

## 6. Flood Intelligence Card, Property Inundation List and Flood / No Flood Guidance Tool

### 6.1 Introduction

There are currently no water level / flood gauges within the Natimuk Creek catchment. All actions must therefore be driven by rainfall observations and / or on-ground observations of rising levels within Natimuk and Little Natimuk creeks.

Rainfall data is available from the following rainfall stations (**Horsham AWS, Longerenong AWS and Polkemmet Road (Horsham)** or alternative closer locations – see BoM website) and should be used to determine an appropriate rainfall depth for use in the Flood / No Flood guidance tool provided at Section 6.5. Instructions for use of the tool are also provided in Section 6.5.

#### Notes:

1. While flood intelligence cards provide guidance on the relationship between flood magnitude and flood consequences, 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. Further, the hydrologic and hydraulic modelling that underpins much of the intell detailed below is informed by a number of assumptions and approximations that are unlikely to be replicated exactly during a flood event. Actual impacts under similar rainfall conditions are therefore expected to be similar but may not be exactly the same: there are likely to be some differences. More details about flood intelligence and its use can be found in the Australian Emergency Management Manuals flood series at <http://www.ema.gov.au> and in particular in Manual 20 “Flood Preparedness”.
2. All levels, impacts and actions listed in the following flood intelligence card and graph may need to be adjusted to better reflect experience.

### 6.2 Flood Intelligence Card

Observed Rainfall (see graph)	AEP of flood	Water level at Wimmera Highway Bridge	Consequence / Impact	Action <b>DRAFT ONLY</b> Actions may include (but not limited to) evacuation, closure of roads, sandbagging, issue of warnings and who is responsible
<ul style="list-style-type: none"> <li>▪ It is important that sand and sandbags are delivered to Natimuk and made available to residents as soon as possible after it becomes apparent that flooding is likely. As time will be short, <b>sandbags are only likely to be effective for brick buildings on a concrete slab</b>. For all other buildings, effort should be directed at lifting furniture and other valuables.</li> <li>▪ It is important that the decision to sandbag and to mobilise to remove furniture etc from buildings is made early. Big floods rise very quickly.</li> <li>▪ Consider how best to assist nursing staff attend the Nursing Home in Natimuk when the Wimmera Highway is flooded.</li> </ul>				
<p><b>USING THIS INTELLIGENCE CARD.</b> Obtain rainfall data and use the flood guidance tool to determine the approximate flood severity. Consider the appropriate flood inundation map. Review all consequences and actions in this table, from the first row down to the approximate expected severity of flooding. Initiate all actions in a logical sequence remembering that water will rise quickly and that some actions may need to be initiated in an order that is different from their relative placement in this table.</p>				
<p><b>If response has been initiated locally, the first action should be a call to VICSES, followed by a call to the MERO at the Rural City of Horsham. Note time available – see below.</b></p>				
<p>Note that::</p> <ul style="list-style-type: none"> <li>○ Little Natimuk Creek will begin to flood at Natimuk 4 to 8 hours after start of rain: the heavier the rain the shorter the lead time.</li> <li>○ Natimuk Creek will begin to flood at Natimuk 8 to 16 hours after start of rain: the heavier the rain the shorter the lead time.</li> <li>○ Lake Avenue is likely to start getting wet around 7 hours after start of rain, maximum depth will occur at around 12 hours, and it will remain wet for up to 23 hours.</li> <li>○ At the Little Natimuk Creek crossing, the Wimmera Highway will start to get wet around 7 hours after start of rain, maximum depth will occur at ~8 hours, and it will remain wet for up to 12 hours.</li> <li>○ At the Natimuk Creek crossing, the Wimmera Highway will start to get wet around 7 hours after start of rain, the maximum depth will occur at ~12 hours and it will remain wet for up to 22 hours.</li> </ul>				

