



# Technical and Approvals Consultancy Services: Parkes to Narromine

## Flood Study Report Volume 2

December 2018

3-0001-240-IHY-00-RP-0004



# Appendix A

## Existing Conditions Flood Maps

*A01 - Existing Flood Depth 18% AEP*

*A02 – Existing Flood Depth 5% AEP*

*A03 – Existing Flood Depth 2% AEP*

*A04 – Existing Flood Depth 0.05% AEP*

*A05 – Existing Flood Velocity 18% AEP*

*A06 – Existing Flood Velocity 5% AEP*

*A07 – Existing Flood Velocity 2% AEP*

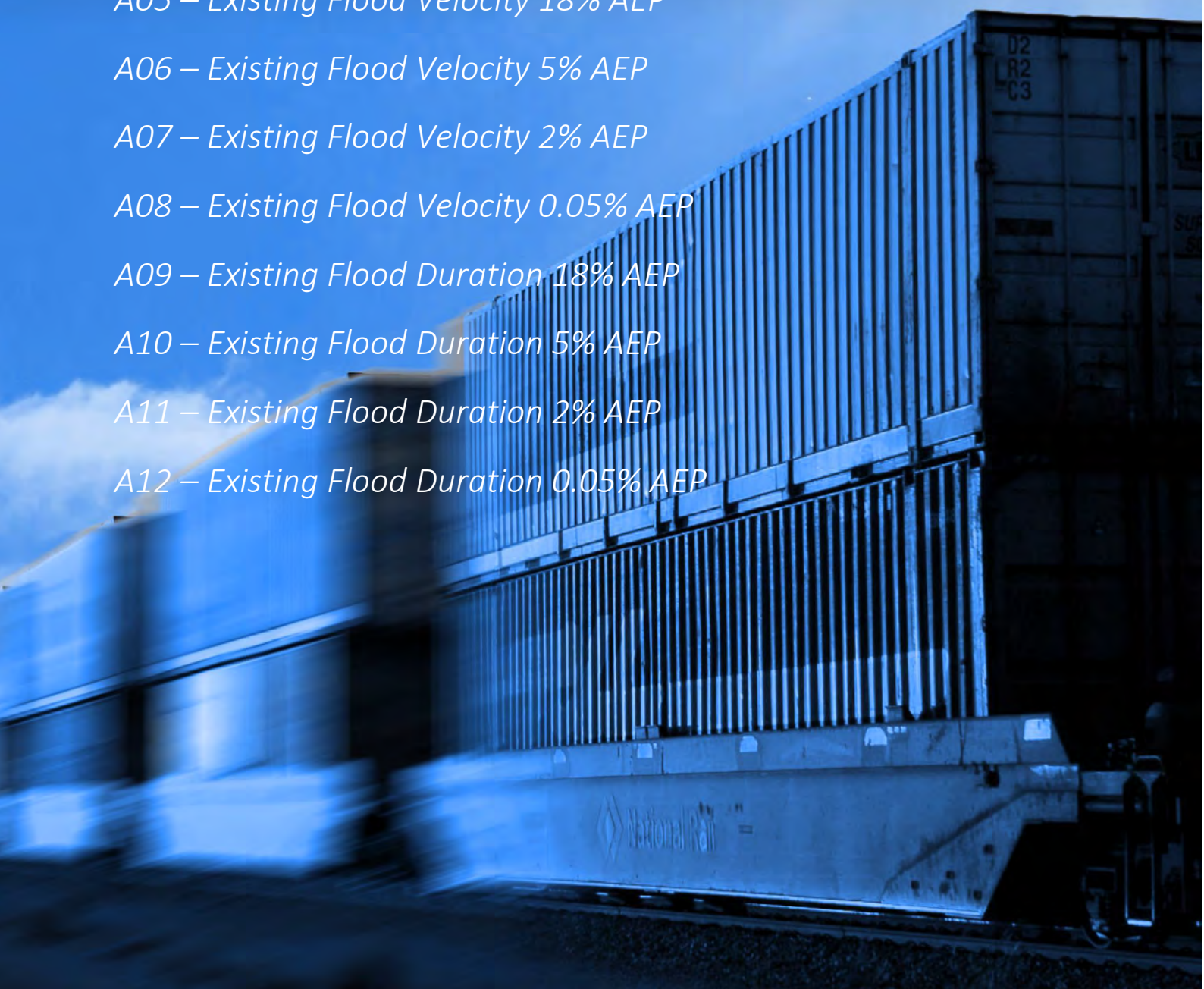
*A08 – Existing Flood Velocity 0.05% AEP*

*A09 – Existing Flood Duration 18% AEP*

*A10 – Existing Flood Duration 5% AEP*

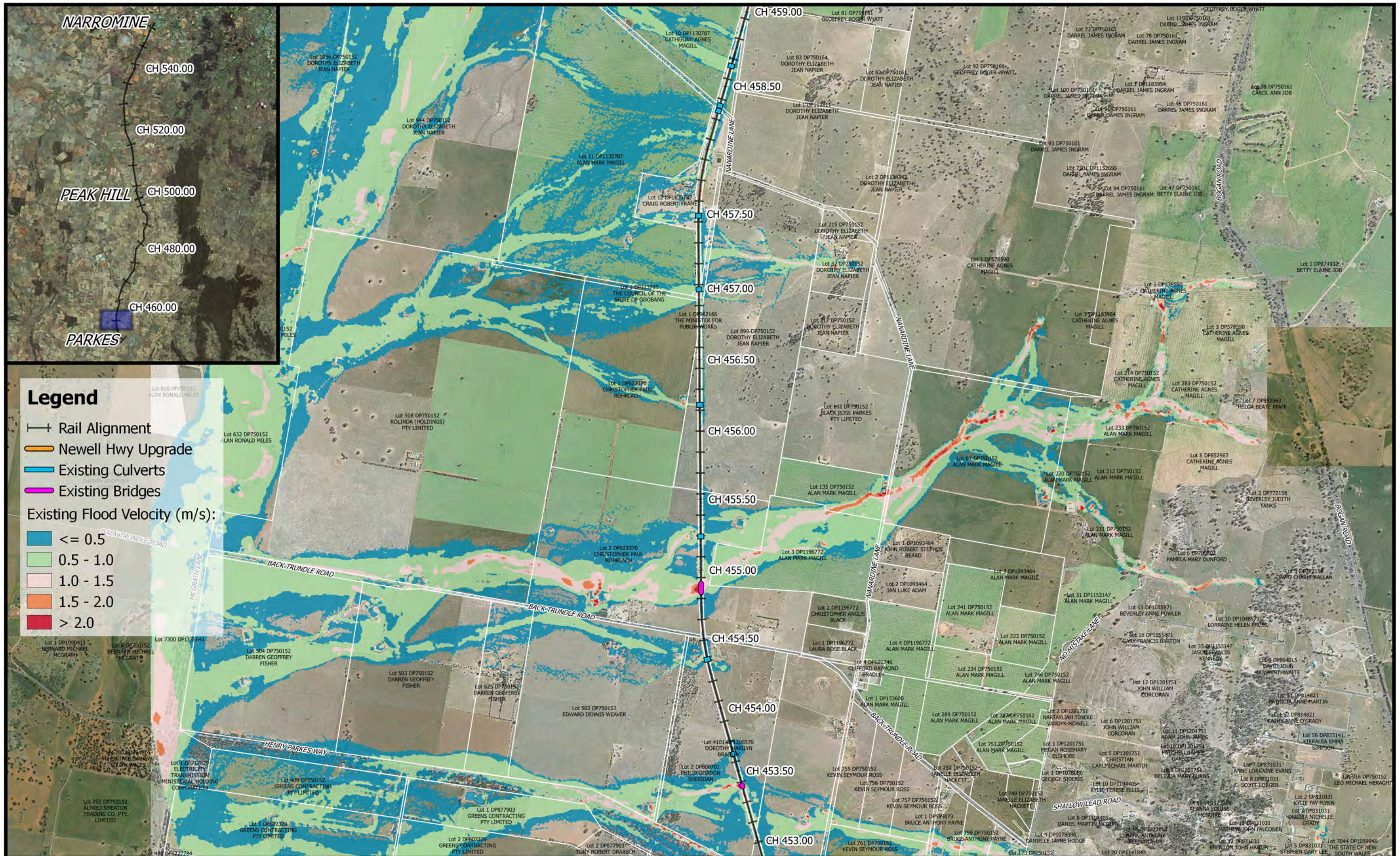
*A11 – Existing Flood Duration 2% AEP*

*A12 – Existing Flood Duration 0.05% AEP*

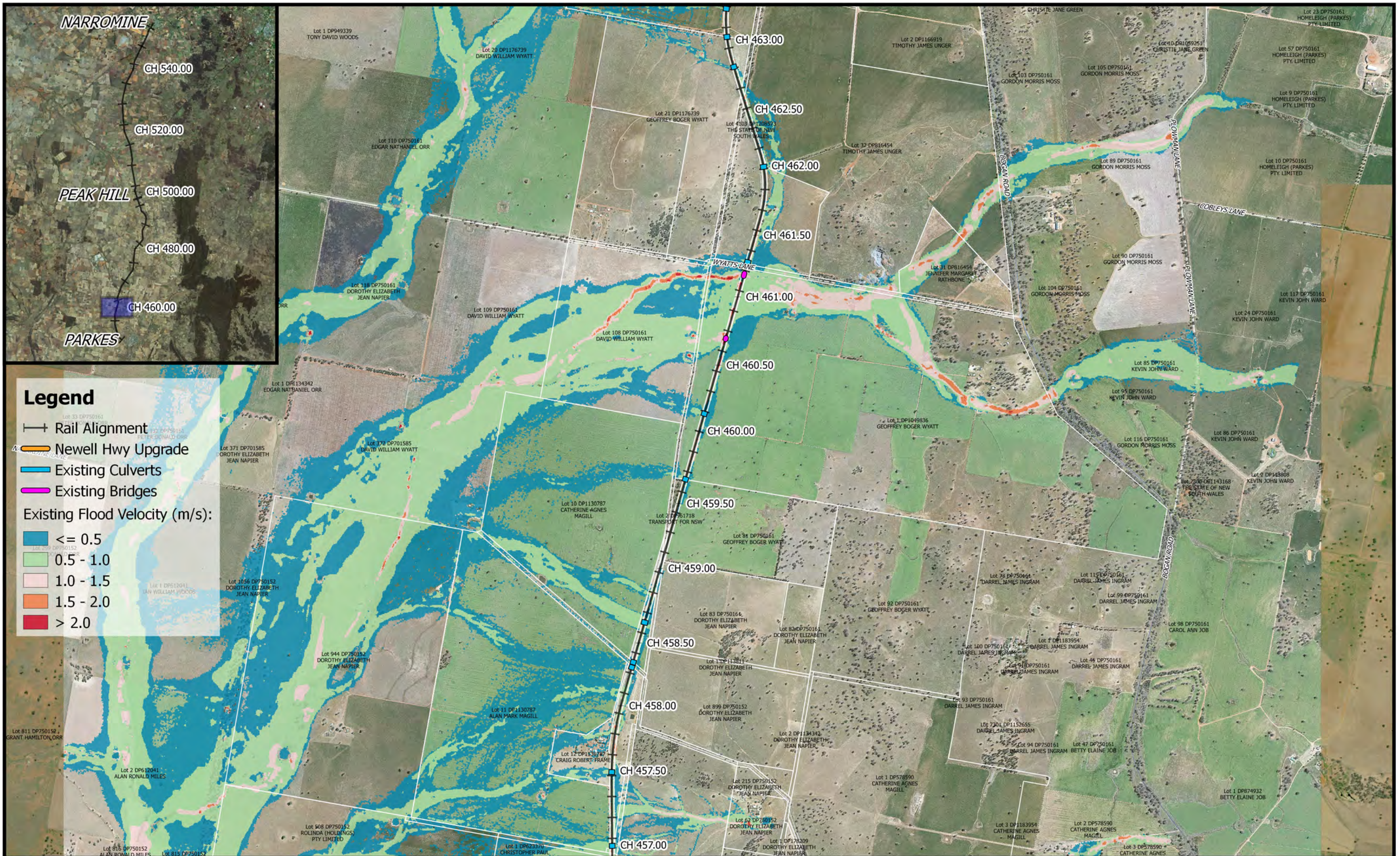




			Date: 18/10/2018	<b>Parkes to Narromine</b> DD100% - Cross Drainage Flood Impact Assessment Results <b>Figure EX2V1</b> 2% AEP Existing Flood Velocity - CH 450.00
	1:25,000		Rev: B	
	Coordinate system: GDA 1994 MGA Zone 55 Scale ratio correct when printed at A3		Prepared By: YeohM	



