed in table C1.2 and are used in the issuing of a flood warning for Cardinia Creek. Other level / flood gauges within the Cardinia Creek catchment are contained within table C1.3.

Flood Warning Gauge	Creek Flood Class Level		
	Minor	Moderate	Major
Cardinia Creek at Chasemore Road, Cardinia	2.7m	3.0m	3.4m

Table C1.2 – Gauges with established Flood Class Levels for the Cardinia Creek catchment

At these sites on Cardinia Creek, the Bureau of Meteorology (the Bureau) in consultation with Melbourne Water will issue flood warnings if levels reach those classified above. This warning will be placed on the Bureau's website (<http://www.bom.gov.au/vic/warnings/index.shtml>) and the VicEmergency website <https://emergency.vic.gov.au/>. While the City of Casey monitors these warnings in times of high rainfall, there are no specific guidelines to advise how these situations should be responded to.

Gauge	Station No.	Location	Owner	Gauge Type	Melway Ref
Emerald (Cardinia Reservoir)	586033	Along Road 7 at Cardinia Reservoir, Emerald	Melbourne Water	Rain	Melway 126 G10
Cardinia Creek d/s Cardinia Reservoir, Beaconsfield Upper	228258A	North side of the creek at end of Duffys Rd, Beaconsfield Upper	Melbourne Water	Stream Level	Melway 210 C3
Berwick	586199	Beaumont Road, Berwick	Melbourne Water	Rain	Melway 111 G2
Cardinia Creek Drop Structure, Officer South	228382A	Eastern bank of the creek within the Drop Structure R/B, Officer South	Melbourne Water	Stream Level & Rain	Melway 214 C12
Cardinia Creek at Chasemore Rd, Cardinia	228228A	Western bank of the creek at Chasemore Rd, Clyde North	Melbourne Water	Stream Level & Rain	VicMap Central 6762 K11

Table C1.2 – Gauges within the Cardinia Creek catchment

These Gauges may provide some warning of expected flooding. See the Melbourne Water website for more information on these gauges: <http://www.melbournewater.com.au/waterdata/rainfallandriverleveldata/Pages/Rainfall-and-river-level-new.aspx>. It is advised that residents monitor the Bureau of Meteorology's website <http://www.bom.gov.au/> and the VicEmergency website <https://emergency.vic.gov.au/> for any thunderstorm, flood or severe weather warnings present for their area.



