

## APPENDIX C4 – LANG LANG 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 the Lang Lang and Little Lang Lang Rivers					
<b>Property</b>					
<b>Properties</b>	<b>30</b>				
Residential	1				
Commercial	0				
Industrial	0				
Public Land	1				
Rural	28				
<b>Community Infrastructure</b>					
Schools / Colleges	1	Lang Lang Primary School			
<b>Essential Infrastructure</b>					
Major Roads	2	South Gippsland Hwy; Westernport Rd			
Bus Routes	1	896			
<b>Tourism / Recreation</b>					
<b>Government Boundaries</b>					
Local Gov't Areas	1	Cardinia	CMA	1	Port Phillip & Westernport
Adjacent LGAs	1	South Gippsland	CFA District	1	District 08
SES Unit Area	1	Pakenham	MFB District	0	

Table C4.1 – Consequence Summary of 1% AEP flood along the Lang Lang and Little Lang Lang Rivers in Cardinia Shire

Lang Lang is located approximately 70km southeast of Melbourne in a predominantly rural town setting. The Lang Lang and Little Lang Lang Rivers are the prominent watercourse in the area, both flowing from the east. The Little Lang Lang River joins The Lang Lang River to the northeast of Lang Lang township. The River then crosses the South Gippsland Hwy before discharging into the Western Port Bay. High Intensity, short duration rainfall events can cause flash flooding in and around Lang Lang, while prolonged rainfall may see the Lang Lang River, the Little Lang Lang River or Adams Creek flood. The area sees moderate to slow water movement as the waterways move from the foothills of Lang Lang East to the flatter lands around Lang Lang. Flooding as a result may last for a number of days around Lang Lang. See mapping in **Appendix F** for more insight into flooding in the area.

### Gauges and Warnings

Warnings are available for flooding expected along the Old Lang Lang River at Yannathan. Flood class levels for the Yannathan gauge are detailed in table C4.2 and are used in the issuing of a flood warning for the Lang Lang River catchment. Other level / flood gauges within the Lang Lang River catchment are contained within table C4.3

Flood Warning Gauge	River / Creek Flood Class Level		
	Minor	Moderate	Major
Lang Lang River at Heads Rd, Yannathan	3.5m	4.0m	4.9m

Table C4.2 – Gauges with established Flood Class Levels for the Lang Lang River catchment

At these sites, 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>). While Cardinia Shire Council 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
Lang Lang River at Heads Rd, Yannathan	228209B	Northern side of River 500m down unnamed road off Heads Road, Yannathan	Melbourne Water	Stream Level & Rain	VicMap Central 6824 A9
Upper Lang Lang	586196	North side of Drouin – Korumburra Rd, Poowong East	Melbourne Water	Rain	VicMap Central 6878 G7

Table C4.3 – Gauges within the Lang Lang River catchment

The gauges in table C4.3 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>. The Bureau of Meteorology's website also links a number of these gauges at: [http://www.bom.gov.au/cgi-bin/wrap\\_fwo.pl?IDV60201.html](http://www.bom.gov.au/cgi-bin/wrap_fwo.pl?IDV60201.html). It is advised that residents monitor the Bureau of Meteorology's website <http://www.bom.gov.au/vic/warnings/index.shtml?ref=hdr> 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 within the Lang Lang River catchment