Observed Rainfall (see graph)	AEP of flood	Water level at Wimmera Highway Bridge	Consequence / Impact	Action <b>DRAFT ONLY</b> Actions may include (but not limited to) evacuation, closure of roads, sandbagging, issue of warnings and who is responsible
<ul style="list-style-type: none"> <li>▪ It is important that sand and sandbags are delivered to Natimuk and made available to residents as soon as possible after it becomes apparent that flooding is likely. As time will be short, <b>sandbags are only likely to be effective for brick buildings on a concrete slab</b>. For all other buildings, effort should be directed at lifting furniture and other valuables.</li> <li>▪ It is important that the decision to sandbag and to mobilise to remove furniture etc from buildings is made early. Big floods rise very quickly.</li> <li>▪ Consider how best to assist nursing staff attend the Nursing Home in Natimuk when the Wimmera Highway is flooded.</li> </ul>				
<p><b>USING THIS INTELLIGENCE CARD.</b> Obtain rainfall data and use the flood guidance tool to determine the approximate flood severity. Consider the appropriate flood inundation map. Review all consequences and actions in this table, from the first row down to the approximate expected severity of flooding. Initiate all actions in a logical sequence remembering that water will rise quickly and that some actions may need to be initiated in an order that is different from their relative placement in this table.</p>				
<p><b>If response has been initiated locally, the first action should be a call to VICSES, followed by a call to the MERO at the Rural City of Horsham. Note time available – see below.</b></p>				
~15mm in 30 minutes to ~60mm in 24 hours	20% AEP (5-yr ARI)	NCK: 118.1mAHD  LNCK: 116.6mAHD	Downstream from the railway culverts, Little Natimuk Creek runs over Station Street to a depth of up to 500mm. Jory Street overtopped by Little Natimuk Creek to depth less than 100mm. Natimuk Creek wetting the corner of Sudholz Road and Elmes Street by up to 300mm. Water in close proximity to Lake Avenue. Water backing up from Natimuk Creek into the Lake Avenue by-wash channel and entering lower sections of land to the east of Lake Avenue.	<ul style="list-style-type: none"> <li>○ Place “Water over road” signs and consider closing these roads.</li> <li>○ Monitor rainfall and water levels.</li> </ul>
				<ul style="list-style-type: none"> <li>○ Provide sandbags and sand into Natimuk (to the nominated collection point – see Appendix D4, Section 7) sufficient for the expected severity of flooding.</li> </ul>
~20mm in 30 minutes to ~70mm in 24 hours	10% AEP (10-yr ARI)	NCK: 118.4mAHD  LNCK: 116.8mAHD	Little Natimuk Creek running over Station Street and Jory Street (up to 250mm) and getting deeper and faster. First properties (2-14 Jory Street, 83 Main Street and 3 Schmidt Street) starting to experience over ground flooding. Natimuk Creek wetting Creek Road by up to 300mm. Water beginning to impact on the northern corner of Elmes St. Lake Avenue flooded to around 200mm deep near Nos 47-61. Water entering the Lake Avenue by-wash channel from both ends.	<ul style="list-style-type: none"> <li>○ Close Station Street and Jory Street.</li> <li>○ Continue to monitor rainfall and water levels.</li> <li>○ Check on the Caravan Park at the upstream / Natimuk end of Lake Natimuk and implement evacuation plans as necessary.</li> </ul>