# Area Map of Flood Risk for Cardinia Creek and its Stormwater Tributaries

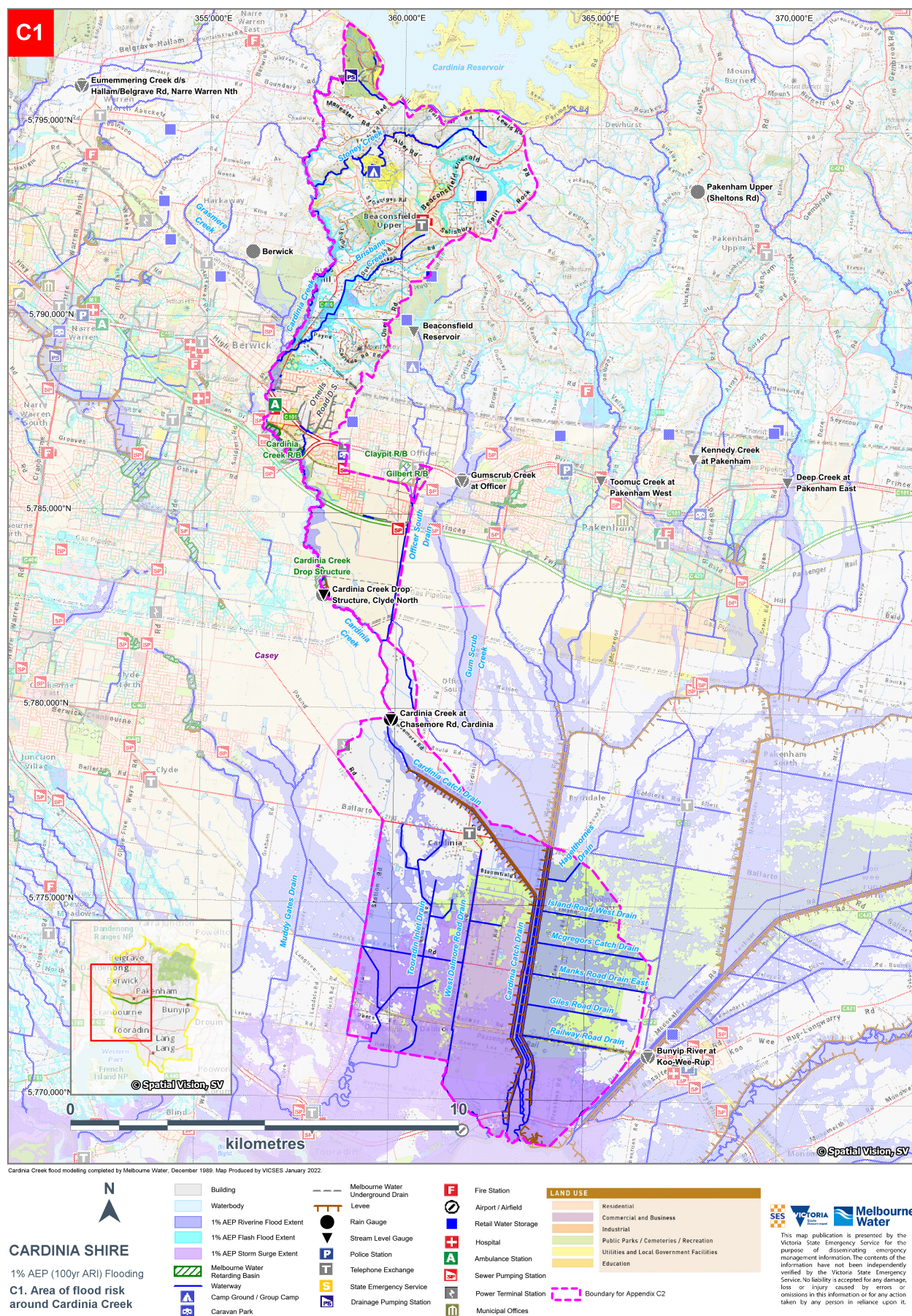


Figure C1 – Areas of flood risk around the Cardinia Creek in Cardinia Shire



## Properties at Flood Risk

Properties listed in the table below are at risk from flooding within the Cardinia Creek in Cardinia during a 1% AEP flood event. As more intelligence becomes available, this list may change. This table has been populated based on modelling work as part of the Cardinia Creek (Melbourne Water, December 1989) flood mapping and risk assessment program.

*This Property Flood Risk Table is presented by the Victoria State Emergency Service for the purpose of disseminating emergency management information. The contents of the information have not been independently verified by the 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.*

Properties at risk from Flooding around Cardinia Creek during a 1% AEP event				
Residential	Commercial	Industrial	Rural	Public Use
Street No. at Risk	Street	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
795	Cardinia Road	Cardinia	Cardinia Creek	Riverine
815	Cardinia Road	Cardinia	Cardinia Creek	Riverine
860	Cardinia Road	Cardinia	Cardinia Creek	Riverine
865	Cardinia Road	Cardinia	Cardinia Creek	Riverine
870	Cardinia Road	Cardinia	Cardinia Creek	Riverine
2305	Ballarto Road	Cardinia	Cardinia Creek	Riverine
2485	Ballarto Road	Cardinia	Cardinia Creek	Riverine
2505	Ballarto Road	Cardinia	Cardinia Creek	Riverine
2525	Ballarto Road	Cardinia	Cardinia Creek	Riverine
2565	Ballarto Road	Cardinia	Cardinia Creek	Riverine
2571	Ballarto Road	Cardinia	Cardinia Creek	Riverine
130	Gowan Lea Road	Dalmore	Cardinia Creek	Riverine
145	Gowan Lea Road	Dalmore	Cardinia Creek	Riverine
3400	South Gippsland Highway	Koo Wee Rup	Cardinia Creek	Riverine
3420	South Gippsland Highway	Koo Wee Rup	Cardinia Creek	Riverine
3440	South Gippsland Highway	Koo Wee Rup	Cardinia Creek	Riverine
<b>Total</b>				
<b>16</b>				