			Date: 18/10/2018	<b>Parkes to Narromine</b> DD100% - Cross Drainage Flood Impact Assessment Results <b>Figure EX2V2</b> 2% AEP Existing Flood Velocity - CH 455.00
	Coordinate system: GDA 1994 MGA Zone 55 Scale ratio correct when printed at A3		Rev: B	
	Prepared By: YeohM			



**Legend**

- Rail Alignment
- Newell Hwy Upgrade
- Existing Culverts
- Existing Bridges

Existing Flood Velocity (m/s):

- ≤ 0.5
- 0.5 - 1.0
- 1.0 - 1.5
- 1.5 - 2.0
- > 2.0

	<p>0 250 500 750 1000 m</p> <p>1:25,000</p>	 	Date: 19/7/2018	<p><b>Parkes to Narromine</b></p> <p>DD100% - Cross Drainage Flood Impact Assessment Results</p> <p><b>Figure EX2V3</b></p> <p><i>2% AEP Existing Flood Velocity - CH 460.00</i></p>
	Coordinate system: GDA 1994 MGA Zone 55		Rev: A	
	Scale ratio correct when printed at A3		Prepared By: YeohM	



			Date: 19/7/2018	<b>Parkes to Narromine</b> DD100% - Cross Drainage Flood Impact Assessment Results <b>Figure EX2V4</b> <i>2% AEP Existing Flood Velocity - CH 465.00</i>
	1:25,000		Rev: A	
	Coordinate system: GDA 1994 MGA Zone 55 Scale ratio correct when printed at A3		Prepared By: YeohM	



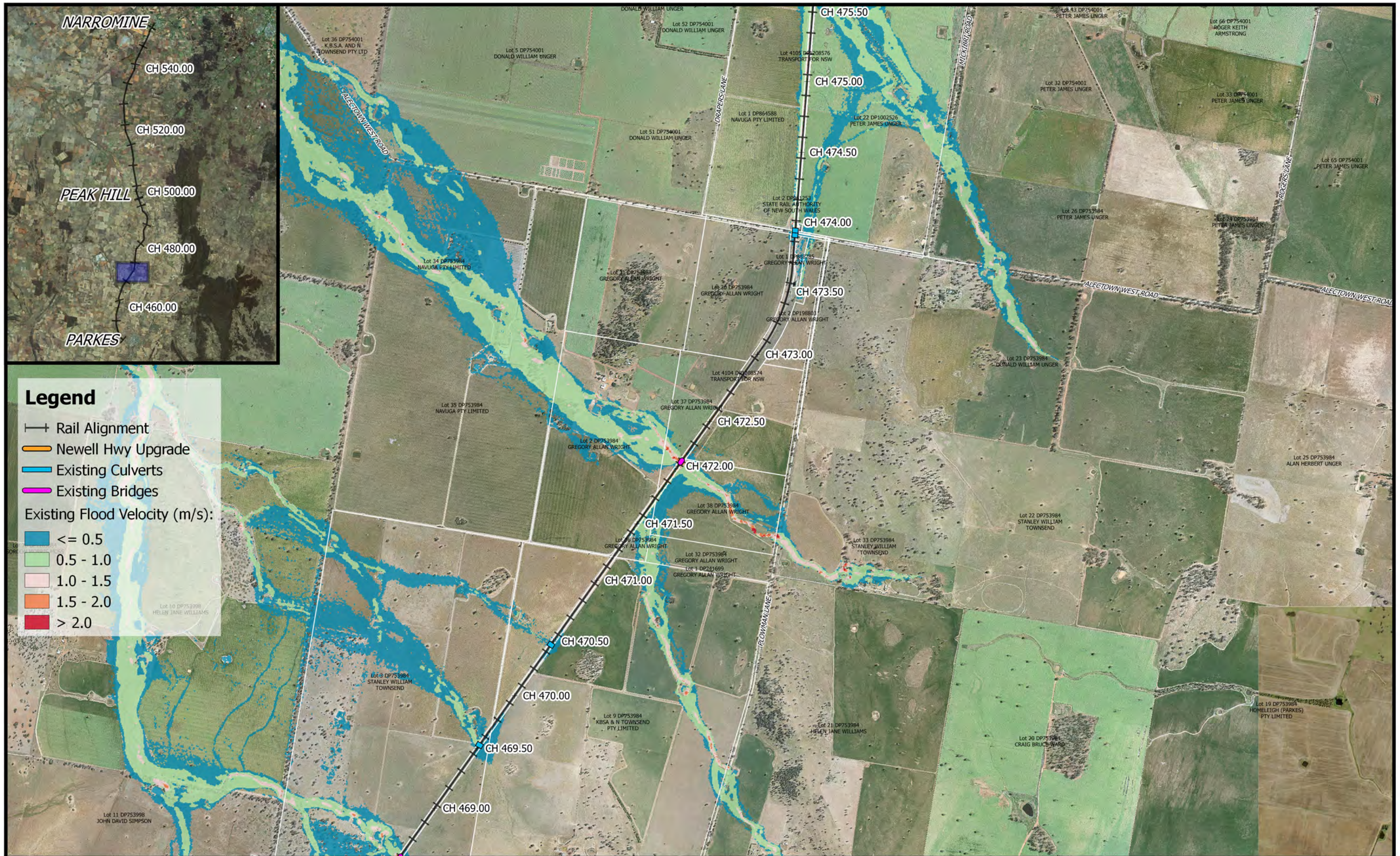
**Legend**

- +— Rail Alignment
- Newell Hwy Upgrade
- Existing Culverts
- Existing Bridges

Existing Flood Velocity (m/s):

- Blue: <= 0.5
- Light Green: 0.5 - 1.0
- Yellow: 1.0 - 1.5
- Orange: 1.5 - 2.0
- Red: > 2.0

	<p>0 250 500 750 1000 m</p> <p>1:25,000</p> <p>Coordinate system: GDA 1994 MGA Zone 55 Scale ratio correct when printed at A3</p>	<p><b>M M</b> MOTT MACDONALD</p>	<p>Date: 19/7/2018</p> <p>Rev: A</p> <p>Prepared By: YeohM</p>	<p><b>Parkes to Narromine</b> DD100% - Cross Drainage Flood Impact Assessment Results</p> <p><b>Figure EX2V5</b> 2% AEP Existing Flood Velocity - CH 470.00</p>
--	---	--	--	---



**Legend**

- +— Rail Alignment
- Newell Hwy Upgrade
- Existing Culverts
- Existing Bridges

Existing Flood Velocity (m/s):

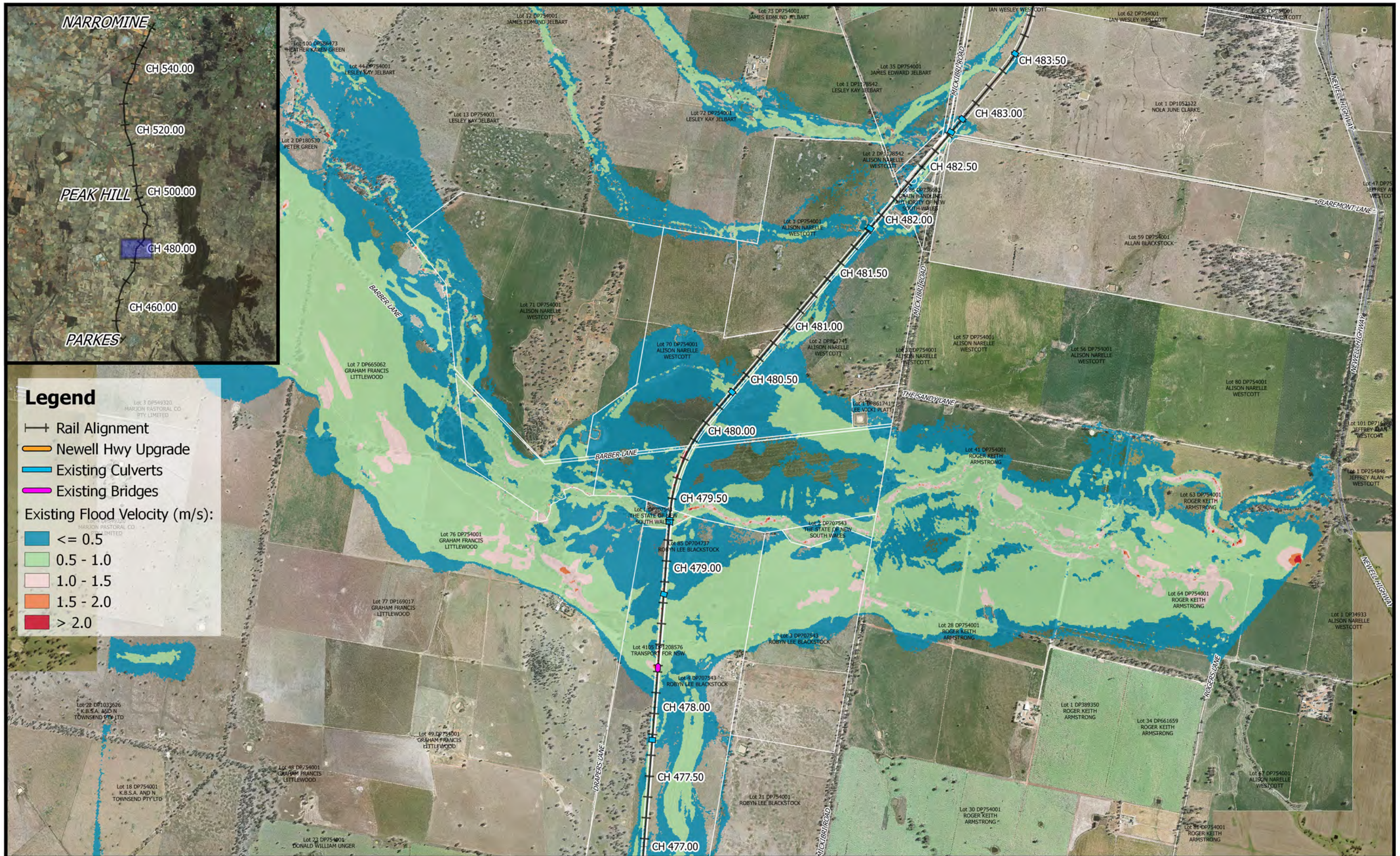
- Blue:  $\le 0.5$
- Light Green: 0.5 - 1.0
- Light Orange: 1.0 - 1.5
- Orange: 1.5 - 2.0
- Red:  $> 2.0$

	<p>1:25,000</p>		Date: 19/7/2018	<p><b>Parkes to Narromine</b> DD100% - Cross Drainage Flood Impact Assessment Results</p> <p><b>Figure EX2V6</b> 2% AEP Existing Flood Velocity - CH 472.00</p>
	Coordinate system: GDA 1994 MGA Zone 55 Scale ratio correct when printed at A3		Rev: A	
	Prepared By: YeohM			