Observed Rainfall (see graph)	AEP of flood	Water level at Wimmera Highway Bridge	Consequence / Impact	Action <b>DRAFT ONLY</b> Actions may include (but not limited to) evacuation, closure of roads, sandbagging, issue of warnings and who is responsible
<ul style="list-style-type: none"> <li>▪ It is important that sand and sandbags are delivered to Natimuk and made available to residents as soon as possible after it becomes apparent that flooding is likely. As time will be short, <b>sandbags are only likely to be effective for brick buildings on a concrete slab</b>. For all other buildings, effort should be directed at lifting furniture and other valuables.</li> <li>▪ It is important that the decision to sandbag and to mobilise to remove furniture etc from buildings is made early. Big floods rise very quickly.</li> <li>▪ Consider how best to assist nursing staff attend the Nursing Home in Natimuk when the Wimmera Highway is flooded.</li> </ul>				
<p><b>USING THIS INTELLIGENCE CARD.</b> Obtain rainfall data and use the flood guidance tool to determine the approximate flood severity. Consider the appropriate flood inundation map. Review all consequences and actions in this table, from the first row down to the approximate expected severity of flooding. Initiate all actions in a logical sequence remembering that water will rise quickly and that some actions may need to be initiated in an order that is different from their relative placement in this table.</p>				
<p><b>If response has been initiated locally, the first action should be a call to VICSES, followed by a call to the MERO at the Rural City of Horsham. Note time available – see below.</b></p>				
			<p>Lake Avenue and Elmes Street getting progressively wetter.</p>	<ul style="list-style-type: none"> <li>○ Review contingency plans for access through Natimuk and to the Nursing Home.</li> <li>○ Review evacuation and associated community support arrangements.</li> </ul>
<p>~25mm in 30 minutes to ~80mm in 24 hours</p>	<p>5% AEP (20-yr ARI)</p>	<p>NCK: 118.6mAHD  LNCK: 117.0mAHD</p>	<p>Water at Station Street crossing up to 500mm deep. Jory Street wetted to a depth of around 400mm. Properties on the upstream side of the Wimmera Highway at the Little Natimuk Creek crossing beginning to get wet but no over-floor flooding (eg. 2-14 Jory Street, 3-7 Schmidt Street and 71, 75-79, 81, 83 and 85 Main Street). Water up to 400mm deep in places on Creek Road. Natimuk Creek overtopping Wimmera Highway by up to 100mm. Inundation of the northern parts of Sudholz Road and Elmes Street by up to 200mm. Lake Avenue by-wash channel overtopping the outlet on Lake Avenue. Properties along Lake Avenue (47-65) and on Elmes Street beginning to get wet with water up to 300mm deep on the roads. A shed at 15 Elmes Street likely to be flooded over-floor to about 160mm unless sandbagged earlier.</p>	<ul style="list-style-type: none"> <li>○ Consider beginning to sandbag properties likely to experience over-floor flooding for a larger flood.</li> <li>○ Implement traffic management measure for Lake Avenue and Elmes Street. Access issues.</li> <li>○ Monitor water levels across the Wimmera Highway at the Natimuk Creek crossing.</li> <li>○ Check on the Caravan Park at the upstream / Natimuk end of Lake Natimuk and implement evacuation plans as necessary.</li> <li>○ Continue to monitor rainfall and water levels.</li> </ul>
				<ul style="list-style-type: none"> <li>○ Consider implementing evacuation plan for Jory Street, Elmes Street, Schmidt Street, Sudholz Road and Lake Avenue if more severe flooding is</li> </ul>