Table C1.3 – Properties at risk of flooding along Cardinia Creek in Cardinia Shire

Properties listed in the table below are at risk from flooding along Cardinia Creek's stormwater tributaries in Beaconsfield, Beaconsfield Upper and Guys Hill. As more intelligence becomes available, this list may change. This table has been populated based on modelling work as part of the Cardinia Northern Catchments (Cardno, September 2020) flood mapping and risk assessment program. Note that any multi-lot properties situated above ground floor likely impacted by isolation only with flooding on ground floor impacting access to common areas and/or carpark and storage facilities. Information on above ground-floor properties is not available in this list.

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**Properties at risk from Flooding along Cardinia Creek's Stormwater Tributaries in Beaconsfield, Beaconsfield Upper and Guys Hill**

Residential			Commercial	Industrial	Rural	Public Use
Street No. at Risk in AEP Event			Address	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
20% AEP	5% AEP	1% AEP				
		✓	65 Beaconsfield-Emerald Road	Beaconsfield Upper	Stoney Creek	Flash
		✓	67 Beaconsfield-Emerald Road	Beaconsfield Upper	Stoney Creek	Flash
✓	✓	✓	216 Beaconsfield-Emerald Road	Beaconsfield	Brisbane Creek	Flash
		✓	218 Beaconsfield-Emerald Road	Beaconsfield	Brisbane Creek	Flash
✓	✓	✓	238 Beaconsfield-Emerald Road	Beaconsfield	Brisbane Creek	Flash
✓	✓	✓	260 Beaconsfield-Emerald Road	Beaconsfield	Brisbane Creek	Flash
✓	✓	✓	266 Beaconsfield-Emerald Road	Beaconsfield	Brisbane Creek	Flash
	✓	✓	294 Beaconsfield-Emerald Road	Guys Hill	Brisbane Creek	Flash
	✓	✓	300 Beaconsfield-Emerald Road	Guys Hill	Brisbane Creek	Flash
✓	✓	✓	16 Fox Road	Beaconsfield Upper	Stoney Creek	Flash
		✓	6 Haupt Place	Beaconsfield Upper	Stoney Creek	Flash
✓	✓	✓	77 Holm Park Road	Beaconsfield	Beaconsfield Township Drain	Flash
		✓	157 Holm Park Road	Beaconsfield	Beaconsfield Township Drain	Flash
		✓	5 Lenne Street	Beaconsfield Upper	Stoney Creek	Flash
		✓	7 Lenne Street	Beaconsfield Upper	Stoney Creek	Flash
		✓	9 Lenne Street	Beaconsfield Upper	Stoney Creek	Flash
		✓	11 Lenne Street	Beaconsfield Upper	Stoney Creek	Flash
		✓	13 Lenne Street	Beaconsfield Upper	Stoney Creek	Flash
		✓	15 Lenne Street	Beaconsfield Upper	Stoney Creek	Flash
✓	✓	✓	28 McArthur Road	Beaconsfield Upper	Stoney Creek	Flash
		✓	2 Paul Grove	Beaconsfield Upper	Stoney Creek	Flash
		✓	4 Paul Grove	Beaconsfield Upper	Stoney Creek	Flash
		✓	6 Paul Grove	Beaconsfield Upper	Stoney Creek	Flash
		✓	7 Paul Grove	Beaconsfield Upper	Stoney Creek	Flash
		✓	8 Paul Grove	Beaconsfield Upper	Stoney Creek	Flash
		✓	9 Paul Grove	Beaconsfield Upper	Stoney Creek	Flash
		✓	10 Paul Grove	Beaconsfield Upper	Stoney Creek	Flash
		✓	11 Paul Grove	Beaconsfield Upper	Stoney Creek	Flash
		✓	12 Paul Grove	Beaconsfield Upper	Stoney Creek	Flash
		✓	13 Paul Grove	Beaconsfield Upper	Stoney Creek	Flash
		✓	14 Paul Grove	Beaconsfield Upper	Stoney Creek	Flash
		✓	16 Paul Grove	Beaconsfield Upper	Stoney Creek	Flash
✓	✓	✓	17 Quamby Road	Guys Hill	Brisbane Creek	Flash
		✓	21 Quamby Road	Guys Hill	Brisbane Creek	Flash
		✓	168 Quamby Road	Guys Hill	Brisbane Creek	Flash
✓	✓	✓	18 Rosebank Lane	Beaconsfield Upper	Stoney Creek	Flash
		✓	22 Rosebank Lane	Beaconsfield Upper	Stoney Creek	Flash
		✓	23 Rosebank Lane	Beaconsfield Upper	Stoney Creek	Flash
		✓	24 Rosebank Lane	Beaconsfield Upper	Stoney Creek	Flash
		✓	25 Rosebank Lane	Beaconsfield Upper	Stoney Creek	Flash
	✓	✓	30 Rosebank Lane	Beaconsfield Upper	Stoney Creek	Flash

