

# Appendix B – Flood Maps



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Paper Size A3  
 0 100 200 400  
 Metres  
 Map Projection: Transverse Mercator  
 Horizontal Datum: GDA 1994  
 Grid: GDA 1994 MGA Zone 56



**LEGEND**

Project area	<b>Depth (m)</b>	0.30 - 0.50	1.50 - 2.00
Train station	0.00 - 0.05	0.50 - 1.00	2.00 - 2.50
Railway	0.05 - 0.30	1.01 - 1.50	>2.50



Transport for NSW  
 Sydney Metro - Sydenham to Bankstown upgrade  
 Surface Water Assessment

Job Number | 21-25273  
 Revision | A  
 Date | 19 May 2017

**Existing 63% AEP flood depth**

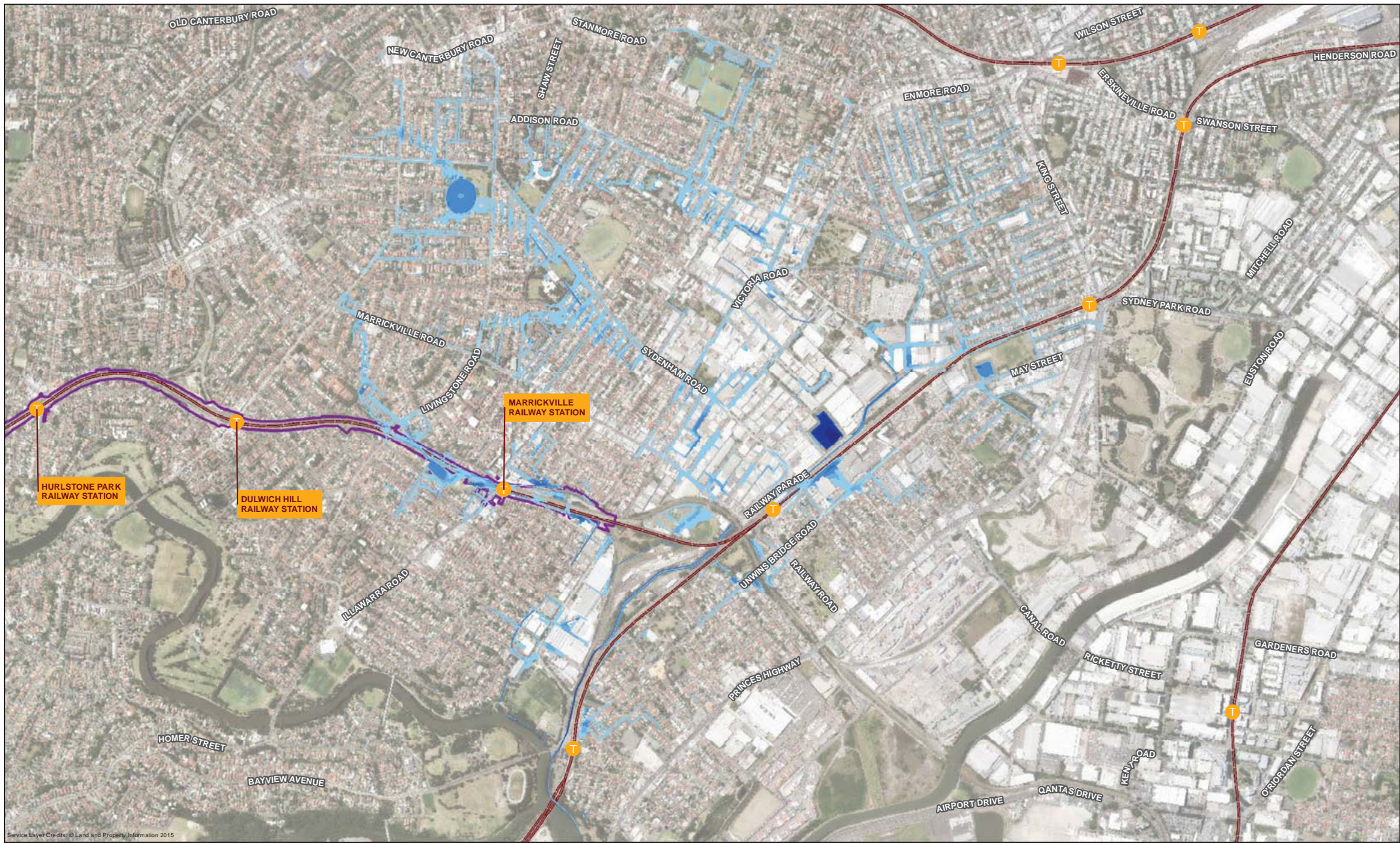
**Figure B.1**

ghdnet\ghd\AU\Sydney\Projects\2125273\GIS\Maps\Deliverables\SurfaceWater\SMA.mxd

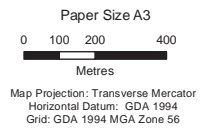
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Level 15, 133 Castlereagh Street Sydney NSW 2000 T 61 2 9239 7100 F 61 2 9239 7199 E sydmail@ghd.com.au W www.ghd.com.au



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**LEGEND**

Project area	<b>Depth (m)</b>	0.30 - 0.50	1.50 - 2.00
Train station	0.00 - 0.05	0.50 - 1.00	2.00 - 2.50
Railway	0.05 - 0.30	1.01 - 1.50	>2.50

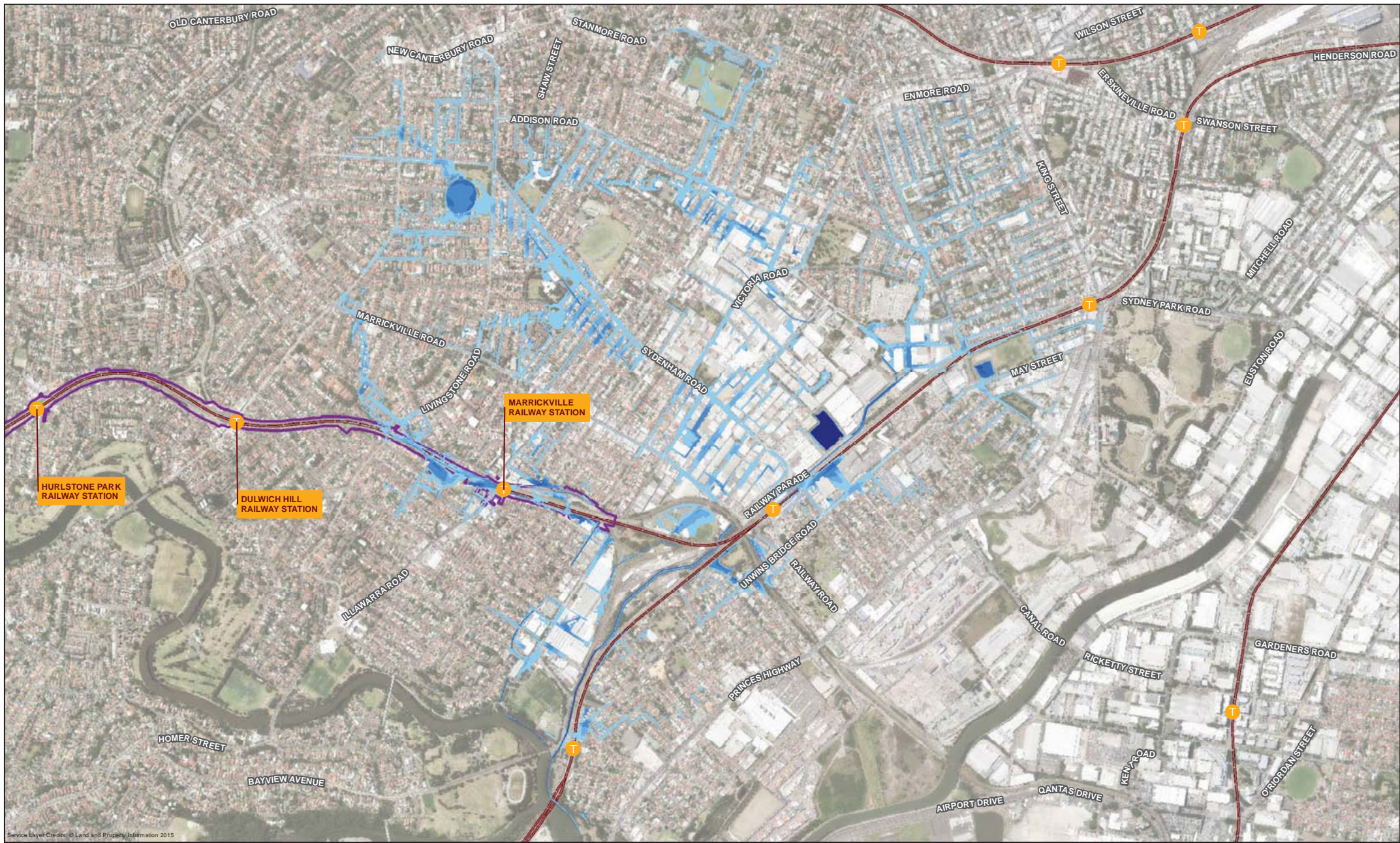


Transport for NSW  
Sydney Metro - Sydenham to Bankstown upgrade  
Surface Water Assessment