	<p>1:25,000</p>		Date: 19/7/2018	<p><b>Parkes to Narromine</b> DD100% - Cross Drainage Flood Impact Assessment Results</p> <p><b>Figure EX2V7</b> 2% AEP Existing Flood Velocity - CH 475.00</p>
	<p>Coordinate system: GDA 1994 MGA Zone 55 Scale ratio correct when printed at A3</p>		<p>Rev: A</p>	
	<p>Prepared By: YeohM</p>			



			Date: 19/7/2018	<b>Parkes to Narromine</b> DD100% - Cross Drainage Flood Impact Assessment Results <b>Figure EX2V8</b> <i>2% AEP Existing Flood Velocity - CH 480.00</i>
	Coordinate system: GDA 1994 MGA Zone 55 Scale ratio correct when printed at A3		Rev: A	
	Prepared By: YeohM			

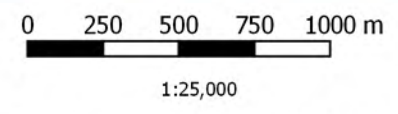


**Legend**

- +— Rail Alignment
- Newell Hwy Upgrade
- Existing Culverts
- Existing Bridges

Existing Flood Velocity (m/s):

- ≤ 0.5
- 0.5 - 1.0
- 1.0 - 1.5
- 1.5 - 2.0
- > 2.0



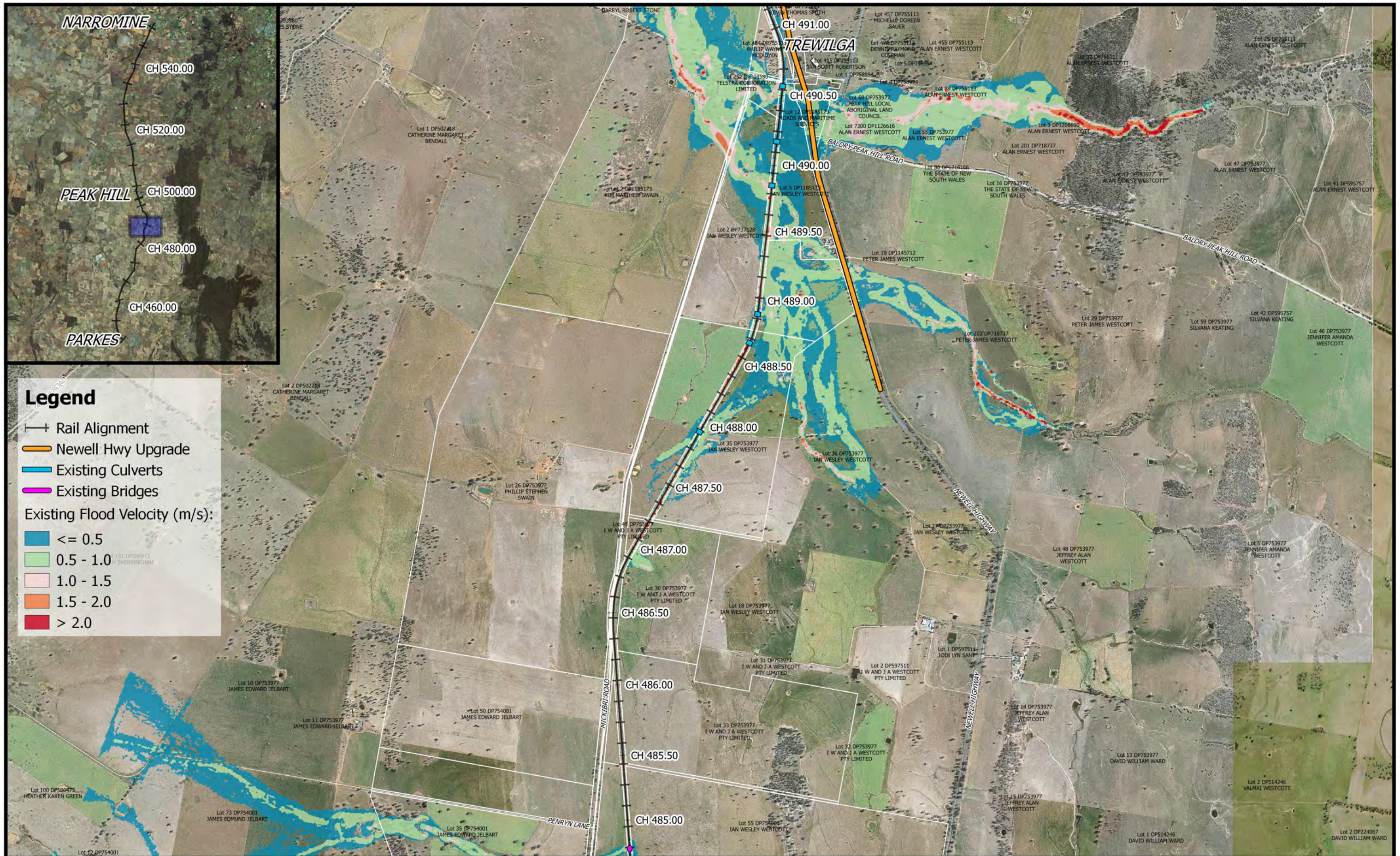
Coordinate system: GDA 1994 MGA Zone 55  
Scale ratio correct when printed at A3



Date: 19/7/2018  
Rev: A  
Prepared By: YeohM

**Parkes to Narromine**  
DD100% - Cross Drainage Flood Impact Assessment Results

**Figure EX2V9**  
2% AEP Existing Flood Velocity - CH 485.00



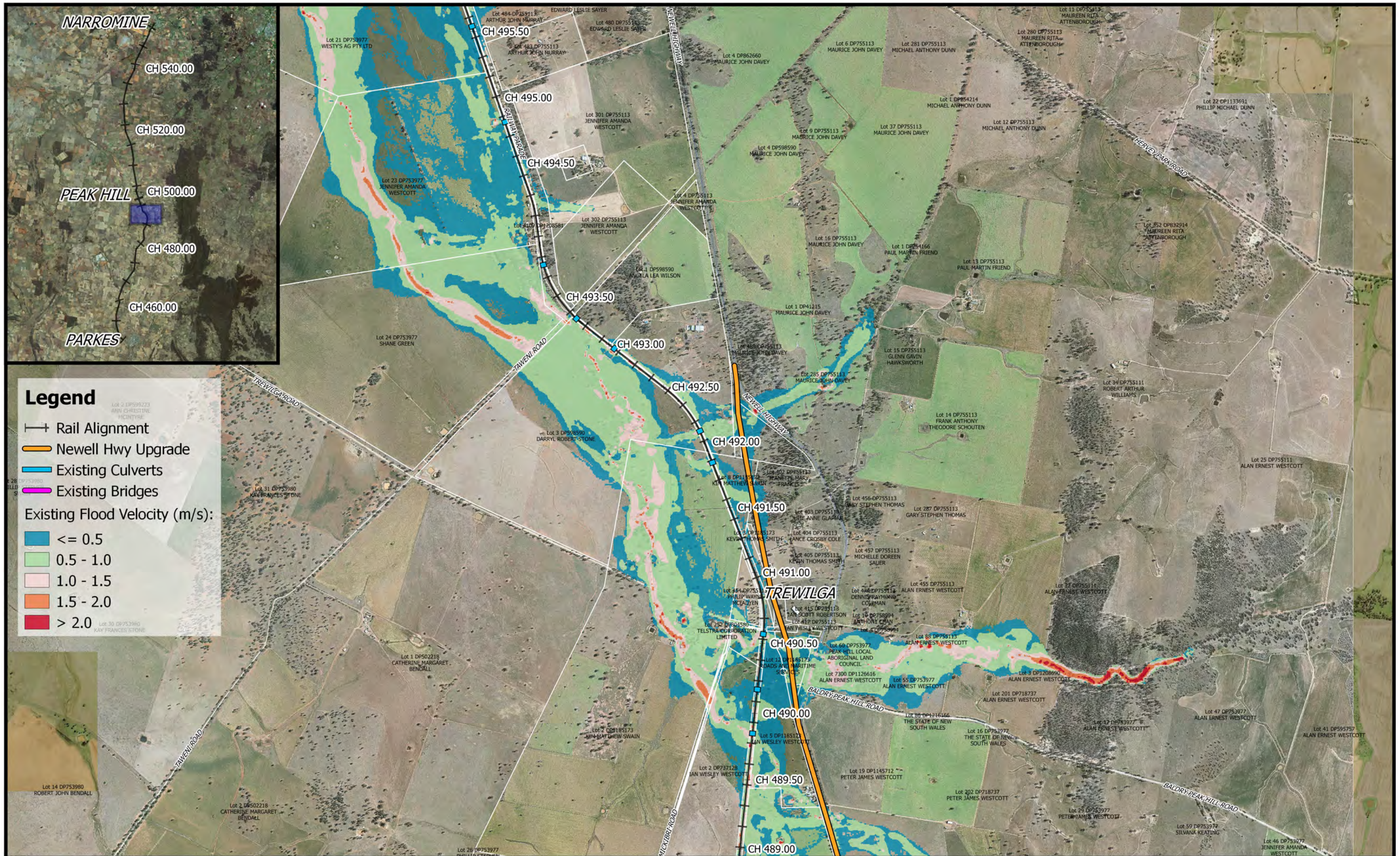
**Legend**


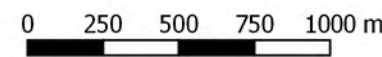

- +— Rail Alignment
- Newell Hwy Upgrade
- Existing Culverts
- Existing Bridges

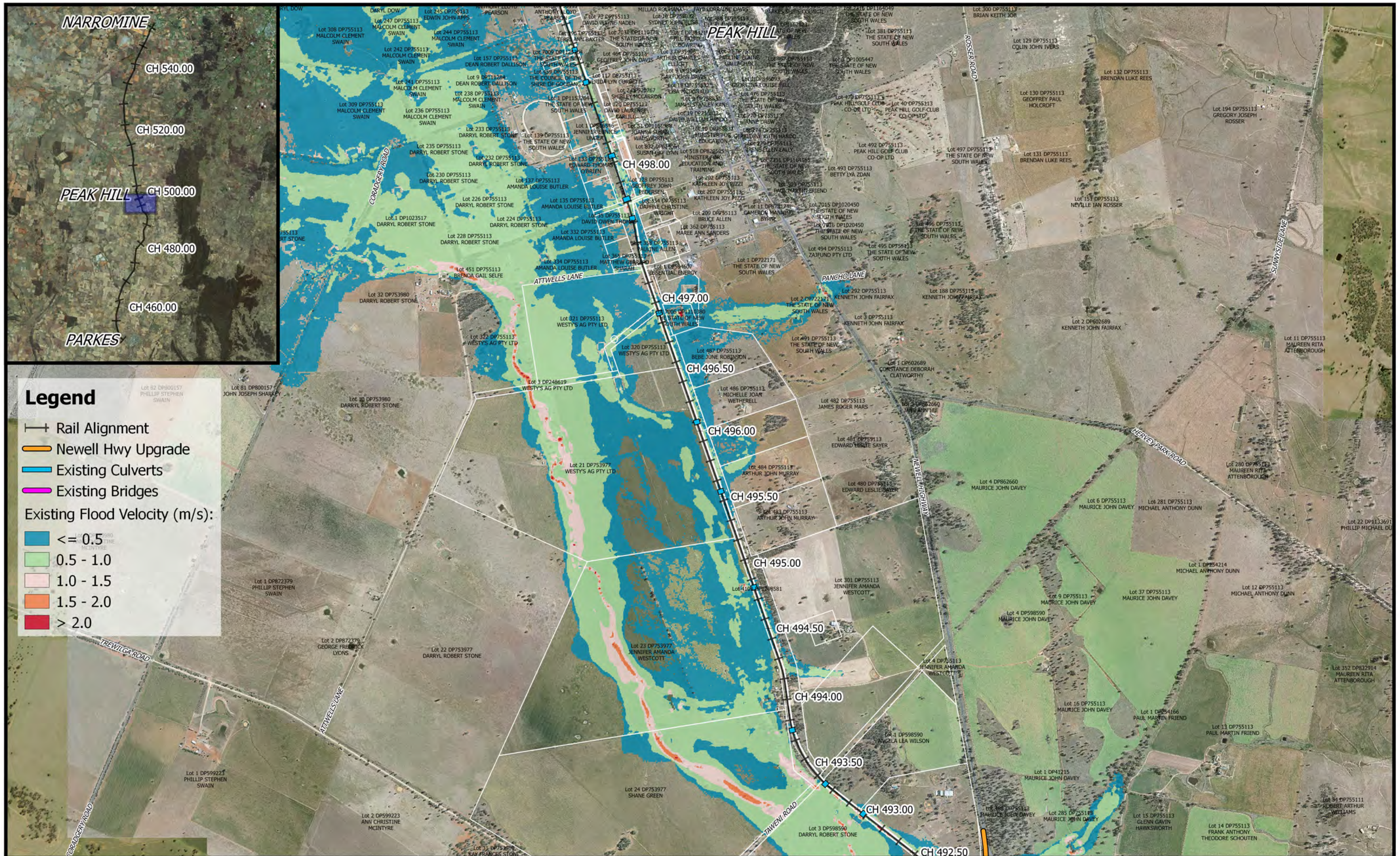
Existing Flood Velocity (m/s):