Properties at risk from Flooding along Cardinia Creek's Stormwater Tributaries in Beaconsfield, Beaconsfield Upper and Guys Hill						
Residential			Commercial	Industrial	Rural	Public Use
Street No. at Risk in AEP Event			Address	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
20% AEP	5% AEP	1% AEP				
		✓	61 Vernon Road	Beaconsfield	Beaconsfield Township Drain	Flash
Totals						
9	12	42				

Table C1.4 – Properties at risk of flooding along Cardinia Creek's stormwater tributaries in Beaconsfield, Beaconsfield Upper and Guys Hill in Cardinia Shire

## Isolation

Properties located in Cardinia around Ballarto Rd may experience some manner of isolation when Cardinia Creek and Gum Scrub creek are in flood. Ballarto Rd to the east; Cardinia Rd to the north; & the southern end of Dalmore Rd to the south will most likely be inaccessible during a large flood from Cardinia Creek & Gum Scrub Creek. Ballarto Rd to the west will most likely have water over the road but may still be accessible by 4X4 vehicles. Some localised short-duration isolation may also occur due to flash flooding.

## Essential Infrastructure

During an event, see the Public Transport Victoria's Website for details on delays or alterations to services. <http://ptv.vic.gov.au/live-travel-updates/>. A map of Public Transport routes within Cardinia Shire is available via the website at: [https://www.ptv.vic.gov.au/assets/default-site/more/maps/Local-area-maps/Metropolitan/f8a4ef286e/8\\_Cardinia\\_LAM.pdf](https://www.ptv.vic.gov.au/assets/default-site/more/maps/Local-area-maps/Metropolitan/f8a4ef286e/8_Cardinia_LAM.pdf)

Apart from the roads outlined below, all other essential infrastructure and services areas around Cardinia Creek are expected to remain unaffected by flooding during a 1% AEP (100yr ARI) event. This includes the Princes Freeway at Cardinia Creek, both the Pakenham / Bairnsdale and the disused Dandenong – Leongatha railway lines, and the Cardinia Power Terminal Station.

## Road Closures

The following roads are subject to closure during flooding around Cardinia Creek in Beaconsfield Upper, Beaconsfield, Officer South, Cardinia & Dalmore. Check the VicRoads website for more details:

<https://traffic.vicroads.vic.gov.au/>

Department of Transport (VicRoads) Roads flooded in a 1% AEP (100yr ARI) event
<ul style="list-style-type: none"> <li>Ballarto Road, Cardinia between the Cardinia Catchment Drain and Wenn Road</li> <li>Beaconsfield-Emerald Rd, Beaconsfield flooded at Brisbane Creek crossing and at Fieldstone Boulevard intersection</li> <li>Princes Freeway, Officer at Cardinia Creek crossing</li> <li>South Gippsland Highway, Koo Wee Rup at Cardinia Creek crossing</li> </ul>

Table C1.4 – Department of Transport (VicRoads) Possible Road Closures during a flooding event