Job Number | 21-25273  
Revision | A  
Date | 22 May 2017

**Existing 39% AEP flood depth**

**Figure B.2**



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Paper Size A3  
 0 100 200 400  
 Metres  
 Map Projection: Transverse Mercator  
 Horizontal Datum: GDA 1994  
 Grid: GDA 1994 MGA Zone 56



**LEGEND**

Project area	0.00 - 0.05	0.30 - 0.50	1.50 - 2.00
Train station	0.05 - 0.30	0.50 - 1.00	2.00 - 2.50
Railway	1.01 - 1.50	>2.50	



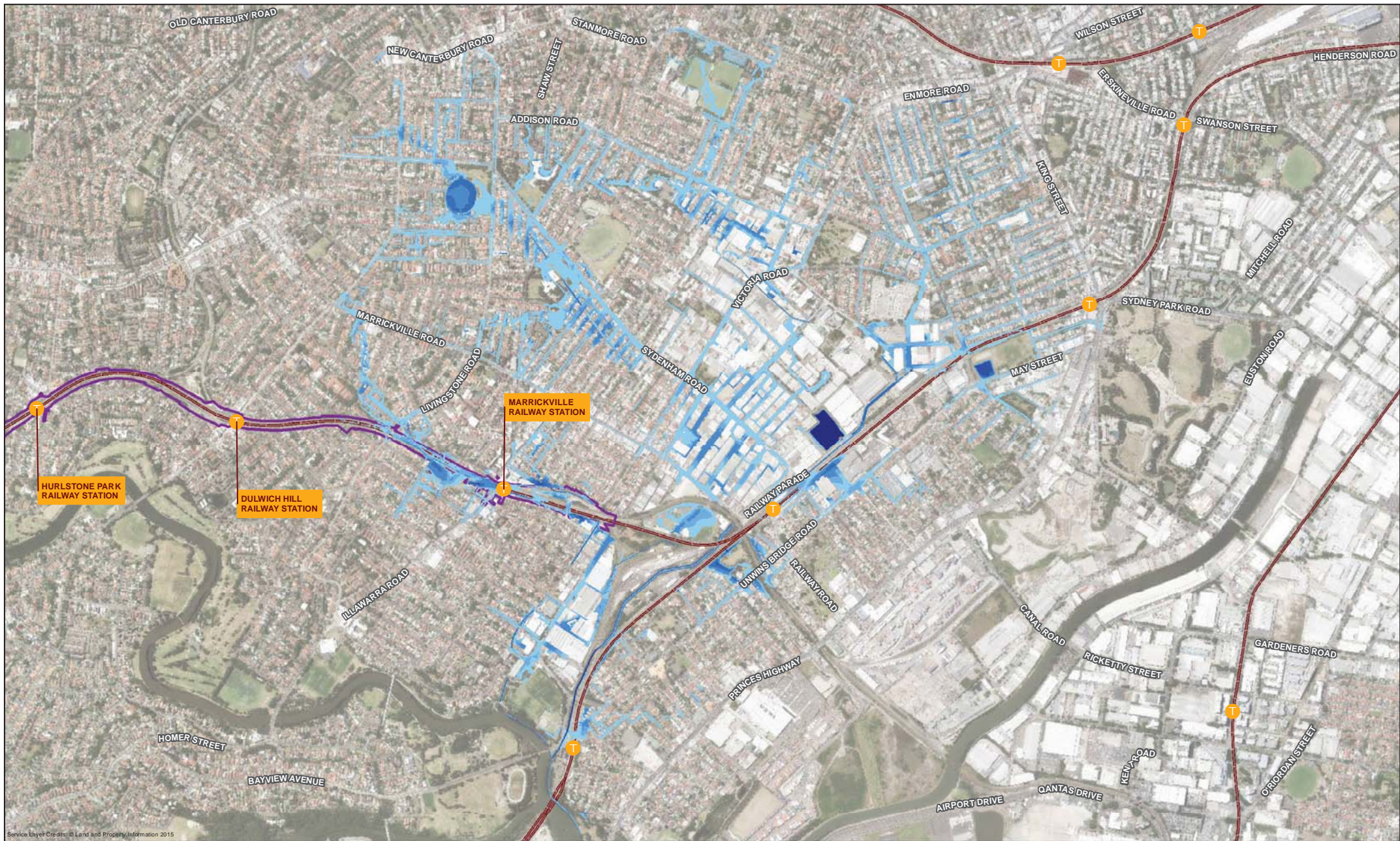
Transport for NSW  
 Sydney Metro - Sydenham to Bankstown upgrade  
 Surface Water Assessment

Job Number | 21-25273  
 Revision | A  
 Date | 22 May 2017

**Existing 18% AEP flood depth**

**Figure B.3**

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 Data source: Aerial imagery - sixmaps 2016, General topo - NSW LPI DTDB 2012. Created by:afoddy