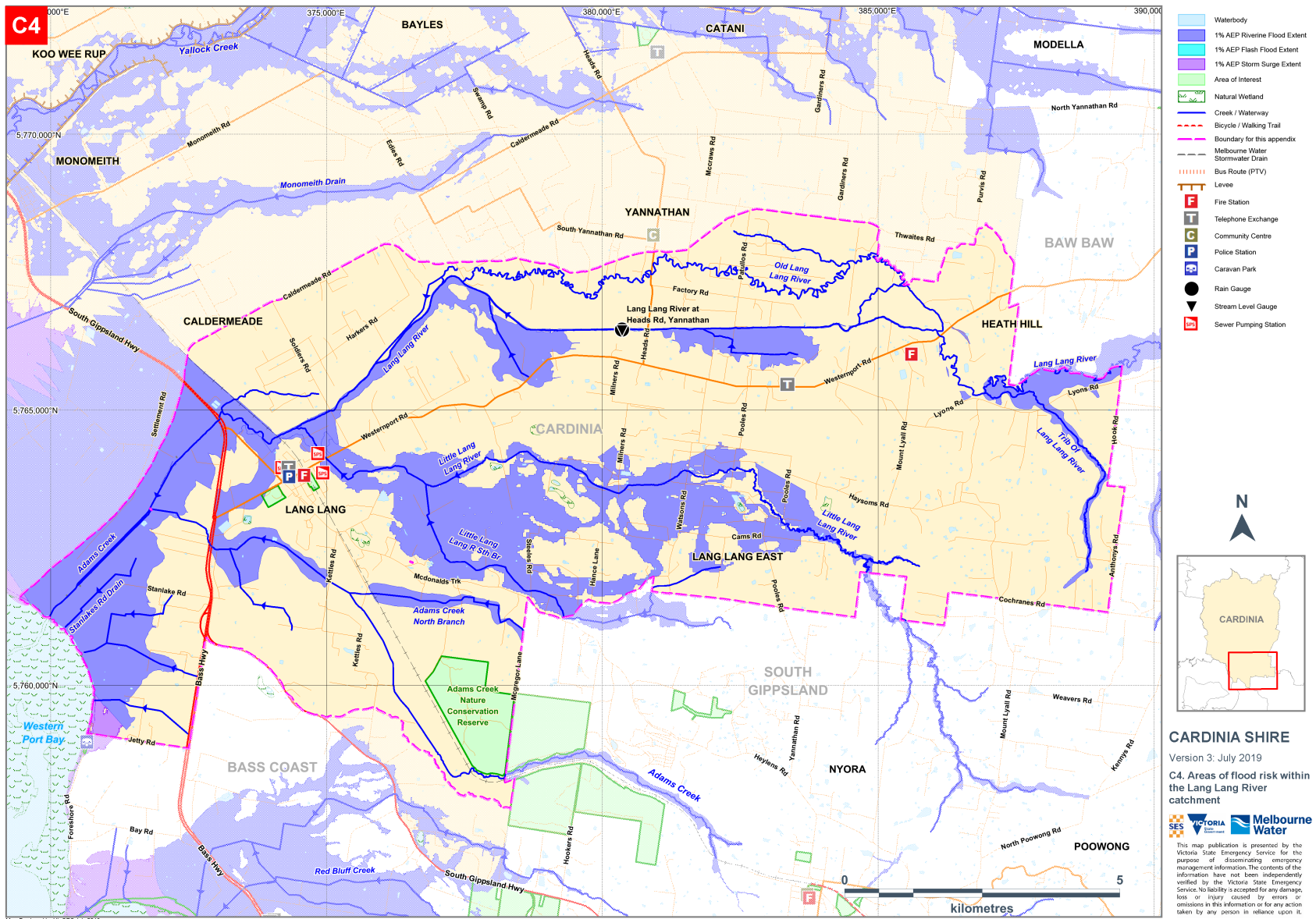


Figure C4 – Areas of flood risk around Lang Lang & Yannathan in Cardinia Shire

## Properties at Flood Risk

Properties listed in the table below are at risk from flooding around Yannathan and Lang Lang 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 Little Lang Lang River (Lawson&Treloar, November 2002) 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 Yannathan and Lang Lang during a 1% AEP event				
Residential	Commercial	Industrial	Rural	Public Use
Street No. at Risk	Street	Suburb	Along Melbourne Water Watercourse	Flood Risk Type
30	Caldermeade Road	Caldermeade	Lang Lang River	Riverine
75	McDonalds Road	Caldermeade	Lang Lang River	Riverine
145	McDonalds Road	Caldermeade	Lang Lang River	Riverine
185	McDonalds Road	Caldermeade	Lang Lang River	Riverine
105	McDonalds Track	Lang Lang	Lang Lang River	Riverine
115	McDonalds Track	Lang Lang	Lang Lang River	Riverine
545	McDonalds Track	Lang Lang	Little Lang Lang River	Riverine
230	Milners Road	Lang Lang East	Little Lang Lang River	Riverine
260	Milners Road	Lang Lang East	Little Lang Lang River	Riverine
305	Pooles Road	Lang Lang East	Little Lang Lang River	Riverine
380	Pooles Road	Lang Lang East	Little Lang Lang River	Riverine
144	Settlement Road	Caldermeade	Lang Lang River	Riverine
150	Settlement Road	Caldermeade	Lang Lang River	Riverine
170	Settlement Road	Caldermeade	Lang Lang River	Riverine
185	Settlement Road	Caldermeade	Lang Lang River	Riverine
190	Settlement Road	Caldermeade	Lang Lang River	Riverine
195	Settlement Road	Caldermeade	Lang Lang River	Riverine
260	Settlement Road	Caldermeade	Lang Lang River	Riverine
300	Settlement Road	Caldermeade	Lang Lang River	Riverine
4385	South Gippsland Highway	Lang Lang	Lang Lang River	Riverine
4440	South Gippsland Highway	Lang Lang	Lang Lang River	Riverine
4585	South Gippsland Highway	Lang Lang	Lang Lang River	Riverine
4655	South Gippsland Highway	Lang Lang	Lang Lang River	Riverine
375	Steeles Road	Lang Lang	Little Lang Lang River	Riverine
705	Westernport Road	Lang Lang	Lang Lang River	Riverine
54	Westernport Road	Lang Lang	Little Lang Lang River	Riverine
223	Westernport Road	Lang Lang	Little Lang Lang River	Riverine
270	Westernport Road	Lang Lang	Little Lang Lang River	Riverine
280	Westernport Road	Lang Lang	Little Lang Lang River	Riverine
55	Wildes Road	Yannathan	Lang Lang River	Riverine
<b>Total</b>				
<b>30</b>				

Table C4.3 – Properties at risk of flooding within the Lang Lang River catchment in Cardinia Shire