- ≤ 0.5
- 0.5 - 1.0
- 1.0 - 1.5
- 1.5 - 2.0
- > 2.0

	<p>1:25,000</p>		Date: 19/7/2018	<p><b>Parkes to Narromine</b> DD100% - Cross Drainage Flood Impact Assessment Results</p> <p><b>Figure EX2V10</b> 2% AEP Existing Flood Velocity - CH 490.00</p>
	Coordinate system: GDA 1994 MGA Zone 55 Scale ratio correct when printed at A3		Rev: A	



	 1:25,000 Coordinate system: GDA 1994 MGA Zone 55 Scale ratio correct when printed at A3		Date: 19/7/2018 Rev: A Prepared By: YeohM	<b>Parkes to Narromine</b> DD100% - Cross Drainage Flood Impact Assessment Results <b>Figure EX2V11</b> 2% AEP Existing Flood Velocity - CH 492.00
---	--	--	---	---



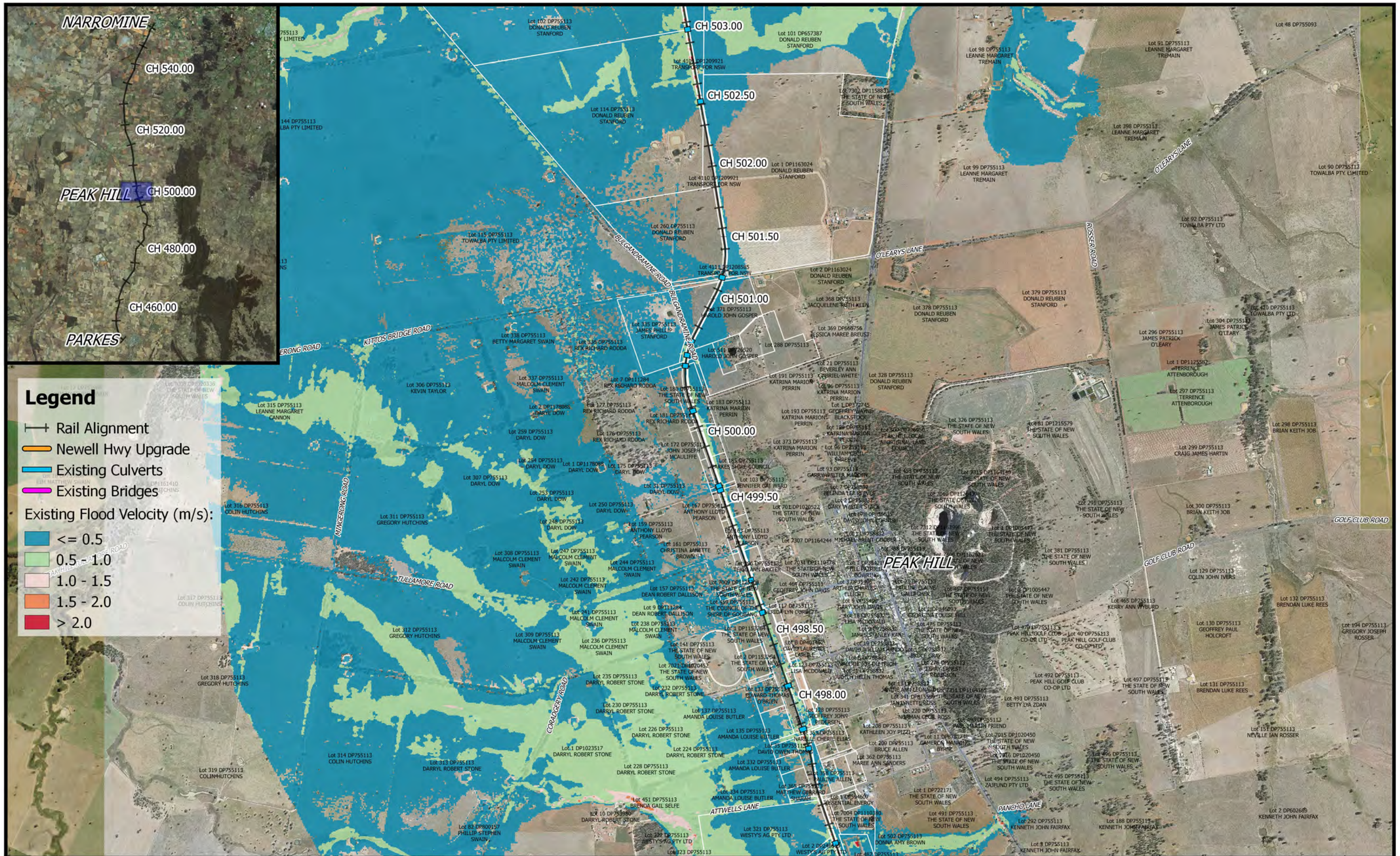
**Legend**

- +— Rail Alignment
- Newell Hwy Upgrade
- Existing Culverts
- Existing Bridges

Existing Flood Velocity (m/s):

- Blue:  $\leq 0.5$
- Light Green: 0.5 - 1.0
- Pink: 1.0 - 1.5
- Orange: 1.5 - 2.0
- Red:  $> 2.0$

	 1:25,000		Date: 19/7/2018	<b>Parkes to Narromine</b> DD100% - Cross Drainage Flood Impact Assessment Results <b>Figure EX2V12</b> <i>2% AEP Existing Flood Velocity - CH 495.00</i>
	Coordinate system: GDA 1994 MGA Zone 55 Scale ratio correct when printed at A3		Rev: A	
	Prepared By: YeohM			



**Legend**

- Rail Alignment
- Newell Hwy Upgrade
- Existing Culverts
- Existing Bridges

Existing Flood Velocity (m/s):