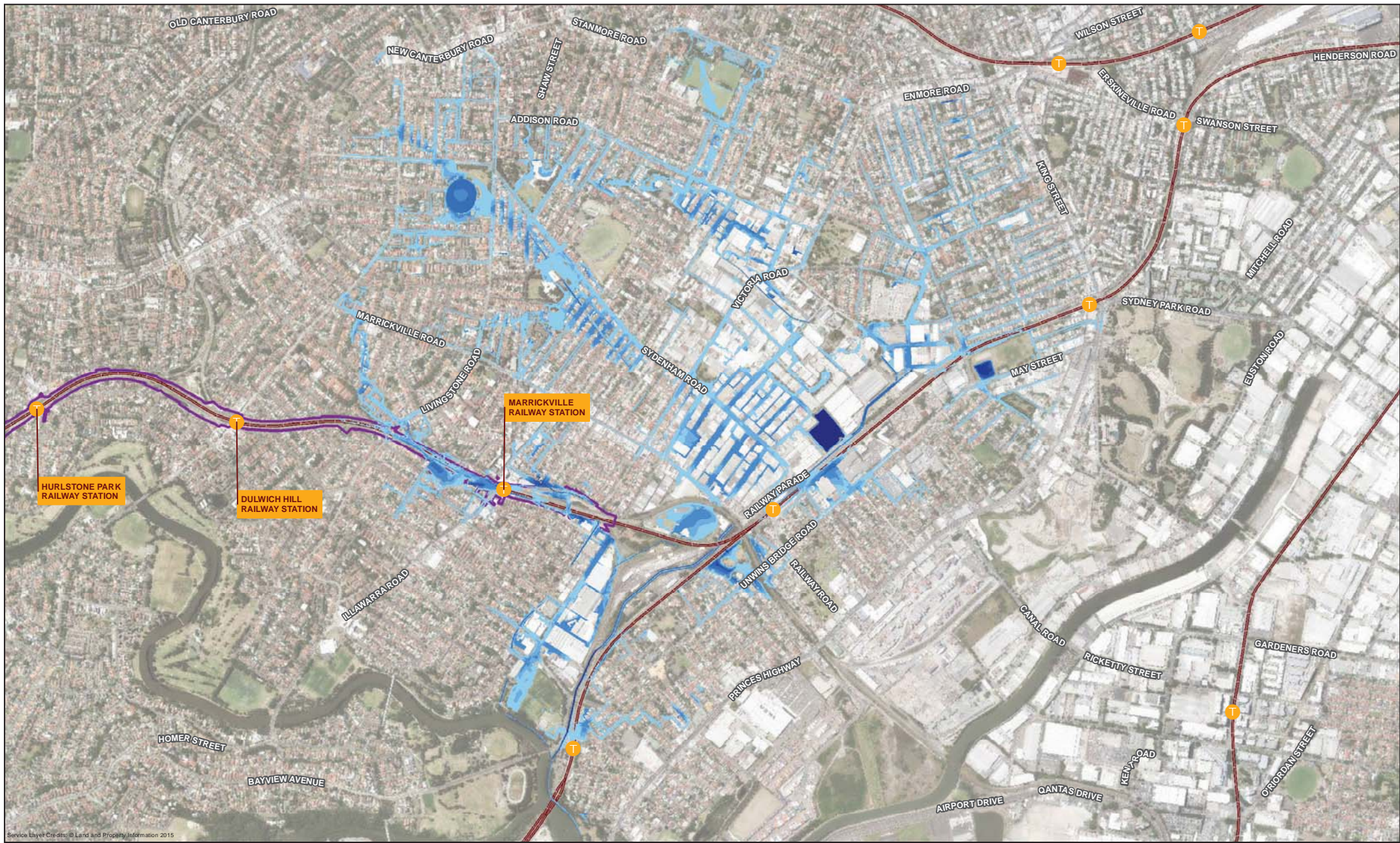


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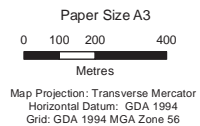
<p>Paper Size A3</p> <p>0 100 200 400 Metres</p> <p>Map Projection: Transverse Mercator Horizontal Datum: GDA 1994 Grid: GDA 1994 MGA Zone 56</p>		<p><b>LEGEND</b></p> <p> Project area</p> <p> Train station</p> <p> Railway</p>	<table border="0"> <tr> <td><b>Depth (m)</b></td> <td> 0.00 - 0.05</td> <td> 0.30 - 0.50</td> <td> 1.50 - 2.00</td> </tr> <tr> <td></td> <td> 0.05 - 0.30</td> <td> 0.50 - 1.00</td> <td> 2.00 - 2.50</td> </tr> <tr> <td></td> <td> 1.01 - 1.50</td> <td> &gt;2.50</td> <td></td> </tr> </table>	<b>Depth (m)</b>	0.00 - 0.05	0.30 - 0.50	1.50 - 2.00		0.05 - 0.30	0.50 - 1.00	2.00 - 2.50		1.01 - 1.50	>2.50			<p>Transport for NSW Sydney Metro - Sydenham to Bankstown upgrade Surface Water Assessment</p>	<p>Job Number   21-25273 Revision   A Date   22 May 2017</p>
<b>Depth (m)</b>	0.00 - 0.05	0.30 - 0.50	1.50 - 2.00															
	0.05 - 0.30	0.50 - 1.00	2.00 - 2.50															
	1.01 - 1.50	>2.50																

Existing 10% AEP flood depth

Figure B.4



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LEGEND

Project area	<b>Depth (m)</b>	0.30 - 0.50	1.50 - 2.00
Train station	0.00 - 0.05	0.50 - 1.00	2.00 - 2.50
Railway	0.05 - 0.30	1.01 - 1.50	>2.50

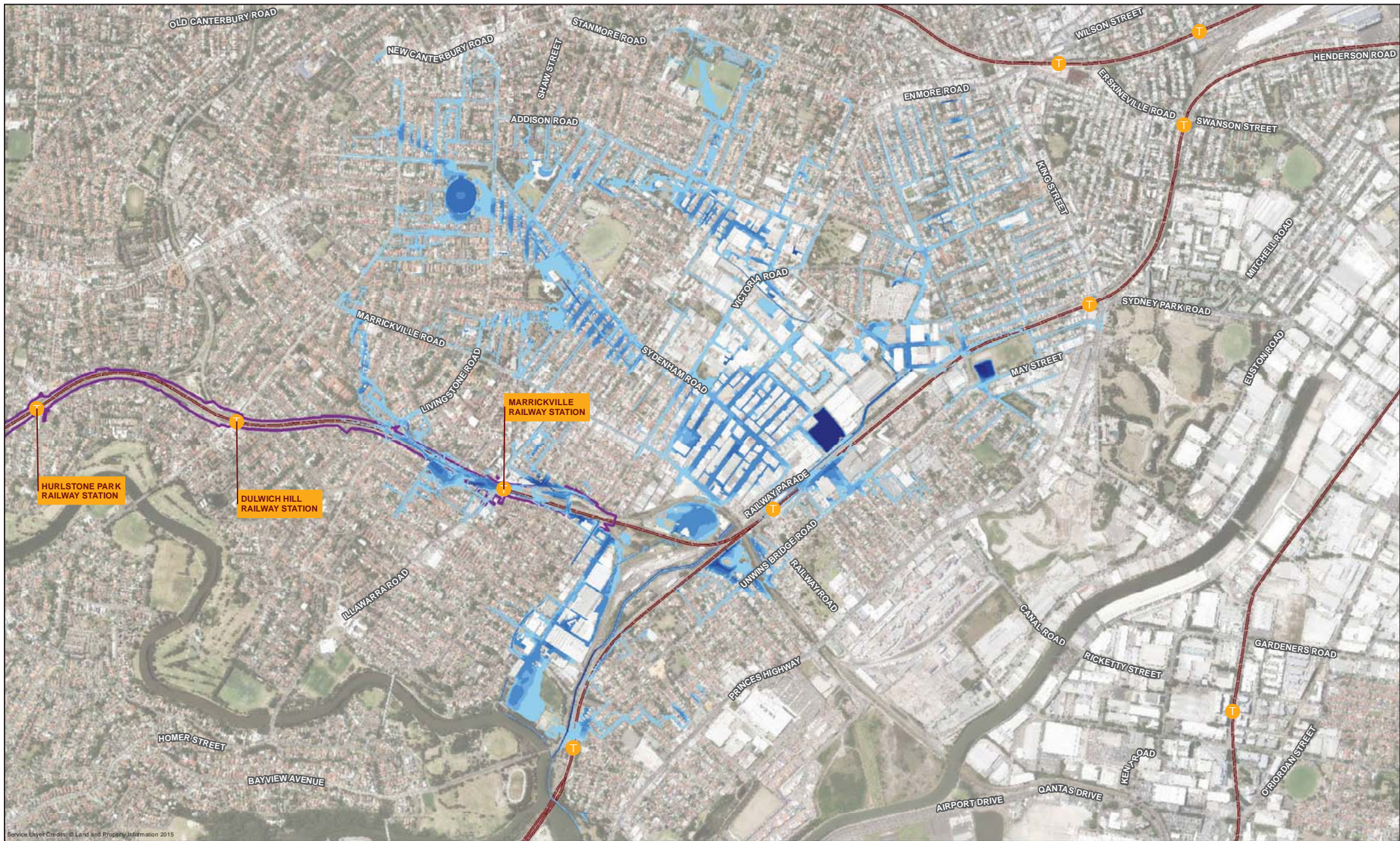


Transport for NSW  
Sydney Metro - Sydenham to Bankstown upgrade  
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Existing 5% AEP flood depth

Figure B.5



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Paper Size A3

0 100 200 400  
Metres

Map Projection: Transverse Mercator  
Horizontal Datum: GDA 1994  
Grid: GDA 1994 MGA Zone 56



**LEGEND**

Project area	0.00 - 0.05	0.30 - 0.50	1.50 - 2.00
Train station	0.05 - 0.30	0.50 - 1.00	2.00 - 2.50
Railway	1.01 - 1.50	>2.50	