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<ul style="list-style-type: none"> <li>▪ It is important that sand and sandbags are delivered to Natimuk and made available to residents as soon as possible after it becomes apparent that flooding is likely. As time will be short, <b>sandbags are only likely to be effective for brick buildings on a concrete slab</b>. For all other buildings, effort should be directed at lifting furniture and other valuables.</li> <li>▪ It is important that the decision to sandbag and to mobilise to remove furniture etc from buildings is made early. Big floods rise very quickly.</li> <li>▪ Consider how best to assist nursing staff attend the Nursing Home in Natimuk when the Wimmera Highway is flooded.</li> </ul>				
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				expected.
~30mm in 30 minutes to 95mm in 24 hours	2% AEP (50-yr ARI)	NCK: 118.8mAHD  LNCK: 117.2mAHD	<p><b>Similar to December 2010 flood event (2% AEP)</b> Water at Station Street crossing up to 750mm deep. Water in Jory Street up to 500mm deep. Little Natimuk Creek overtopping the Wimmera Highway to a depth of between 100mm and 200mm. More properties experiencing over-ground flooding. Over-floor flooding of 2 x properties on Main Street near the Little Natimuk Creek crossing. Over-floor flooding of 5 x houses along Lake Avenue. Flooding of Lake Avenue, Elmes Street and creek end of Sudholz Street. Water beginning to affect properties in Schmidt Street.</p>	<ul style="list-style-type: none"> <li>○ Consider sandbagging properties likely to experience over-floor flooding for a larger flood and advise owners of such properties to lift furniture, carpets, etc.</li> <li>○ Consider implementing contingency plans for access through Natimuk and to the Nursing Home.</li> <li>○ Monitor water levels across the Wimmera Highway at the Natimuk Creek crossing and the Little Natimuk Creek crossing.</li> <li>○ Implement evacuation plan</li> <li>○ Continue to monitor rainfall and water levels.</li> </ul>
			<p>Depth of water over the Wimmera Highway (Main Street) through Natimuk is increasing. First properties in Lake Avenue and Main Street about to be flooded over-floor.</p>	<ul style="list-style-type: none"> <li>○ Consider closing the Wimmera Highway (Main Street) through Natimuk to traffic bearing in mind that the Nursing Home will need to continue to function.</li> <li>○ Lifting of furniture, etc in and sandbagging of properties likely to be flooded over-floor by a larger flood should be well underway.</li> </ul>
~35mm in 30 minutes to 110mm in 24 hours	1% AEP (100-yr ARI)	NCK: 118.9mAHD	<p><b>Similar to January 2011 flood (1% AEP)</b> when 12 homes were evacuated and 21 buildings were inundated above floor level in</p>	<ul style="list-style-type: none"> <li>○ Continue to monitor rainfall and water levels.</li> </ul>

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		LNck: 117.4mAHD	<p>Lake Avenue, Elmes Street, Wimmera Highway, Depot Lane and Jory Street. The Wimmera Highway was also inundated at both Creek crossings.</p> <p>Water at Station Street crossing up to 800mm deep.</p> <p>Substantial inundation along Little Natimuk Creek between Station Street and Wimmera Highway and on the downstream side of the Highway downstream from Sudholz Street.</p> <p>Water around 300mm deep on Schmidt Street.</p> <p>Parts of Creek Road flooded to 500mm.</p> <p>Both creeks flowing over Wimmera Highway to depth of 200mm to 300mm.</p> <p>Significant inundation of Sudholz Road and Elmes Street. Access to homes along Elmes Street limited with depths of 300mm to 400mm.</p> <p>Parts of Lake Avenue flooded to more than 500mm.</p> <p>Parts of Lake Road flooded to depth.</p> <p>Over-floor flooding of properties in Lake Avenue and Main Street.</p>	<ul style="list-style-type: none"> <li>○ Implement plans as required.</li> <li>○ Lifting of furniture, etc in and sandbagging of properties likely to be flooded over-floor by a larger flood should be well advanced.</li> </ul>
Heavy rain (eg. more than ~100mm in around 12 hours) on a wet catchment	0.5% AEP (200-yr ARI)	Nck: 119.0mAHD  LNck: 117.5mAHD	<p>Severe deep flooding near the creek channels.</p> <p>Jory Street flooded to a depth of around 800mm.</p> <p>Schmidt Street flooded to a depth of around 600mm.</p> <p>Flow across Wimmera Highway at Little Natimuk Creek of order 500mm and between 300mm and 400mm at the Natimuk Creek crossing.</p>	<ul style="list-style-type: none"> <li>○ Continue to monitor rainfall and water levels.</li> <li>○ Implement plans as required.</li> </ul>