Cardinia Shire Council Roads flooded in a 1% AEP (100yr ARI) event	
BEACONSFIELD	CARDINIA
<ul style="list-style-type: none"> <li>Fieldstone Boulevard</li> </ul>	<ul style="list-style-type: none"> <li>Cardinia Road</li> </ul>
<ul style="list-style-type: none"> <li>Kenilworth Avenue</li> </ul>	DALMORE
<ul style="list-style-type: none"> <li>Holm Park Road</li> </ul>	<ul style="list-style-type: none"> <li>Gowan Lea Road</li> </ul>
<ul style="list-style-type: none"> <li>Lukedenn Drive</li> </ul>	GUYS HILL
<ul style="list-style-type: none"> <li>Payne Road</li> </ul>	<ul style="list-style-type: none"> <li>Luke Place</li> </ul>
<ul style="list-style-type: none"> <li>Telegraph Road</li> </ul>	<ul style="list-style-type: none"> <li>Quamby Road</li> </ul>
	KOO WEE RUP
	<ul style="list-style-type: none"> <li>Prestons Road</li> </ul>

Table C1.5 – Cardinia Shire Council Possible flooded roads due to flash flooding over 30cm depth

## Flood Mitigation

### Retarding Basins

Melbourne Water Retarding Basin	On Drain/ Waterway	Area	Storage Capacity	Spillway Crest Level	Full Supply Level	Embankment Crest Level	ANCOLD Hazard Rating	Houses In Flow Path (dam breach)	Melway Reference
Cardinia Creek	Cardinia Creek, Beaconsfield	39.67 ha	850 ML	46.1m AHD	Unavailable	49.5m AHD	High C	Unavailable	131 K2
Cardinia Creek Drop Structure	Cardinia Creek, Officer South	15.5 ha	200 ML	29.1m AHD	29.1m AHD	31.2m AHD	Very Low	0	214 B11

Table C1.6 – Melbourne Water Retarding Basins within the Cardinia Creek catchment in Cardinia Shire

### Levees

Melbourne Water Levee	Reach	Side	Levee Height	Levee Length	Expected Level of Protection	ANCOLD Hazard Rating	Houses at risk behind Levee	VICMap Central Reference
Cardinia Creek	Upstream of Ballarto Rd to Island Rd	West	3m	4.8m	Unavailable	Low	1 house & agricultural land flooded	6763 A12-6822 D1
Cardinia Creek	Upstream of Ballarto Rd to Island Rd	East	2m	4.7m	Unavailable	Unavailable	Unavailable	6763 A12-D15
Cardinia / Gum Scrub Creek Outfall	Island Rd to Manks Rd	West	4m	1.6m	Unavailable	Low	2 houses & agricultural land flooded	6822 D1-D2
Cardinia / Gum Scrub Creek Outfall	Manks Rd to Railway Line	West	3m	1.6m	Unavailable	Low	3 houses, 2 industrial buildings & agricultural land flooded	6822 D2-D4
Cardinia / Gum Scrub Creek Outfall	Railway Line to South Gippsland Hwy	West	3m	2.0m	Unavailable	Low	2 industrial buildings & agricultural land flooded	6822 D4-D6
Cardinia / Gum Scrub Creek Outfall	South Gippsland Hwy to Westernport Bay	West	Unavailable	0.2m	Unavailable	Very Low	Agricultural land flooded	6822 D6

Table C1.7 – Melbourne Water Levees in the Cardinia Creek Catchment in Cardinia Shire



## Sewerage Infrastructure

Sewerage Infrastructure of note during a severe flood event located within the Cardinia Creek catchment is contained within the following table. It is possible a number of un-sewered properties are located within the catchment also.