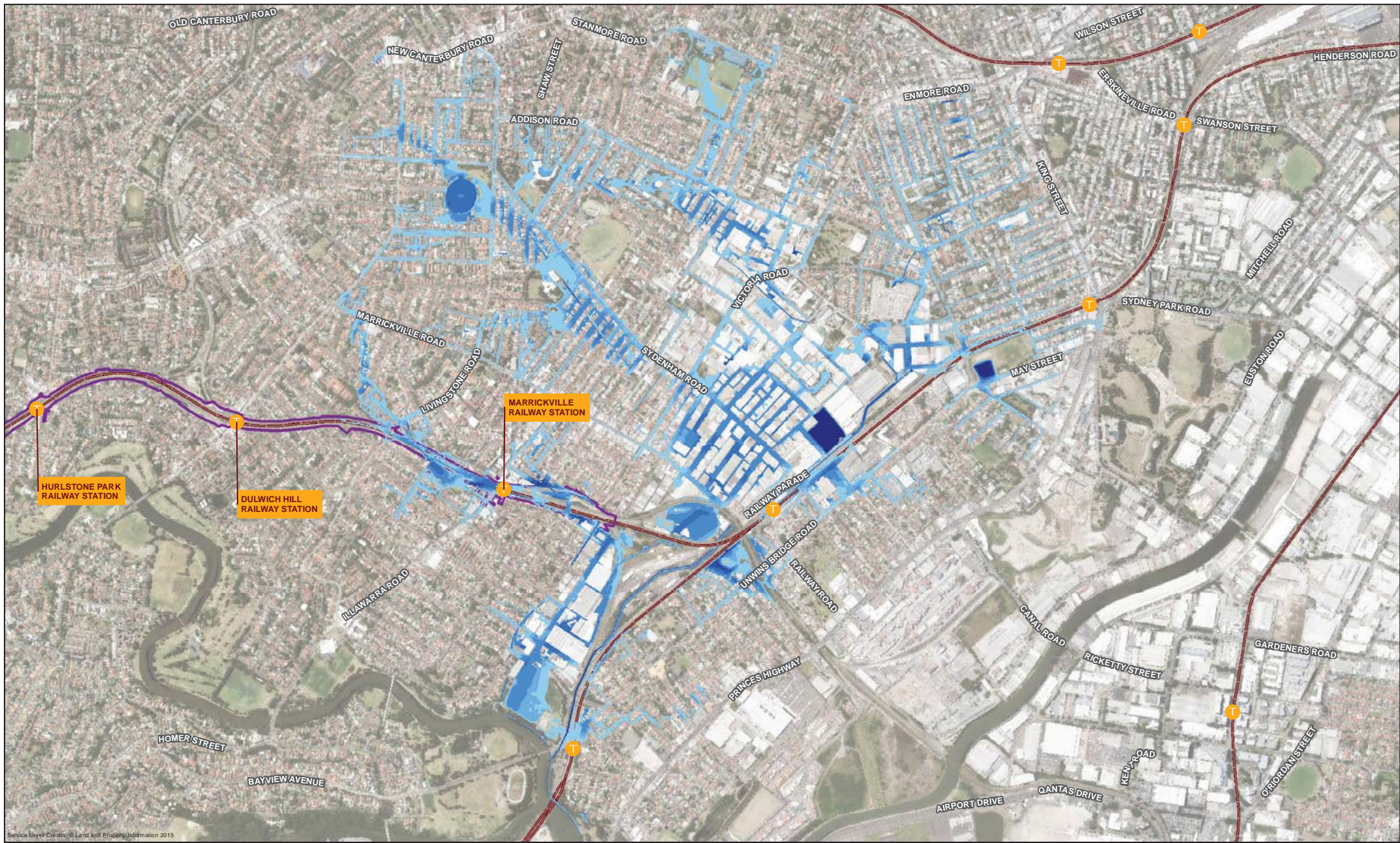


Transport for NSW  
Sydney Metro - Sydenham to Bankstown upgrade  
Surface Water Assessment

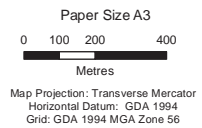
Job Number | 21-25273  
Revision | A  
Date | 22 May 2017

Existing 2% AEP flood depth

Figure B.6



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**LEGEND**

Project area	<b>Depth (m)</b>	0.30 - 0.50	1.50 - 2.00
Train station	0.00 - 0.05	0.50 - 1.00	2.00 - 2.50
Railway	0.05 - 0.30	1.01 - 1.50	>2.50



Transport for NSW  
Sydney Metro - Sydenham to Bankstown upgrade  
Surface Water Assessment

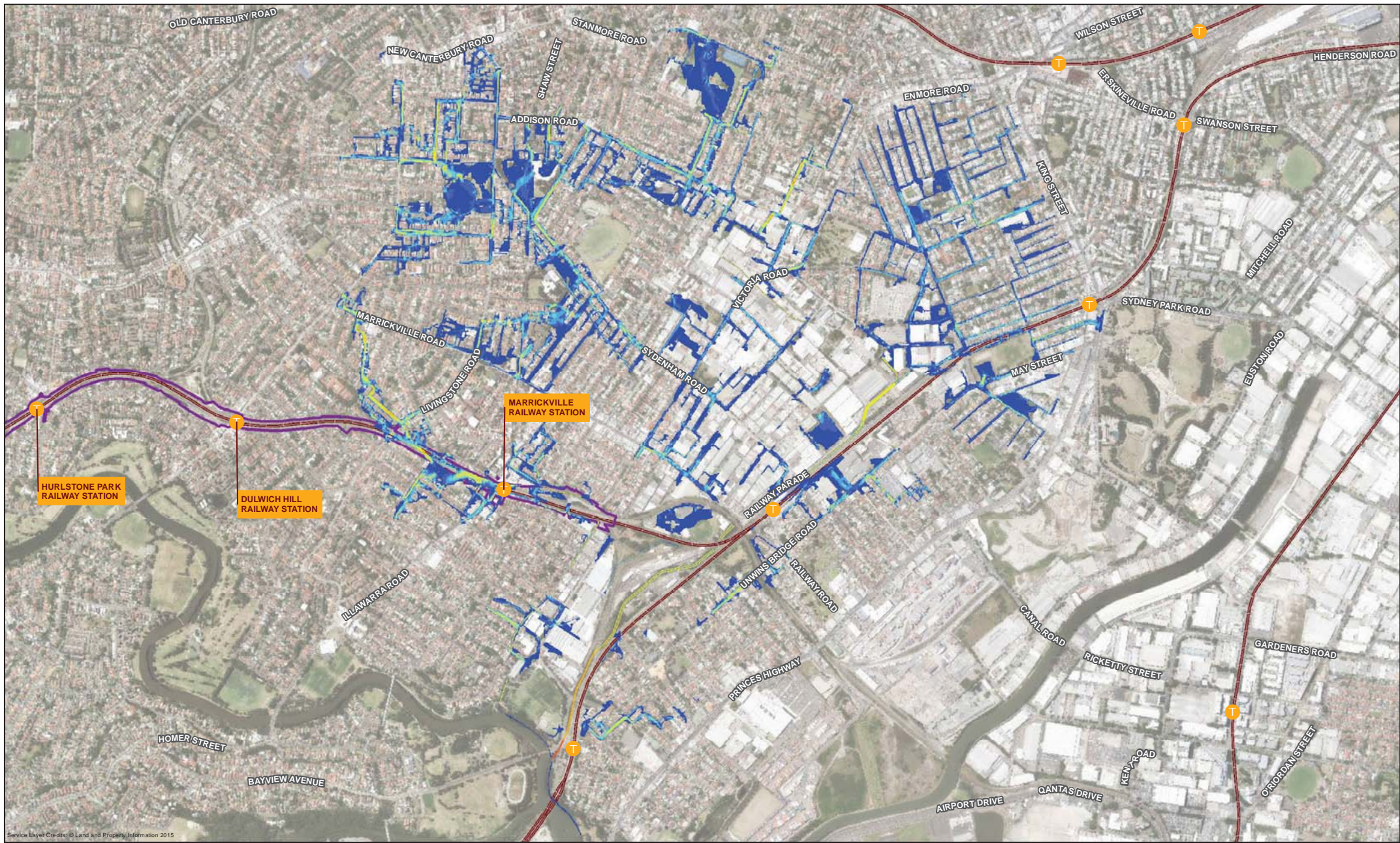
Job Number | 21-25273  
Revision | A  
Date | 22 May 2017