- ≤ 0.5
- 0.5 - 1.0
- 1.0 - 1.5
- 1.5 - 2.0
- > 2.0



0 250 500 750 1000 m

1:25,000

Coordinate system: GDA 1994 MGA Zone 55  
Scale ratio correct when printed at A3



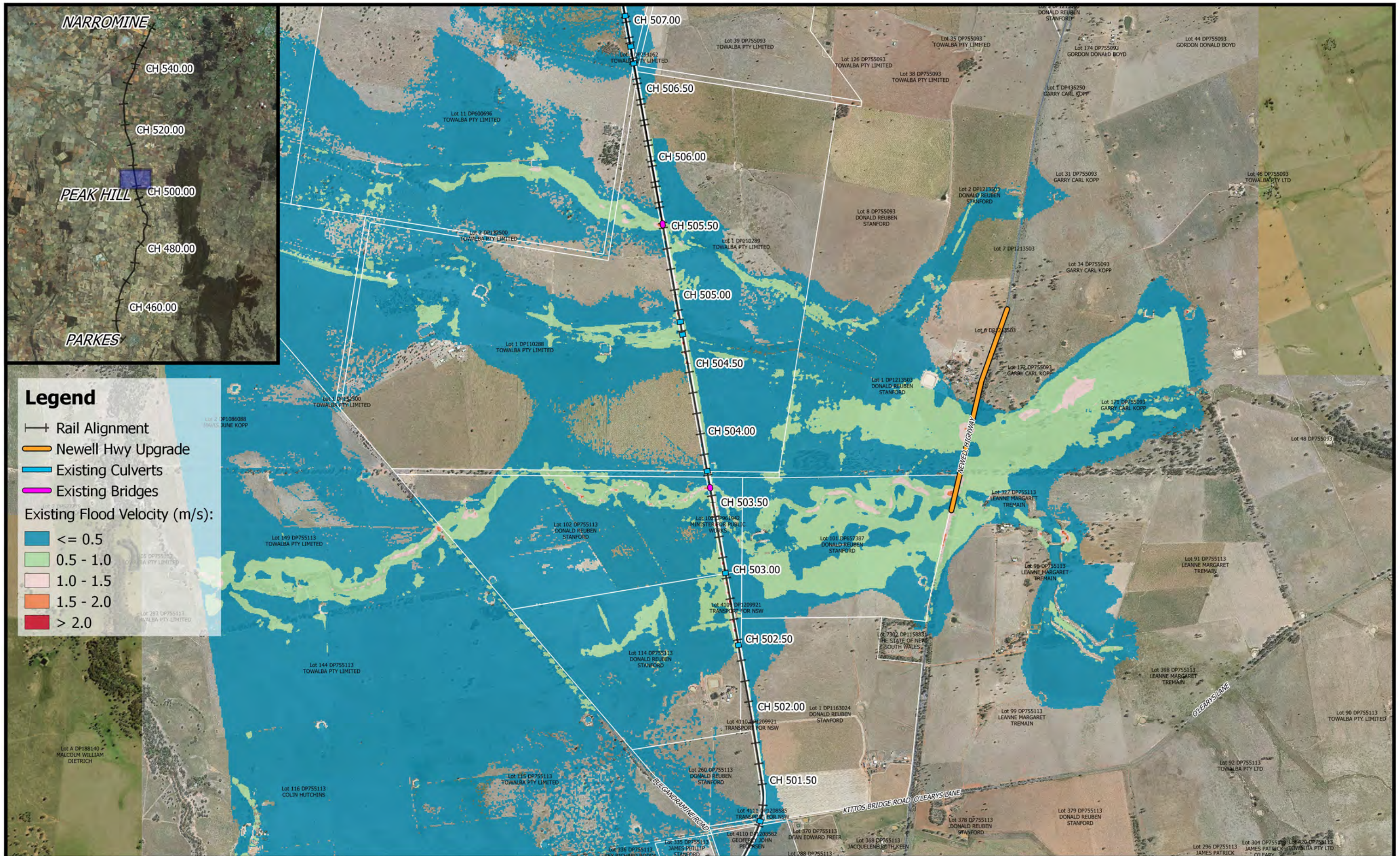
Date: 19/7/2018

Rev: A

Prepared By: YeohM

**Parkes to Narromine**  
DD100% - Cross Drainage Flood Impact Assessment Results

**Figure EX2V13**  
2% AEP Existing Flood Velocity - CH 500.00



**Legend**

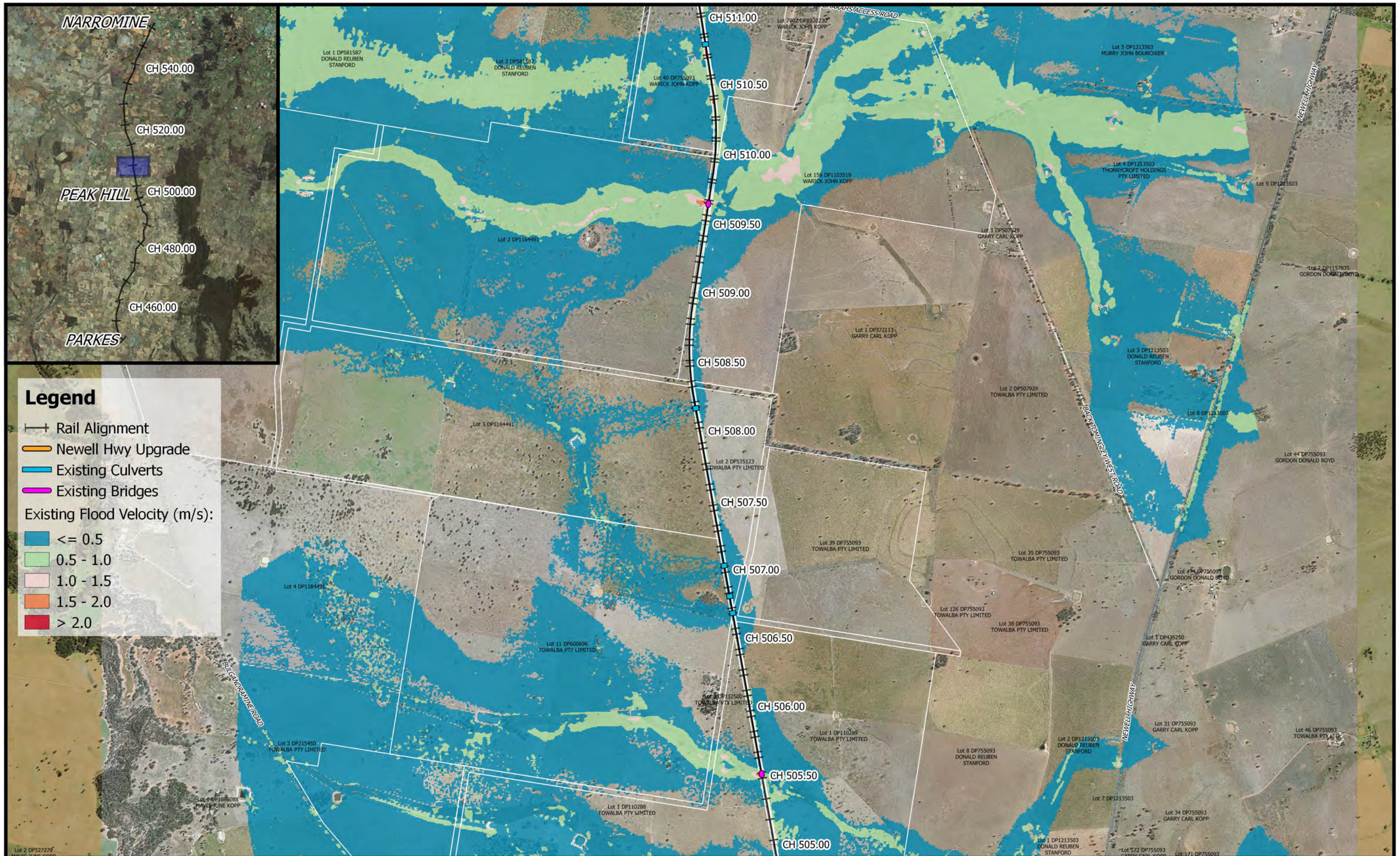
- +— Rail Alignment
- Newell Hwy Upgrade
- Existing Culverts
- Existing Bridges

Existing Flood Velocity (m/s):

- Blue: <= 0.5
- Light Green: 0.5 - 1.0
- Pink: 1.0 - 1.5
- Orange: 1.5 - 2.0
- Red: > 2.0

	 1:25,000		Date: 19/7/2018	<p style="text-align: center;"><b>Parkes to Narromine</b></p> <p style="text-align: center;">DD100% - Cross Drainage Flood Impact Assessment Results</p> <p style="text-align: center;"><b>Figure EX2V14</b></p> <p style="text-align: center;"><i>2% AEP Existing Flood Velocity - CH 505.00</i></p>
	Coordinate system: GDA 1994 MGA Zone 55 Scale ratio correct when printed at A3		Rev: A	
	Prepared By: YeohM			





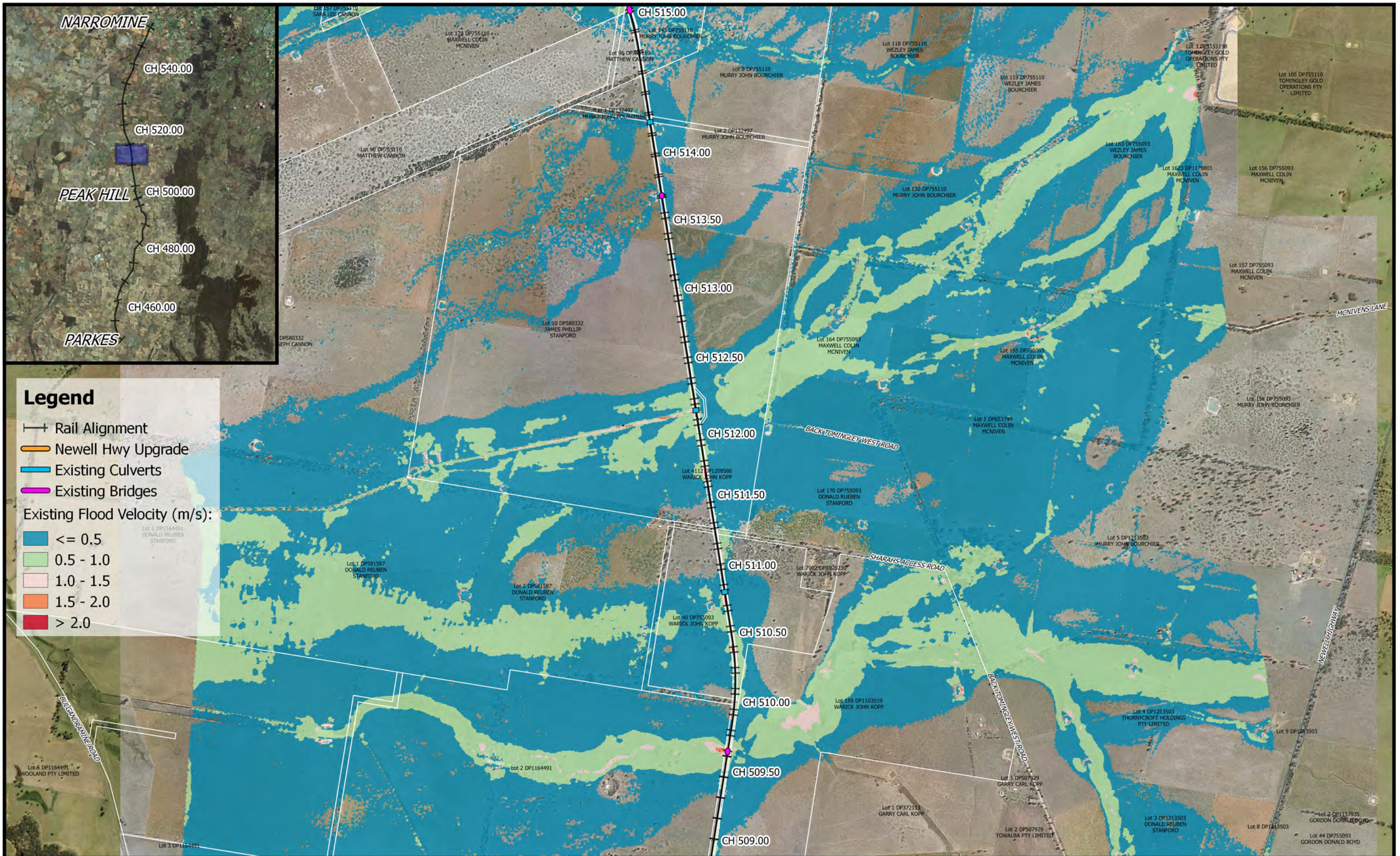
**Legend**

- Rail Alignment
- Newell Hwy Upgrade
- Existing Culverts
- Existing Bridges

Existing Flood Velocity (m/s):

- $\le 0.5$
- 0.5 - 1.0
- 1.0 - 1.5
- 1.5 - 2.0
- $> 2.0$

	<p>1:25,000</p>		Date: 19/7/2018	<p><b>Parkes to Narromine</b> DD100% - Cross Drainage Flood Impact Assessment Results</p> <p><b>Figure EX2V15</b> <i>2% AEP Existing Flood Velocity - CH 510.00</i></p>
	Coordinate system: GDA 1994 MGA Zone 55 Scale ratio correct when printed at A3		Rev: A	
	Prepared By: YeohM			



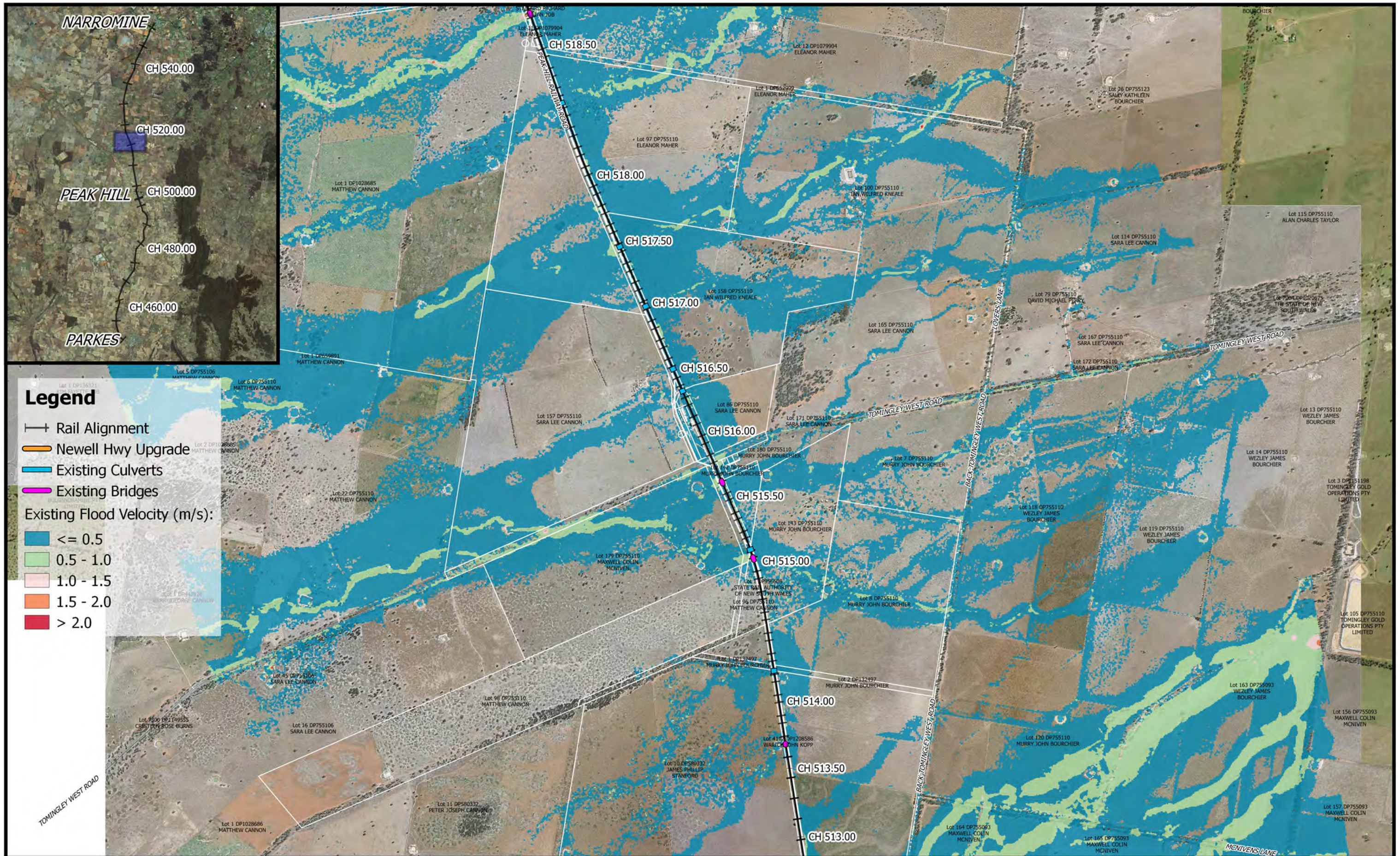
**Legend**

- +— Rail Alignment
- Newell Hwy Upgrade
- Existing Culverts
- Existing Bridges

Existing Flood Velocity (m/s):