### Sewer Pumping Stations

Sewerage Pumping Station	On Drain / Waterway	Bank / Side of Waterway	Operator	Location	Melway Reference
Brunt Road	Davidsons Creek		South East Water	Brunt Road, Beaconsfield	214 C4
Officer South Road	Officer South Drain		South East Water	Officer South Road, Officer	214 G8

Table C1.8 – Sewer Pumping Stations within the Cardinia Creek Catchment in Cardinia Shire

## Flood Impacts & Operational Considerations (Intelligence Cards)

The tables on the following pages provide a breakdown of the possible consequences of flooding along Cardinia Creek at various creek heights or rain totals within Cardinia Shire. These tables are to be used only as a guide as no two floods at a location will have identical impacts.

Intelligence Cards have been included for the following locations:

- Beaconsfield, Beaconsfield Upper & Guys Hill;
- Cardinia Creek at Officer South and
- Cardinia Creek at Cardinia.

# FLOOD INTELLIGENCE CARD – BEACONSFIELD, BEACONSFIELD UPPER & GUYS HILL (UNGAUGED)

Version 5 – February 2022



*Note: flood intelligence records are approximations. This is because no two floods at a location, even if they peak at the same height, will have identical impacts. Flood intelligence cards detail the relationship between flood magnitude and flood consequences. More details about flood intelligence and its use can be found in the Australian Emergency Management Manuals flood series.*

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CLOSEST RAIN GAUGE:	<b>Berwick</b>
LOCATION:	<b>Beaumont Road, Berwick</b>
RECENT RAINFALL:	<a href="https://www.melbournewater.com.au/water-data-and-education/rainfall-and-river-levels#/reader/586199">https://www.melbournewater.com.au/water-data-and-education/rainfall-and-river-levels#/reader/586199</a>

MELWAY REF:	<b>111 G2</b>
GAUGE NUMBER	<b>586199</b>
GAUGE TYPE	<b>Rain</b>

Design Rainfall Depths (mm) – Indication of Possible Flooding	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
<p>42mm in 1 hour; 56mm in 2 hours; 65mm in 3 hours; 85mm in 6 hours 110mm in 12 hours; or 146mm in 24 hours;</p> <p>Note: rainfall depths are a very rough method of estimating flood events and have been used due to the ungauged nature of the catchment. This should be used as a guide only.</p>	1% AEP (100-year ARI)	<p><b>Properties at Flood Risk</b>  <b>42 Property in Total</b>  <b>Beaconsfield Township Drain</b></p> <ul style="list-style-type: none"> <li>77 &amp; 157 Holm Park Road, Beaconsfield</li> <li>61 Vernon Road, Beaconsfield</li> </ul> <p><b>Brisbane Creek</b></p> <ul style="list-style-type: none"> <li>216, 218, 238, 260 &amp; 266 Beaconsfield – Emerald Road, Beaconsfield</li> <li>294 &amp; 300 Beaconsfield – Emerald Road, Guys Hill</li> <li>17, 21 &amp; 168 Quamby Road, Guys Hill</li> </ul> <p><b>Stoney Creek</b></p> <ul style="list-style-type: none"> <li>65 &amp; 67 Beaconsfield – Emerald Road, Beaconsfield Upper</li> <li>16 Fox Road, Beaconsfield Upper</li> <li>6 Haupt Place, Beaconsfield Upper</li> <li>5, 7, 9, 11, 13 &amp; 15 Leanne Street, Beaconsfield Upper</li> <li>28 BcArthur Road, Beaconsfield Upper</li> <li>2, 4, 6, 7, 8, 9, 10, 11, 12, 13, 14 &amp; 16 Paul Grove, Beaconsfield Upper</li> <li>18, 22, 23, 24, 25 &amp; 30 Rosebank Lane, Beaconsfield Upper</li> </ul> <p><b>Community Infrastructure Flooded</b></p> <ul style="list-style-type: none"> <li>Beaconsfield Berwick Pet Resort at 236 Beaconsfield – Emerald Road, Beaconsfield</li> </ul> <p><b>Essential Infrastructure Likely Impacted</b></p> <ul style="list-style-type: none"> <li>Bus Routes 836 &amp; 896 along Kenilworth Avenue, Beaconsfield</li> </ul>	<p>VICSES State and Region to provide warnings to the community and other agencies.</p> <p>VICSES will provide warnings using OSOM and SMSER as required based on the predications provided by BoM regarding flood levels and the risk of Flash Flooding. The Central Duty officer in conjunction with the Regional Agency Commander will maintain operational awareness and form an appropriate response arrangement to suit the level of incident.</p> <p>Council to provide road closure signage if required.</p> <p>VicRoads and Council to provide road closure signage if required.</p>