**Existing 1% AEP flood depth**

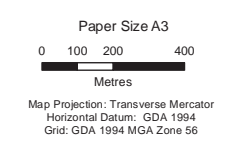
**Figure B.7**

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**LEGEND**

Project area	<b>Velocity (m/s)</b>	0.6 to 0.8	2.0 to 3.0
Train station	0 to 0.2	0.8 to 1.0	3.0 to 5.0
Railway	0.2 to 0.4	1.0 to 1.5	Greater than 5.0
	0.4 to 0.6	1.5 to 2.0	



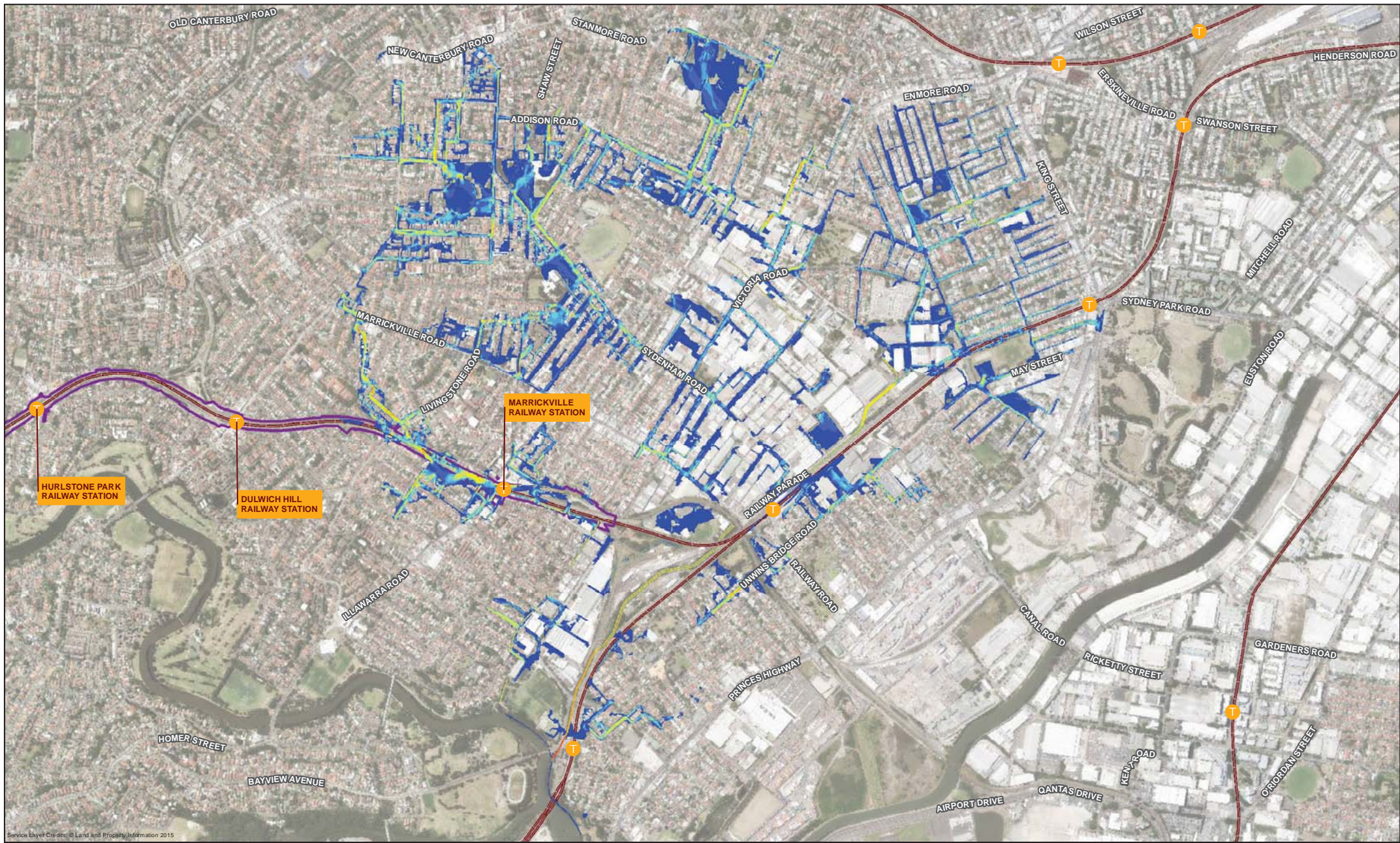
Transport for NSW  
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Surface Water Assessment

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Revision | A  
Date | 22 May 2017

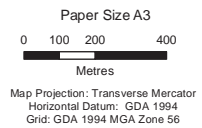
**Existing 63% AEP flood velocity**

**Figure B.8**

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**LEGEND**

Project area	<b>Velocity (m/s)</b>	0.6 to 0.8	2.0 to 3.0
Train station	0 to 0.2	0.8 to 1.0	3.0 to 5.0
Railway	0.2 to 0.4	1.0 to 1.5	Greater than 5.0
	0.4 to 0.6	1.5 to 2.0	



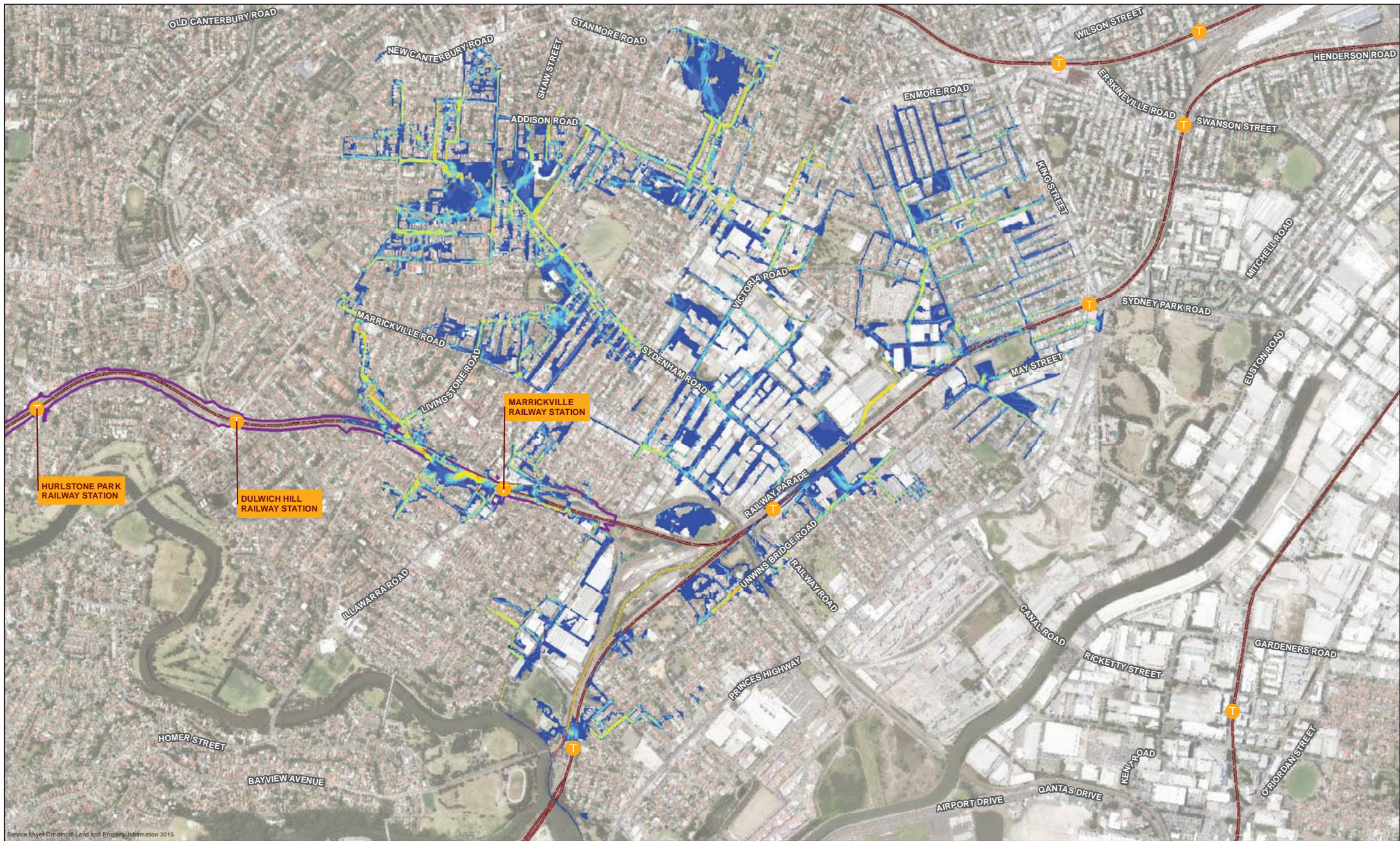
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Revision | A  
Date | 22 May 2017