## Isolation

Lang Lang Township is at risk from having access cut to Koo Wee Rup and the north along the South Gippsland Hwy for up to a number of days during a 1% AEP event. Access to the south via the South Gippsland Hwy may also be cut for a shorter period if Adams Creek is in flood. It is expected however than McDonalds Track will remain open. Westernport Rd to the east may have water over the road at a number of points, the most likely being the Little Lang Lang River crossing. Some localised short-duration isolation may 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 Yannathan & Lang Lang are expected to remain unaffected by flooding during a 1% AEP (100yr ARI) event.

## Road Closures

The following roads are subject to closure during flooding around Yannathan & Lang Lang. 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>• South Gippsland Highway, Lang Lang at Lang Lang River and Adams Creek Bridges</li> <li>• Westernport Road, Lang Lang west of Heads Road and at the Little Lang Lang River crossing</li> </ul>

Table C4.4 – Department of Transport (VicRoads) Possible Road Closures during a flooding event

Cardinia Council Roads flooded in a 1% AEP (100yr ARI) event			
CALDERMEADE	LANG LANG	LANG LANG EAST	POOWONG NORTH
<ul style="list-style-type: none"> <li>• Caldermeade Road</li> </ul>	<ul style="list-style-type: none"> <li>• Cams Road</li> </ul>	<ul style="list-style-type: none"> <li>• Milners Road</li> </ul>	<ul style="list-style-type: none"> <li>• Clifton Road</li> </ul>
<ul style="list-style-type: none"> <li>• McDonalds Road</li> </ul>	<ul style="list-style-type: none"> <li>• Hance Lane</li> </ul>	<ul style="list-style-type: none"> <li>• Murphys Road</li> </ul>	<b>YANNATHAN</b>
<ul style="list-style-type: none"> <li>• Settlement Road</li> </ul>	<ul style="list-style-type: none"> <li>• McDonalds Track</li> </ul>	<ul style="list-style-type: none"> <li>• Pooles Road</li> </ul>	<ul style="list-style-type: none"> <li>• Patullos Road</li> </ul>
<b>HEATH HILL</b>	<ul style="list-style-type: none"> <li>• Soldiers Road</li> </ul>	<ul style="list-style-type: none"> <li>• Watsons Road</li> </ul>	<ul style="list-style-type: none"> <li>• Wildes Road</li> </ul>
<ul style="list-style-type: none"> <li>• Lyons Road</li> </ul>	<ul style="list-style-type: none"> <li>• Steeles Road</li> </ul>		

Table C4.5 – Cardinia Shire Council Possible flooded roads due to flash flooding over 30cm depth

## Flood Mitigation

No formal Retarding Basins, Pumping Stations or Levees exist around the Lang Lang River.