Design Rainfall Depths (mm) – Indication of Possible Flooding	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
		<ul style="list-style-type: none"> <li>Bus Route 838 along Beaconsfield-Emerald Road, Beaconsfield</li> </ul> <b>Water Over Road</b> <b>Brisbane Creek</b> <ul style="list-style-type: none"> <li>Luke Place, Guys Hill</li> <li>Quamby Road, Guys Hill</li> <li>Payne Road, Beaconsfield</li> <li>Lukedenn Drive, Beaconsfield</li> <li>Holm Park Road, Beaconsfield</li> <li>Telegraph Road, Beaconsfield</li> </ul> <b>Cardinia Creek</b> <ul style="list-style-type: none"> <li>Beaconsfield-Emerald Rd, Beaconsfield flooded at Brisbane Creek crossing and at Fieldstone Boulevard intersection</li> <li>Fieldstone Boulevard, Beaconsfield</li> <li>Kenilworth Avenue, Beaconsfield</li> </ul>	
164mm in 16 hours	5 <sup>th</sup> February 2011 Flood Level Peak	<b>Event Summary</b> <ul style="list-style-type: none"> <li>1 property flooded along Beaconsfield-Emerald Rd</li> <li>Payne Road access cut by Brisbane Creek flooding</li> <li>Water over Princes Hwy in Beaconsfield</li> </ul>	VICSES to respond as per request by request basis.  VicRoads and Council to provide road closure signage if required.

Table C1.9 – Breakdown of possible consequences at various rainfall intensities around Beaconsfield and Beaconsfield Upper with operational considerations

# FLOOD INTELLIGENCE CARD – OFFICER SOUTH GAUGE, CARDINIA CREEK

Version 4 – March 2021



*Note: flood intelligence records are approximations. This is because no two floods at a location, even if they peak at the same height, will have identical impacts. Flood intelligence cards detail the relationship between flood magnitude and flood consequences. More details about flood intelligence and its use can be found in the Australian Emergency Management Manuals flood series.*

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LOCATION:	Eastern bank of Cardinia creek within the Drop Structure Retarding Basin, Officer South
CURRENT LEVEL:	<a href="https://www.melbournewater.com.au/water-data-and-education/rainfall-and-river-levels#/reader/228382A">https://www.melbournewater.com.au/water-data-and-education/rainfall-and-river-levels#/reader/228382A</a>
STREAM:	Cardinia Creek
GAUGE NUMBER:	228382A
GAUGE ZERO:	27.270m AHD
GAUGE TYPE:	Stream Level & Rain

MELWAY REFERENCE:	214 C12
MINOR:	Not Established
MODERATE:	Not Established
MAJOR	Not Established
LEVEE HEIGHT:	N/A
HIGHEST RECORDED FLOOD:	3.38m (5 <sup>th</sup> February 2011)

Creek Height	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
2.0m		<ul style="list-style-type: none"> <li>Drop Structure (Weir) Starts Operating</li> </ul>	
3.20m	1% AEP (100yr ARI) Flood Level	<b>Water Over Road</b> <ul style="list-style-type: none"> <li>Princes Freeway, Officer at Cardinia Creek crossing</li> </ul>	DoT and Council to provide road closure signage if required.
3.38m	5 <sup>th</sup> February 2011 Flood Level Peak		

Table C1.10 – Breakdown of likely consequences at various Officer South gauge level heights along Cardinia Creek in Cardinia with operational considerations



# FLOOD INTELLIGENCE CARD – CARDINIA GAUGE, CARDINIA CREEK

Version 4 – March 2021



*Note: flood intelligence records are approximations. This is because no two floods at a location, even if they peak at the same height, will have identical impacts. Flood intelligence cards detail the relationship between flood magnitude and flood consequences. More details about flood intelligence and its use can be found in the Australian Emergency Management Manuals flood series.*