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<p><b>If response has been initiated locally, the first action should be a call to VICSES, followed by a call to the MERO at the Rural City of Horsham. Note time available – see below.</b></p>				
			<p>Water up to 600mm deep along parts of Creek Road. Elmes Street almost entirely inundated. Access to homes along Elmes Street is limited with depths reaching up to 500mm. Lake Avenue flooded to greater than 600mm in parts. Increase in number of buildings flooded over-floor.</p>	

### 6.3 Summary of Properties Flooded

Summary of number of flood affected properties in Natimuk includes residential;/commercial and non-habited buildings <b>EXISTING CONDITIONS</b>						
	Design Flood ARI (years)					
	5	10	20	50	100	200
Level at Natimuk Creek gauge @ Wimmera Highway						
Equivalent level in mAHD	118.1	118.4	118.6	118.8	118.9	119.0
Level at Little Natimuk Creek gauge @ Wimmera Highway						
Equivalent level in mAHD	116.6	116.8	117.0	117.2	117.4	117.5
Number of properties flooded above floor	0	0	1	8	14	20
Number of properties flooded below floor	2	21	32	41	44	40
Total number of flooded properties	16	21	33	49	58	60

### 6.4 Detailed List of Properties Flooded

Natimuk – EXISTING CONDITIONS It is suggested that this table be used in conjunction with the flood inundation maps													
LEGEND	Within 100mm of flooding over-floor						Depth of over-floor flooding						Comments
	Depth of flooding at lowest part of property for each ARI						Depth of over-floor flooding at property for each ARI						
	5yr	10yr	20yr	50yr	100yr	200yr	5yr	10yr	20yr	50yr	100yr	200yr	
1-3 Duncan Street	1.66	1.76	1.89	2.06	2.16	2.24							Residential
4 Elmes Street			0.30	0.45	0.56	0.64							Residential
5 Elmes Street			0.25	0.46	0.63	0.73					0.09	0.19	Weatherboard house on stumps



<b>Natimuk – EXISTING CONDITIONS</b>													
It is suggested that this table be used in conjunction with the flood inundation maps													
LEGEND	Within 100mm of flooding over-floor						Depth of over-floor flooding						Comments
Location (Number & Street)	Depth of flooding at lowest part of property for each ARI						Depth of over-floor flooding at property for each ARI						
	5yr	10yr	20yr	50yr	100yr	200yr	5yr	10yr	20yr	50yr	100yr	200yr	
6 Elmes Street	0.47	0.70	0.93	1.34	1.48	1.56						0.04	Large corrugated iron shed on a concrete slab
	0.47	0.70	0.93	1.34	1.48	1.56							ParksVic Depot / office, portable weatherboard
7 Elmes Street			0.17	0.39	0.56	0.67						0.08	Weatherboard house on stumps
15 Elmes Street			0.26	0.44	0.58	0.68			0.16	0.33	0.49	0.60	Wooden paling shed with gravel floor
17 Elmes Street			0.30	0.48	0.62	0.72						0.08	Brick/large block house on stumps
21 Elmes Street			0.19	0.37	0.51	0.61					0.10	0.20	Weatherboard house on stumps
23 Elmes Street				0.20	0.37	0.47							Cement sheet house on stumps
27 Elmes Street				0.20	0.56	0.61							Weatherboard house on stumps
2 Jory Street				0.18	0.32	0.43							Cafe, brick building on stumps
	0.19	0.31	0.41	0.51	0.61	0.67							Cafe, weatherboard building on stumps
4 Jory Street	0.24	0.42	0.51	0.62	0.71	0.77							Weatherboard house on stumps
6 Jory Street	1.58	1.68	1.79	1.90	1.98	2.05							Weatherboard house on stumps
10 Jory Street	1.50	1.60	1.71	1.82	1.90	1.96							Iron cladding house on stumps
18 Jory Street				0.21	0.33	0.43							Iron cladding house on stumps
20 Jory Street				0.13	0.26	0.36							Brick house on concrete slab
1 Lake Avenue				0.18	0.32	0.43							Weatherboard house on stumps