**Existing 39% AEP flood velocity**

**Figure B.9**

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Paper Size A3

0 100 200 400  
Metres

Map Projection: Transverse Mercator  
Horizontal Datum: GDA 1994  
Grid: GDA 1994 MGA Zone 56



**LEGEND**

- Project area
- T Train station
- Railway

Velocity (m/s)			
	0 to 0.2		0.8 to 1.0
	0.2 to 0.4		1.0 to 1.5
	0.4 to 0.6		1.5 to 2.0
	0.6 to 0.8		2.0 to 3.0
	0.8 to 1.0		3.0 to 5.0
	Greater than 5.0		



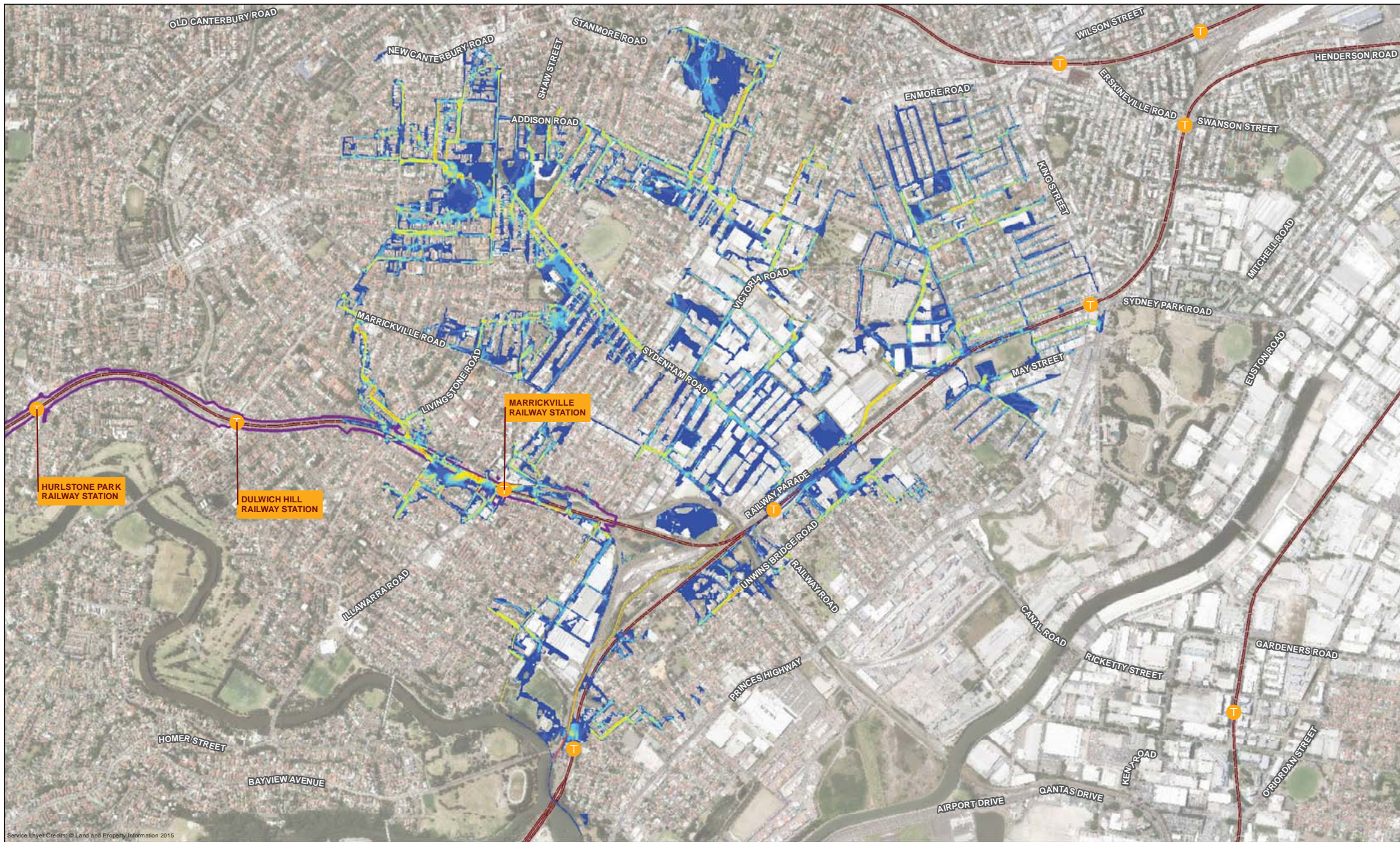
Transport for NSW  
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Surface Water Assessment

Job Number | 21-25273  
Revision | A  
Date | 22 May 2017

Existing 18% AEP flood velocity

Figure B.10

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Paper Size A3

0 100 200 400  
Metres

Map Projection: Transverse Mercator  
Horizontal Datum: GDA 1994  
Grid: GDA 1994 MGA Zone 56