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LOCATION:	Western bank of the creek at Chasemore Rd, Clyde North
CURRENT LEVEL:	<a href="https://www.melbournwater.com.au/water-data-and-education/rainfall-and-river-levels#/reader/228228A">https://www.melbournwater.com.au/water-data-and-education/rainfall-and-river-levels#/reader/228228A</a>
STREAM:	Cardinia Creek
GAUGE NUMBER:	228228A
GAUGE ZERO:	7.93m AHD
GAUGE TYPE:	Stream Level & Rain

VICMAP REFERENCE:	Central 6762 K11
MINOR:	2.7m
MODERATE:	3.0m
MAJOR:	3.4m
LEEVE HEIGHT:	3.6m
HIGHEST RECORDED FLOOD:	4.87m (5 <sup>th</sup> February 2011)

Creek Height	Flood Class or Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
2.7m	MINOR FLOOD LEVEL		VICSES State and Region to provide warnings to the community and other agencies. VICSES will provide warnings using OSOM and SMSER as required based on the predications provided by BoM regarding flood levels and the risk of Flash Flooding. The Central Duty officer in conjunction with the Regional Agency Commander will maintain operational awareness and form an appropriate response arrangement to suit the level of incident.
3.0m	MODERATE FLOOD LEVEL		VICSES State and Region to provide warnings to the community and other agencies. VICSES will provide warnings using OSOM and SMSER as required based on the predications provided by BoM regarding flood levels and the risk of Flash Flooding. The Central Duty officer in conjunction with the Regional Agency Commander will maintain operational awareness and form an appropriate response arrangement to suit the level of incident.
3.4m	MAJOR FLOOD LEVEL		VICSES State and Region to provide warnings to the community and other agencies. VICSES will provide warnings using OSOM and SMSER as required based on the predications provided by BoM regarding flood levels and the risk of Flash Flooding. The Central Duty officer in conjunction with the Regional Agency Commander will maintain operational awareness and form an appropriate response arrangement to suit the level of incident.

Creek Height	Flood Class or Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
3.6m		<ul style="list-style-type: none"> <li>Approximate Height of Levees downstream either side of Ballarto Road</li> </ul>	
4.44m	19 <sup>th</sup> September 1984 Flood Level Peak		
4.87m	5 <sup>th</sup> February 2011 Flood Level Peak	<b>Event Summary</b> <ul style="list-style-type: none"> <li>Ballarto Rd Access cut between Cardinia Creek and Deep Creek.</li> <li>Water over Ballarto Rd west of Cardinia township cutting access to non 4X4 vehicles.</li> <li>3 properties flooded on Ballarto Rd</li> </ul>	<p>VicRoads and Council to provide road closure signage if required.</p> <p>VICSES to respond as per request-by-request basis.</p>
5.22m	1% AEP (100yr ARI) Flood Level (Major)	<b>Properties at Flood Risk</b> <b>16 Properties in Total</b> <ul style="list-style-type: none"> <li>795, 815, 860, 865 &amp; 870 Cardinia Road, Cardinia</li> <li>2305, 2485, 2505, 2525, 2565, 2571 Ballarto Road, Cardinia</li> <li>130 &amp; 145 Gowan Lea Road, Dalmore</li> <li>3400, 3420 &amp; 3440 South Gippsland Highway, Koo Wee Rup</li> </ul> <b>Water Over Road</b> <ul style="list-style-type: none"> <li>Cardinia Road, Cardinia</li> <li>Ballarto Road, Cardinia between the Cardinia Catchment Drain and Wenn Road</li> <li>Gowan Lea Road, Dalmore</li> <li>Prestons Road, Koo Wee Rup</li> <li>South Gippsland Highway, Koo Wee Rup at Cardinia Creek crossing</li> </ul>	<p>VICSES to respond as per request-by-request basis.</p> <p>VicRoads and Council to provide road closure signage if required.</p>

Table C1.11 – Breakdown of likely consequences at various Cardinia gauge level heights along Cardinia Creek in Cardinia Shire with operational considerations