<b>Natimuk – EXISTING CONDITIONS</b>													
It is suggested that this table be used in conjunction with the flood inundation maps													
<b>LEGEND</b>	<b>Within 100mm of flooding over-floor</b>						<b>Depth of over-floor flooding</b>						<b>Comments</b>
<b>Location (Number &amp; Street)</b>	<b>Depth of flooding at lowest part of property for each ARI</b>						<b>Depth of over-floor flooding at property for each ARI</b>						
	<b>5yr</b>	<b>10yr</b>	<b>20yr</b>	<b>50yr</b>	<b>100yr</b>	<b>200yr</b>	<b>5yr</b>	<b>10yr</b>	<b>20yr</b>	<b>50yr</b>	<b>100yr</b>	<b>200yr</b>	
31 Lake Avenue			0.25	0.50	0.67	0.78						0.05	Weatherboard house on stumps
33 Lake Avenue				0.43	0.61	0.69					0.05	0.15	Weatherboard house on stumps
35 Lake Avenue				0.36	0.52	0.61							Weatherboard house on stumps
37 Lake Avenue				0.51	0.66	0.75				0.04	0.23	0.33	Weatherboard house on stumps
41 Lake Avenue			0.06	0.42	0.59	0.67				0.09	0.30	0.41	Weatherboard house on stumps
43 Lake Avenue			0.17	0.40	0.61	0.72				0.09	0.28	0.39	Weatherboard house on stumps
45 Lake Avenue		0.06	0.31	0.55	0.74	0.84					0.16	0.26	Weatherboard house on stumps
59 Lake Avenue	1.45	1.98	2.18	2.38	2.55	2.65				0.03	0.20	0.29	Weatherboard house on stumps
71 Lake Avenue	0.17	0.43	0.67	0.88	1.07	1.18				0.01	0.18	0.29	Brick house on concrete slab
73 Lake Avenue	1.45	1.70	1.94	2.13	2.32	2.43							Brick house on concrete slab
75 Lake Avenue		1.05	1.28	1.47	1.66	1.76							Iron cladding house on stumps
77 Lake Avenue		1.05	1.29	1.48	1.67	1.77							Brick house on concrete slab
12 Lake Road					0.17	0.28							Weatherboard house on stumps
42 Lake Road						0.30							Cement sheet house on stumps
44 Lake Road					0.26	0.38							Weatherboard house on stumps
46 Lake Road					0.21	0.32							Cement sheet house on stumps
81 Main Street		0.04	0.32	0.50	0.60	0.68							Post Office, brick building on concrete slab

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<b>LEGEND</b>	<b>Within 100mm of flooding over-floor</b>						<b>Depth of over-floor flooding</b>						<b>Comments</b>
<b>Location (Number &amp; Street)</b>	<b>Depth of flooding at lowest part of property for each ARI</b>						<b>Depth of over-floor flooding at property for each ARI</b>						
	<b>5yr</b>	<b>10yr</b>	<b>20yr</b>	<b>50yr</b>	<b>100yr</b>	<b>200yr</b>	<b>5yr</b>	<b>10yr</b>	<b>20yr</b>	<b>50yr</b>	<b>100yr</b>	<b>200yr</b>	
62 Main Street				0.18	0.32	0.43							Brick building on concrete slab
	0.14	0.44	0.70	0.93	1.14	1.27							Brick building on concrete slab
63-65 Main Street						0.07							National Hotel – Pub, rendered brick building on concrete slab
64 Main Street					0.16	0.27							Brick, large block house, foundation unknown
67 Main Street					0.18	0.35					0.02	0.13	Iron cladding, brick façade on concrete slab
69 Main Street				0.39	0.56	0.65				0.03	0.20	0.32	Rendered brick commercial building on concrete slab.
71 Main Street	1.23	1.51	1.69	1.82	1.96	2.05				0.21	0.34	0.45	Weatherboard house on stumps
75 Main Street	1.66	1.85	2.00	2.13	2.27	2.36					0.13	0.24	Steel cladding milk bar on stumps.
83 Main Street		0.13	0.24	0.37	0.48	0.54							Old bank, rendered, foundation TBA
85 Main Street					0.41	0.47							Old PO, brick building foundation TBA
87 Main Street				0.18	0.32	0.43						0.01	Western side, brick shop, foundation TBA
				0.52	1.03	1.09						0.07	Eastern side, brick shop, foundation TBA
89 Main Street					0.15	0.21							Brick commercial, building, foundation TBA.