## Sewerage Infrastructure

No Melbourne Water Sewerage Pumping Stations or Emergency Relief Points expected to be within the vicinity of floodwaters during severe flood events around the Lang Lang River. It is possible a number of unsewered properties are located within the catchment.

## **Flood Impacts & Operational Considerations (Intelligence Cards)**

The tables on the following pages provide a breakdown of the possible consequences of flooding along the Lang Lang and Little Lang Lang Rivers at various river 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:

- Lang Lang River at Yannathan and
- Little Lang Lang River.

# FLOOD INTELLIGENCE CARD – YANNATHAN GAUGE, LANG LANG RIVER

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.

This Flood Intelligence Card publication 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. **Scan the QR code for the current levels for this gauge.**

LOCATION:	Northern side of River 500m down unnamed road off Heads Road, Yannathan
CURRENT LEVEL:	<a href="https://www.melbournewater.com.au/water-data-and-education/rainfall-and-river-levels#/reader/228209B">https://www.melbournewater.com.au/water-data-and-education/rainfall-and-river-levels#/reader/228209B</a>
STREAM:	Lang Lang River
GAUGE NUMBER:	228209B
GAUGE ZERO:	18.96m AHD
GAUGE TYPE:	Stream Level & Rain

VICMAP REFERENCE:	Central 6824 A9
MINOR:	3.5m
MODERATE:	4.0m
MAJOR:	4.9m
LEVEE HEIGHT:	5.0m
HIGHEST RECORDED FLOOD:	4.87m (30 <sup>th</sup> July 1996)

Creek Height	Flood Class or Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
3.5m	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.
3.69m	22 <sup>nd</sup> June 2012 Flood Level Peak		
4.0m	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.
4.87m	30 <sup>th</sup> July 1996 Flood Level Peak		
4.9m	MAJOR FLOOD LEVEL	<b>Water Over Road</b> <ul style="list-style-type: none"> <li>South Gippsland Highway, Lang Lang at Lang Lang River Bridge</li> </ul>	<ul style="list-style-type: none"> <li>VICROADs to provide road closure signage if required.</li> </ul>
5.6m	1% AEP (100yr ARI) Flood Level	<b>Properties at Flood Risk</b> <b>20 Properties in Total</b>	VICSES to respond as per request by request basis.

Creek Height	Flood Class or Annual Exceedance Probability (% AEP) (Major)	Consequence / Impact	Operational Considerations
		<ul style="list-style-type: none"> <li>• 55 Wildes Road, Yannathan</li> <li>• 705 Westernport Road, Lang Lang</li> <li>• 105 &amp; 115 McDonalds Track, Lang Lang</li> <li>• 4385, 4440, 4585 &amp; 4655 South Gippsland Highway, Lang Lang</li> <li>• 30 Caldermeade Road, Caldermeade</li> <li>• 75, 145 &amp; 185 McDonalds Road, Caldermeade</li> <li>• 144, 150, 170, 185, 190, 195, 260 &amp; 300 Settlement Road, Caldermeade</li> </ul> <p><b>Water Over Road</b></p> <ul style="list-style-type: none"> <li>• Clifton Road, Heath Hill at Pheasant Creek</li> <li>• Lyons Road, Heath Hill</li> <li>• Wildes Road, Yannathan</li> <li>• Patullos Road, Yannathan</li> <li>• Westernport Road, Lang Lang west of Heads Road and at the Little Lang Lang River crossing</li> <li>• Soldiers Road, Lang Lang</li> <li>• McDonalds Track, Lang Lang between Westernport Road and South Gippsland Highway</li> <li>• South Gippsland Highway, Lang Lang at Adams Creek Bridge</li> <li>• Caldermeade Road, Caldermeade between South Gippsland Highway and the Railway Line</li> <li>• Settlement Road, Caldermeade</li> <li>• McDonalds Road, Caldermeade</li> </ul>	<p>Council to provide road closure signage if required.</p>