- $\leq 0.5$
- 0.5 - 1.0
- 1.0 - 1.5
- 1.5 - 2.0
- $> 2.0$

	 1:25,000		Date: 19/7/2018	<b>Parkes to Narromine</b> DD100% - Cross Drainage Flood Impact Assessment Results  <b>Figure EX2V16</b> <i>2% AEP Existing Flood Velocity - CH 512.00</i>
	Coordinate system: GDA 1994 MGA Zone 55 Scale ratio correct when printed at A3		Rev: A	
	Prepared By: YeohM			



**Legend**

- +— Rail Alignment
- Newell Hwy Upgrade
- Existing Culverts
- Existing Bridges

Existing Flood Velocity (m/s):

- ≤ 0.5
- 0.5 - 1.0
- 1.0 - 1.5
- 1.5 - 2.0
- > 2.0



0 250 500 750 1000 m

1:25,000

Coordinate system: GDA 1994 MGA Zone 55  
Scale ratio correct when printed at A3



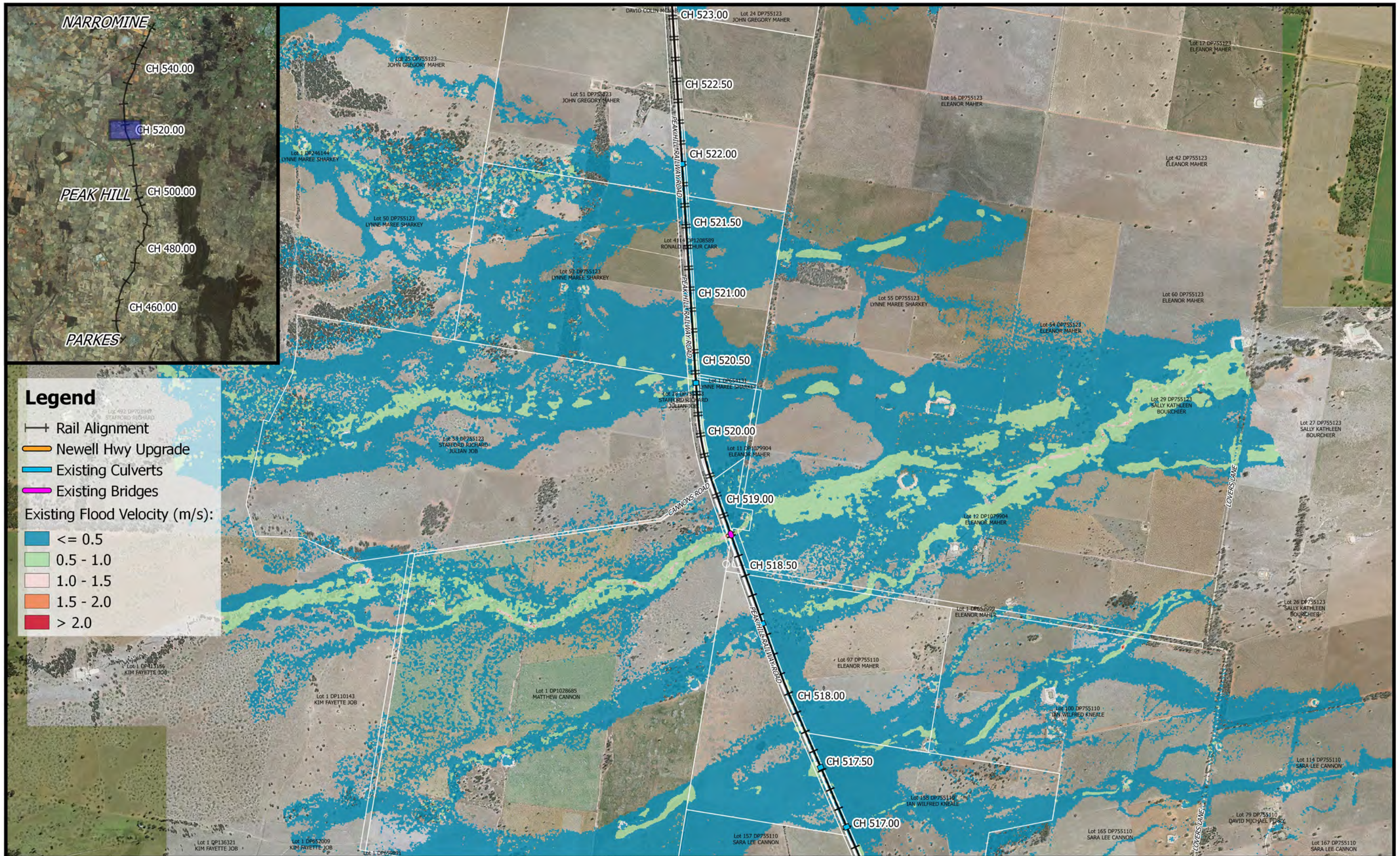
Date: 19/7/2018

Rev: A

Prepared By: YeohM

**Parkes to Narromine**  
DD100% - Cross Drainage Flood Impact Assessment Results

**Figure EX2V17**  
2% AEP Existing Flood Velocity - CH 515.00



**Legend**

- Rail Alignment
- Newell Hwy Upgrade
- Existing Culverts
- Existing Bridges

Existing Flood Velocity (m/s):