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<b>Location (Number &amp; Street)</b>	Depth of flooding at lowest part of property for each ARI						Depth of over-floor flooding at property for each ARI							
	5yr	10yr	20yr	50yr	100yr	200yr	5yr	10yr	20yr	50yr	100yr	200yr		
91 Main Street					0.19	0.25								Brass band building, iron cladding, foundation TBA
93-95 Main Street				0.58	1.09	1.15								Old Bank, rendered building, red-gum slab.
97 Main Street				0.18	0.32	0.43								Brick shop, foundation TBA (floorboard)
				0.35	0.87	0.93								Weatherboard house on stumps
143 Main Street	0.31	0.59	0.86	1.03	1.17	1.26								Iron cladding house on stumps
1 Schmidt Street	0.18	0.29	0.39	0.50	0.59	0.65								Telstra building, iron cladding on stumps. 4 x sheds on site not flooded over-floor
3 Schmidt Street	0.33	0.45	0.58	0.70	0.81	0.88								Weatherboard house on stumps
4 Schmidt Street					0.83	0.89								Brick house, foundation TBA
5 Schmidt Street			0.22	0.35	0.44	0.51								Weatherboard house on stumps
7 Schmidt Street			0.17	0.29	0.38	0.45								Weatherboard house on stumps
3 Sudholz Street			0.18	0.36	0.65	0.78								Cement sheet bowls club on stumps.

## 6.5 Indicative Flood / No flood Guidance Tool

### 6.5.1 In the lead up to a flood event

It is suggested that data from the **Horsham Aerodrome AWS, Longerenong AWS and Polkemmet Road (Horsham)** (see BoM website) or alternative closer locations is used to determine an appropriate rainfall depth for use in the following indicative Flood / No Flood guidance tool. It is further suggested that either an average value is used to drive the tool or, for a more conservative approach, the maximum depth from these gauges. This approach will work reasonably well as the rainfall gradient across the Municipality is minimal.

Two approaches can be used during a rainfall event to determine the likelihood and expected severity of flooding. Both approaches can be used simultaneously using the same copy of the tool. **Unless there are unusual circumstances, actions as per the Flood Intelligence Card should be initiated as soon as the tool suggests flooding is likely.** Response can be escalated if the tool indicates an increase in the expected severity of flooding.

**Approach 1:** Using the total rainfall depth obtained (from an AWS or alternative source) from the start of the event (discount early drizzle or very light rain), plot the rainfall depth against elapsed time on a copy of the tool. Assess the likelihood and expected severity of flooding from the curves with due regard for included notes.

**Approach 2:** Discount the early lighter rain from consideration (i.e. begin calculating rainfall depth from start of heavy rain) and plot depth against time on a copy of the tool. Assess the likelihood and expected severity of flooding from the curves with due regard for included notes.

A word of caution. The tool does not enable accurate predictions of peak gauge heights or time of peaks to be made but does give indicative guidance as to the expected severity of flooding and thus likely consequences. However, it must be remembered that the tool provides indicative, not exact, guidance and must be used with some thought as well as knowledge of local conditions.

### 6.5.2 After a flood event

After a flood event, plot the event rainfall depth with a date on the tool and include an overview of the event, including antecedent conditions, in Appendix A of this MFEP.

## Guidance for likelihood of flooding at Natimuk based on rainfall