**LEGEND**

- Project area
- Train station
- Railway

**Velocity (m/s)**

0 to 0.2	0.2 to 0.4	0.4 to 0.6	0.6 to 0.8	0.8 to 1.0	1.0 to 1.5	1.5 to 2.0	2.0 to 3.0	3.0 to 5.0	Greater than 5.0
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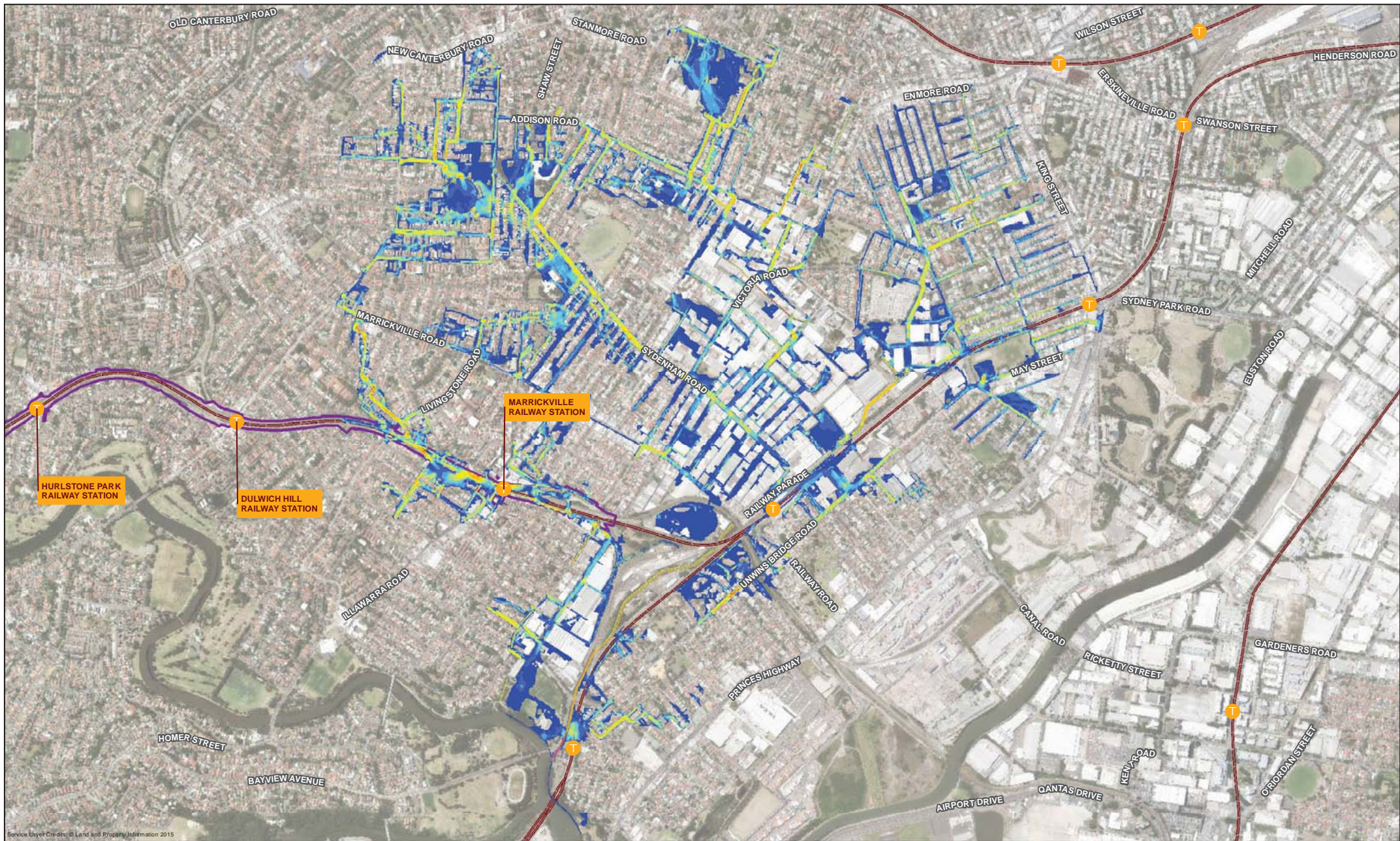
Transport for NSW  
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Surface Water Assessment

Job Number | 21-25273  
Revision | A  
Date | 22 May 2017

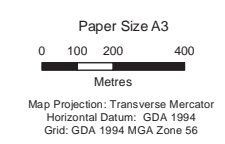
Existing 10% AEP flood velocity

Figure B.11

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Data source: Aerial imagery - sixmaps 2016, General topo - NSW LPI DTDB 2012. Created by:afoddy



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**LEGEND**

Project area	<b>Velocity (m/s)</b>	0.6 to 0.8	2.0 to 3.0
Train station	0 to 0.2	0.8 to 1.0	3.0 to 5.0
Railway	0.2 to 0.4	1.0 to 1.5	Greater than 5.0
	0.4 to 0.6	1.5 to 2.0	



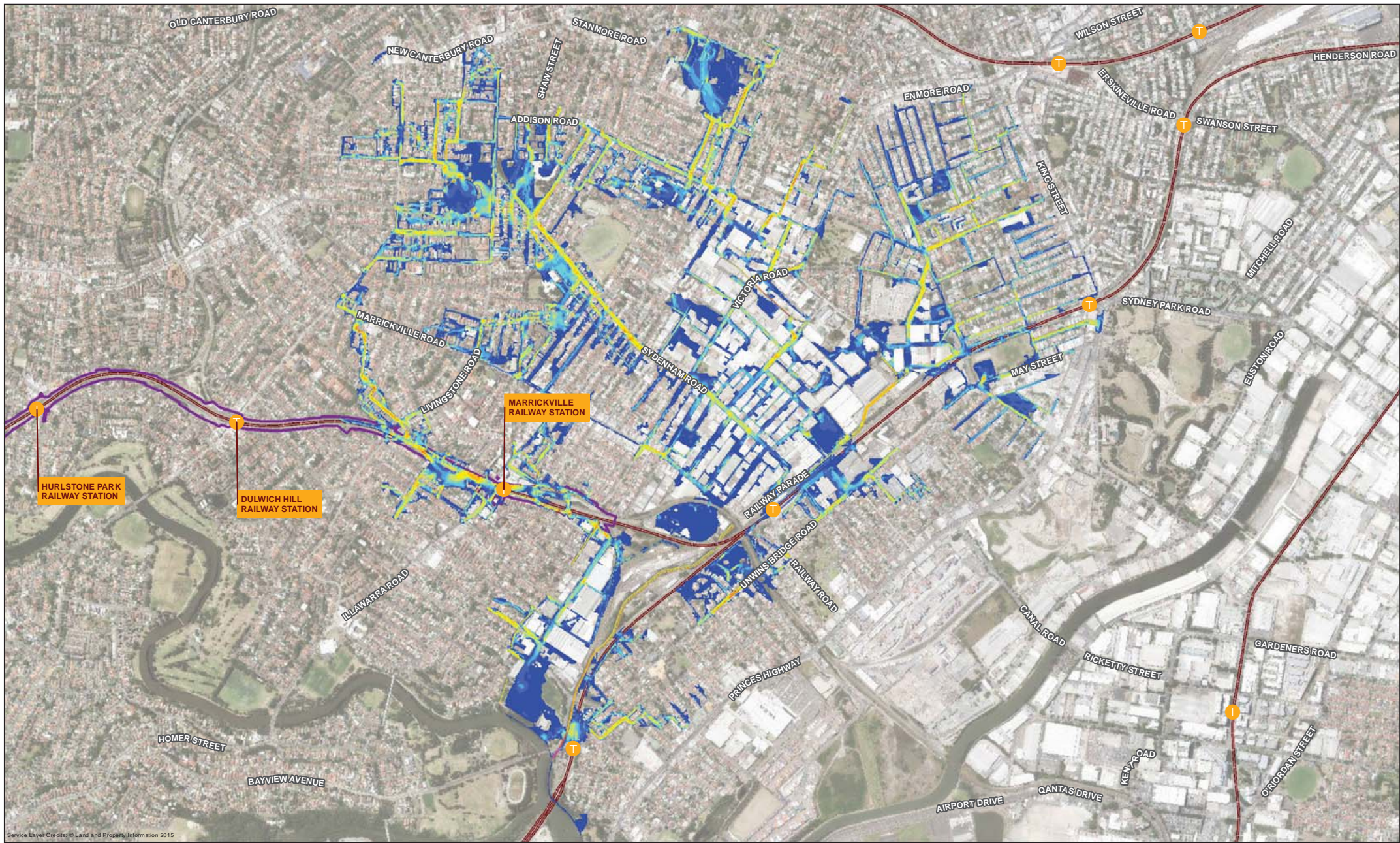
Transport for NSW  
Sydney Metro - Sydenham to Bankstown upgrade  
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Job Number | 21-25273  
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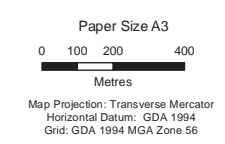
Existing 5% AEP flood velocity

Figure B.12

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**LEGEND**

- Project area
- Train station
- Railway

Velocity (m/s)	Color
0 to 0.2	Blue
0.2 to 0.4	Dark Blue
0.4 to 0.6	Light Blue
0.6 to 0.8	Light Green
0.8 to 1.0	Green
1.0 to 1.5	Yellow-Green
1.5 to 2.0	Yellow
2.0 to 3.0	Orange
3.0 to 5.0	Red
Greater than 5.0	Purple