- ≤ 0.5
- 0.5 - 1.0
- 1.0 - 1.5
- 1.5 - 2.0
- > 2.0



0 250 500 750 1000 m

1:25,000

Coordinate system: GDA 1994 MGA Zone 55  
Scale ratio correct when printed at A3



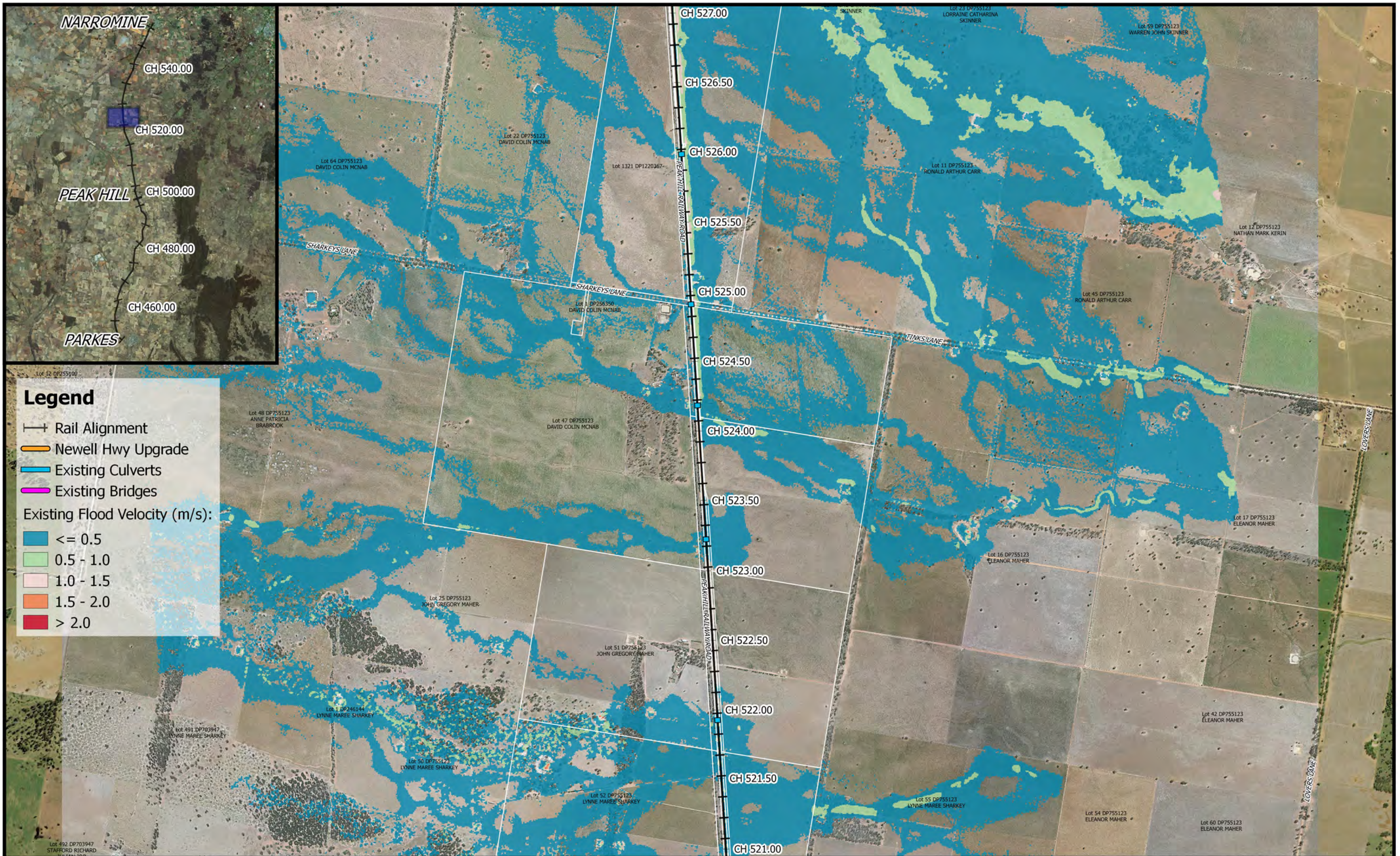
Date: 19/7/2018

Rev: A

Prepared By: YeohM

**Parkes to Narromine**  
DD100% - Cross Drainage Flood Impact Assessment Results

**Figure EX2V18**  
2% AEP Existing Flood Velocity - CH 520.00



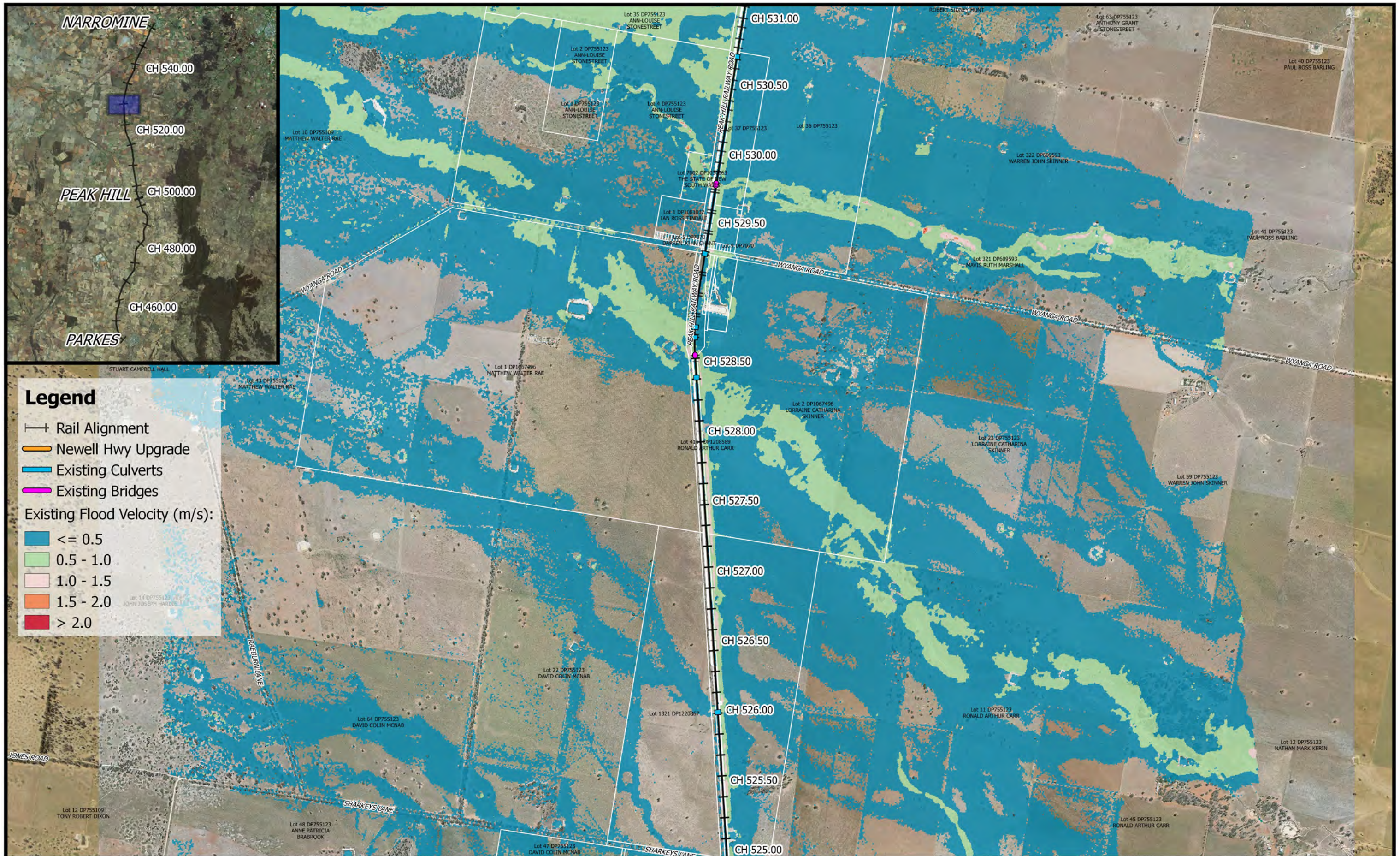
**Legend**

- +— Rail Alignment
- Newell Hwy Upgrade
- Existing Culverts
- Existing Bridges

Existing Flood Velocity (m/s):

- Blue:  $\leq 0.5$
- Light Green: 0.5 - 1.0
- Pink: 1.0 - 1.5
- Orange: 1.5 - 2.0
- Red:  $> 2.0$

	<p>1:25,000</p>		Date: 19/7/2018	<p><b>Parkes to Narromine</b> DD100% - Cross Drainage Flood Impact Assessment Results</p> <p><b>Figure EX2V19</b> <i>2% AEP Existing Flood Velocity - CH 525.00</i></p>
	Coordinate system: GDA 1994 MGA Zone 55 Scale ratio correct when printed at A3		Rev: A	
	Prepared By: YeohM			



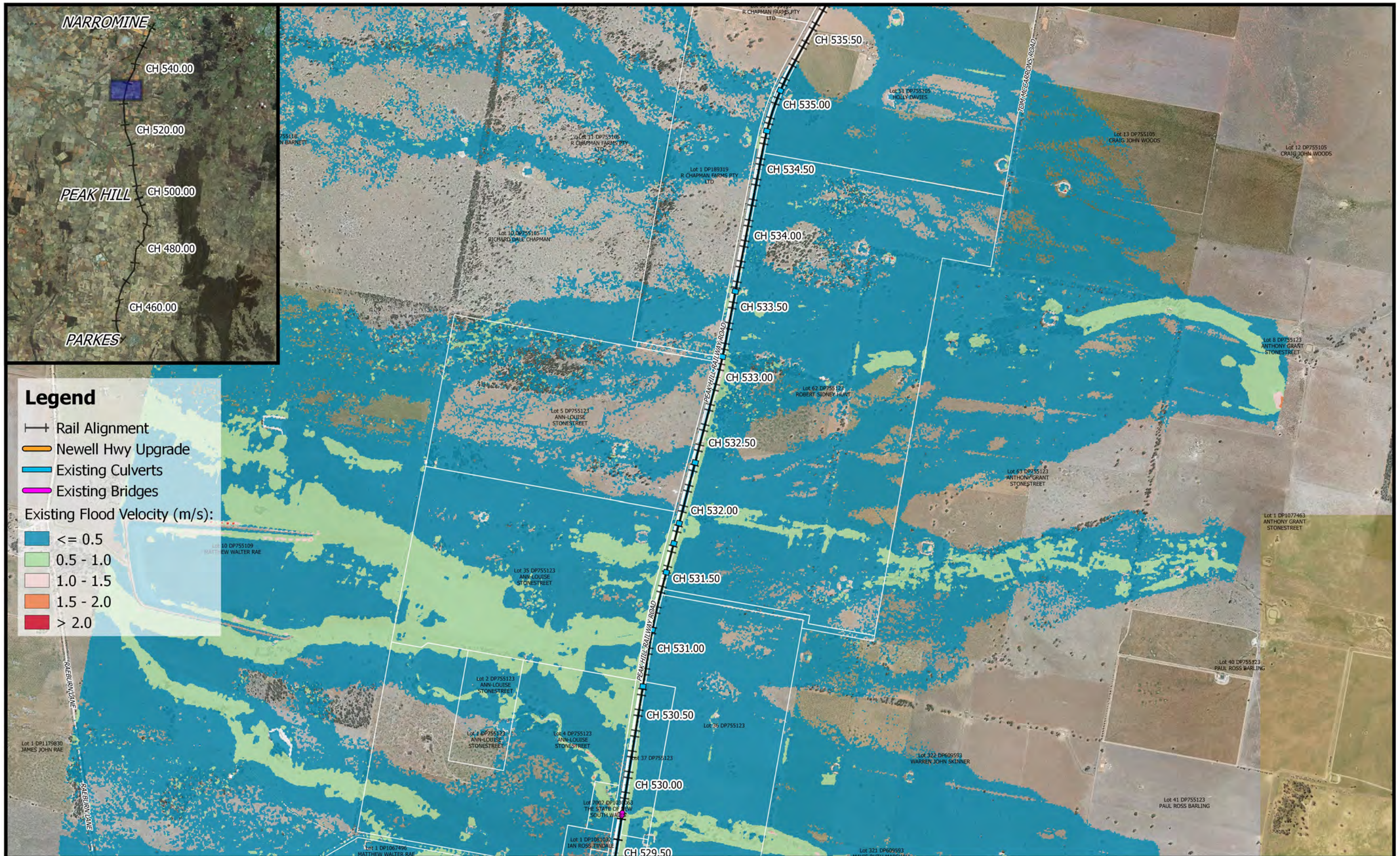
**Legend**

- +— Rail Alignment
- Newell Hwy Upgrade
- Existing Culverts
- Existing Bridges

Existing Flood Velocity (m/s):

- Blue:  $\leq 0.5$
- Light Green: 0.5 - 1.0
- Pink: 1.0 - 1.5
- Orange: 1.5 - 2.0
- Red:  $> 2.0$

	<p>1:25,000</p>		Date: 19/7/2018	<p style="text-align: right;"><b>Parkes to Narromine</b> DD100% - Cross Drainage Flood Impact Assessment Results</p> <p style="text-align: right;"><b>Figure EX2V20</b> 2% AEP Existing Flood Velocity - CH 530.00</p>	
	Coordinate system: GDA 1994 MGA Zone 55 Scale ratio correct when printed at A3		Rev: A		
			Prepared By: YeohM		



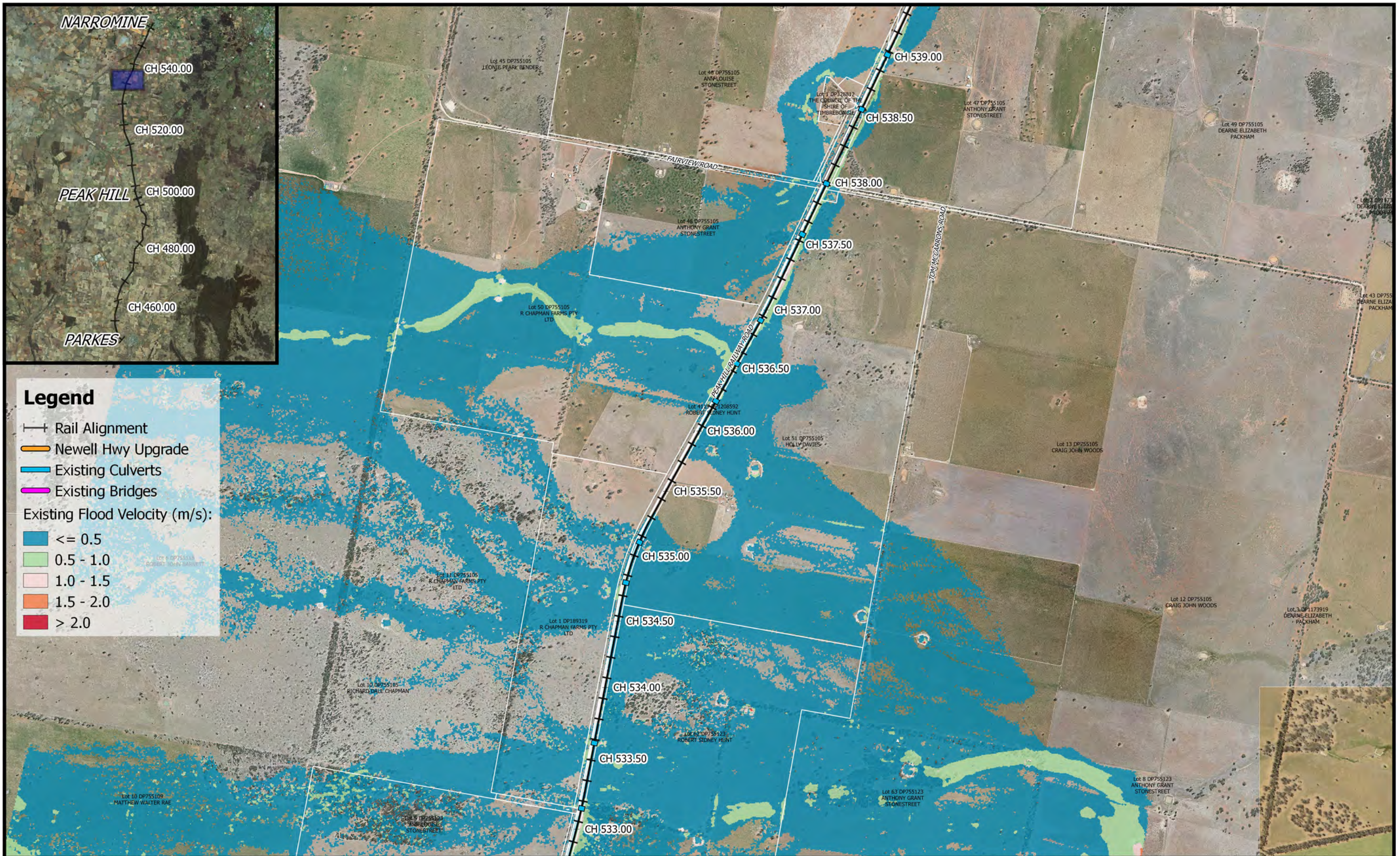
**Legend**


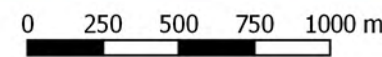

- +— Rail Alignment
- Newell Hwy Upgrade
- Existing Culverts
- Existing Bridges

Existing Flood Velocity (m/s):