Table C4.6 – Breakdown of likely consequences at various Yannathan gauge level heights along Lang Lang River with operational considerations



# FLOOD INTELLIGENCE CARD – LITTLE LANG LANG RIVER (UNGAUGED)

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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CLOSEST RAIN GAUGE:	Upper Lang Lang
LOCATION:	North side of Drouin – Korumburra Rd, Poowong East
RECENT RAINFALL:	<a href="https://www.melbournewater.com.au/water-data-and-education/rainfall-and-river-levels#/reader/586196">https://www.melbournewater.com.au/water-data-and-education/rainfall-and-river-levels#/reader/586196</a>

VICMAP REFERANCE:	Central 6878 G7
GAUGE NUMBER	586196
GAUGE TYPE	Rain

Design Rainfall Depths (mm) – Indication of Possible Flooding	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
30mm in 1 hour; 39mm in 2 hours; 46mm in 3 hours; 61mm in 6 hours; 81mm in 12 hours; or 108mm in 24 hours  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.	5% AEP (20 year ARI)	<b>Properties at Flood Risk</b> <b>1 Property in Total</b> <ul style="list-style-type: none"> <li>54 Westernport Road, Lang Lang</li> </ul> <b>Community Infrastructure Flooded</b> <ul style="list-style-type: none"> <li>Lang Lang Primary School on Westernport Road, Lang Lang with flooding to sports grounds</li> </ul> <b>Water Over Road</b> <ul style="list-style-type: none"> <li>Pooles Road, Lang Lang East</li> <li>Cams Road, Lang Lang</li> <li>Westernport Road, Lang Lang at Little Lang Lang Bridge</li> </ul>	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. DET/School to implement emergency plans if required  Council to provide road closure signage if required.
35mm in 1 hour; 24mm in 2 hours;	2% AEP (50 year ARI)	<b>Properties at Flood Risk</b> <b>9 Properties in Total</b> <ul style="list-style-type: none"> <li>305 &amp; 380 Pooles Road, Lang Lang East</li> </ul>	VICSES to respond as per request by request basis.

Design Rainfall Depths (mm) – Indication of Possible Flooding	Annual Exceedance Probability (% AEP)	Consequence / Impact	Operational Considerations
<p>55mm in 3 hours; 73mm in 6 hours; 96mm in 12 hours; or 130mm in 24 hours</p> <p>Note: rainfall depths are a very rough method of estimating flood events and have been used due to the ungagged nature of the catchment. This should be used as a guide only.</p>		<ul style="list-style-type: none"> <li>• 230 &amp; 260 Milners Road, Lang Lang East</li> <li>• 375 Steeles Road, Lang Lang</li> <li>• 545 McDonalds Track, Lang Lang</li> <li>• 223, 270 &amp; 280 Westernport Road, Lang Lang</li> </ul> <p><b>Water Over Road</b></p> <ul style="list-style-type: none"> <li>• Murphys Road, Lang Lang East</li> <li>• Watsons Road, Lang Lang East</li> <li>• Milners Road, Lang Lang East</li> <li>• Hance Lane, Lang Lang</li> <li>• Steeles Road, Lang Lang</li> </ul>	<ul style="list-style-type: none"> <li>• Council to provide road closure signage if required.</li> </ul>
<p>40mm in 1 hour; 53mm in 2 hours; 63mm in 3 hours; 83mm in 6 hours; 109mm in 12 hours; or 147mm in 24 hours</p> <p>Note: rainfall depths are a very rough method of estimating flood events and have been used due to the ungagged nature of the catchment. This should be used as a guide only.</p>	1% AEP (100 year ARI)	<p><b>Community Infrastructure Flooded</b></p> <p>Lang Lang Primary School on Westernport Road, Lang Lang</p>	DET/School to implement emergency plans if required

Table C4.7 – Breakdown of possible consequences at various rainfall intensities around Lang Lang and Lang Lang East with operational considerations