- Blue: <= 0.5
- Light Green: 0.5 - 1.0
- Pink: 1.0 - 1.5
- Orange: 1.5 - 2.0
- Red: > 2.0

	 1:25,000		Date: 19/7/2018	<b>Parkes to Narromine</b> DD100% - Cross Drainage Flood Impact Assessment Results  <b>Figure EX2V21</b> <i>2% AEP Existing Flood Velocity - CH 533.00</i>
	Coordinate system: GDA 1994 MGA Zone 55 Scale ratio correct when printed at A3		Rev: A	
	Prepared By: YeohM			



	 1:25,000		Date: 19/7/2018	<b>Parkes to Narromine</b> DD100% - Cross Drainage Flood Impact Assessment Results  <b>Figure EX2V22</b> <i>2% AEP Existing Flood Velocity - CH 535.00</i>
	Coordinate system: GDA 1994 MGA Zone 55 Scale ratio correct when printed at A3		Rev: A	
	Prepared By: YeohM			





**Legend**

- +— Rail Alignment
- Newell Hwy Upgrade
- Existing Culverts
- Existing Bridges

Existing Flood Velocity (m/s):

- Blue: ≤ 0.5
- Light Green: 0.5 - 1.0
- Pink: 1.0 - 1.5
- Orange: 1.5 - 2.0
- Red: > 2.0



0 250 500 750 1000 m

1:25,000

Coordinate system: GDA 1994 MGA Zone 55  
Scale ratio correct when printed at A3



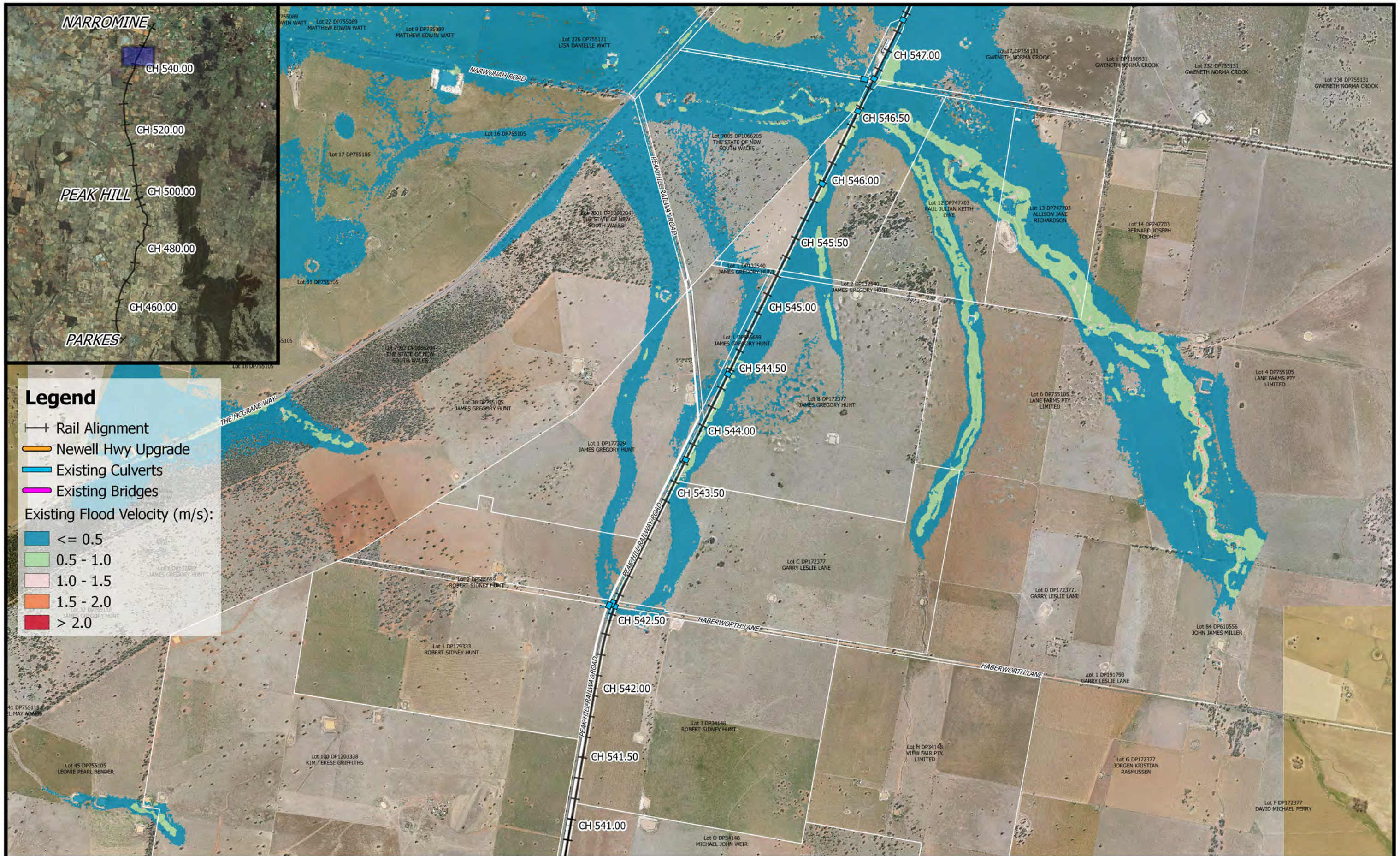
Date: 19/7/2018

Rev: A

Prepared By: YeohM

**Parkes to Narromine**  
DD100% - Cross Drainage Flood Impact Assessment Results

**Figure EX2V23**  
2% AEP Existing Flood Velocity - CH 540.00



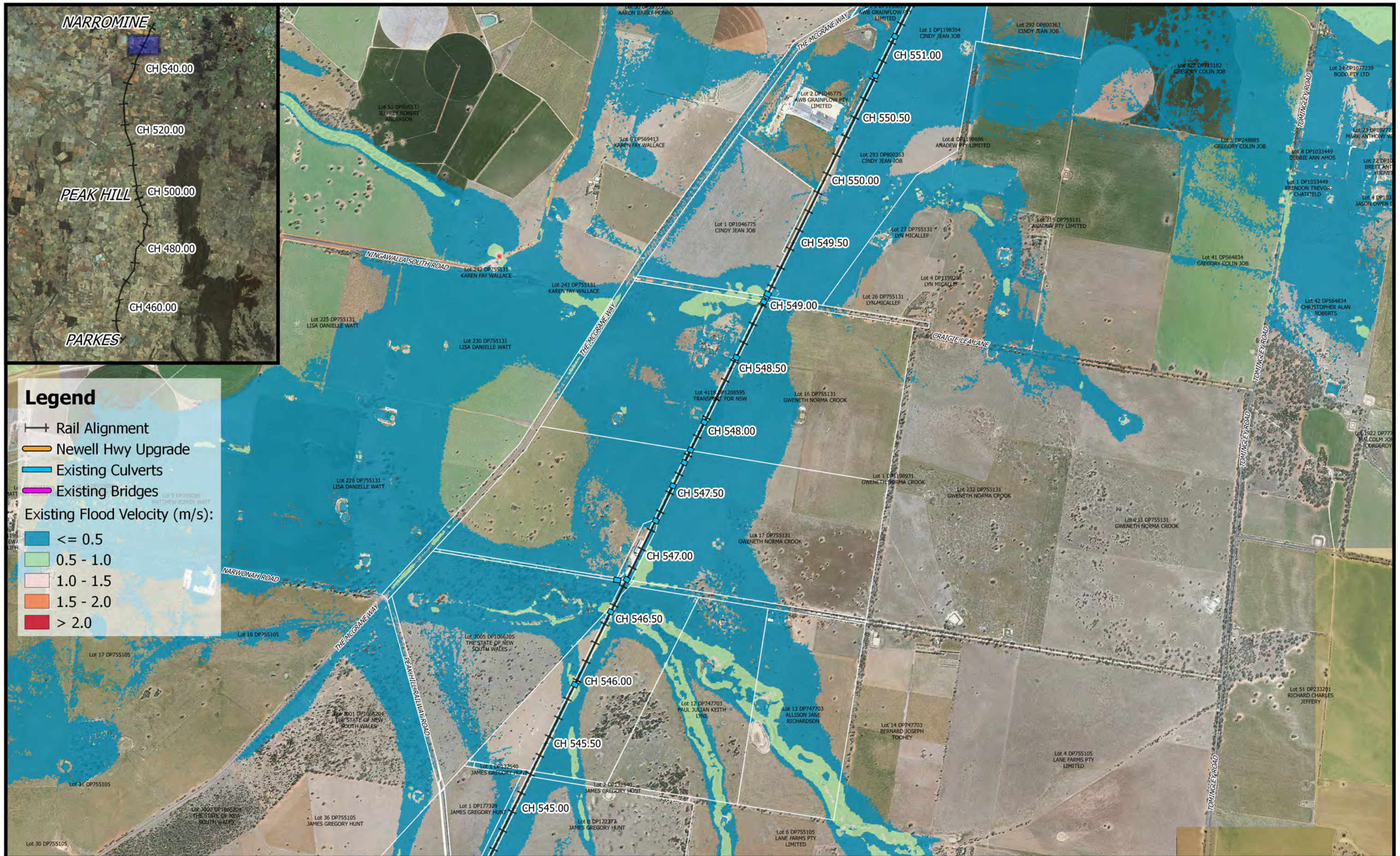
**Legend**

- +— Rail Alignment
- Newell Hwy Upgrade
- Existing Culverts
- Existing Bridges

Existing Flood Velocity (m/s):

- Blue: <= 0.5
- Light Green: 0.5 - 1.0
- Pink: 1.0 - 1.5
- Orange: 1.5 - 2.0
- Red: > 2.0

	 1:25,000		Date: 19/7/2018 Rev: A Prepared By: YeohM	<b>Parkes to Narromine</b> DD100% - Cross Drainage Flood Impact Assessment Results <b>Figure EX2V24</b> <i>2% AEP Existing Flood Velocity - CH 545.00</i>
	Coordinate system: GDA 1994 MGA Zone 55 Scale ratio correct when printed at A3			



**Legend**

- Rail Alignment
- Newell Hwy Upgrade
- Existing Culverts
- Existing Bridges

Existing Flood Velocity (m/s):

- $\le 0.5$
- 0.5 - 1.0
- 1.0 - 1.5
- 1.5 - 2.0
- $> 2.0$

	<p>1:25,000</p> <p>Coordinate system: GDA 1994 MGA Zone 55 Scale ratio correct when printed at A3</p>		<p>Date: 19/7/2018</p> <p>Rev: A</p> <p>Prepared By: YeohM</p>	<p><b>Parkes to Narromine</b> DD100% - Cross Drainage Flood Impact Assessment Results</p> <p><b>Figure EX2V25</b> <i>2% AEP Existing Flood Velocity - CH 550.00</i></p>
--	---	--	--	---