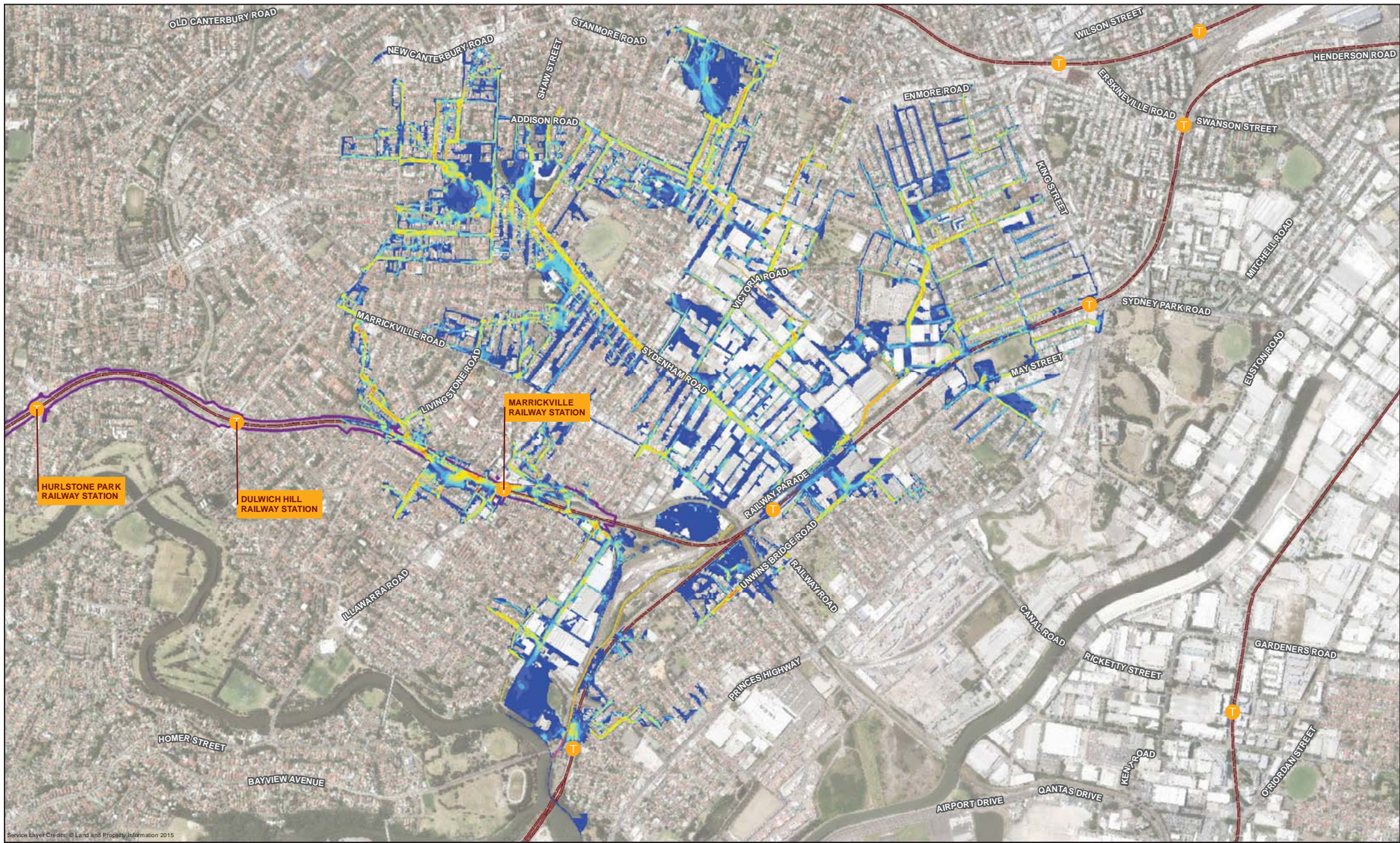
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Surface Water Assessment

Job Number | 21-25273  
Revision | A  
Date | 22 May 2017

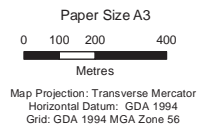
**Existing 2% AEP flood velocity**

**Figure B.13**

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LEGEND

Project area	<b>Velocity (m/s)</b>	0.6 to 0.8	2.0 to 3.0
Train station	0 to 0.2	0.8 to 1.0	3.0 to 5.0
Railway	0.2 to 0.4	1.0 to 1.5	Greater than 5.0
	0.4 to 0.6	1.5 to 2.0	



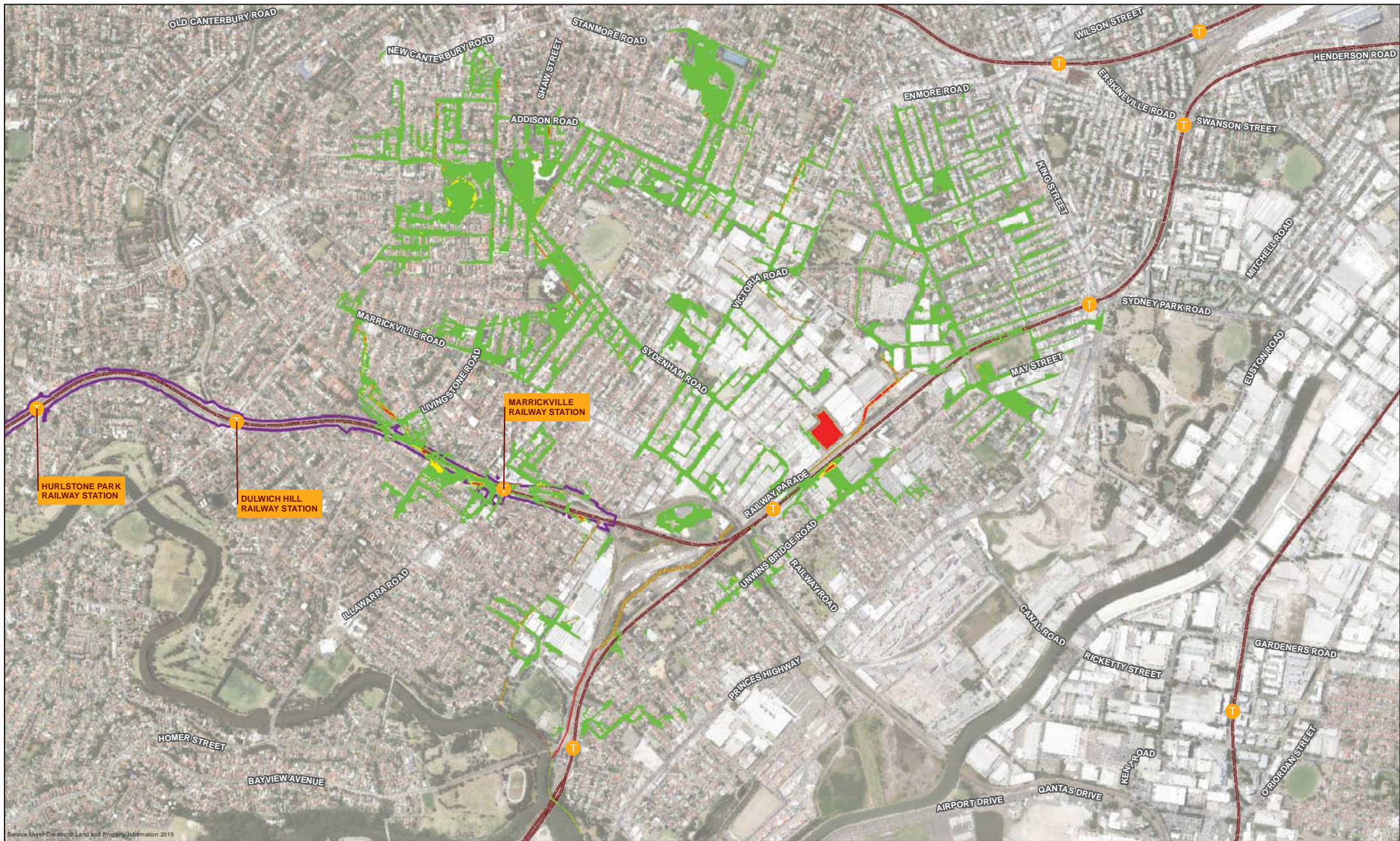
Transport for NSW  
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Surface Water Assessment

Job Number | 21-25273  
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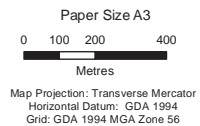
Existing 1% AEP flood velocity

Figure B.14

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**LEGEND**

- Project area
- 1 - Low Hazard
- 2 - Transitional Hazard
- 3 - High Hazard
- Train station
- Railway



Transport for NSW  
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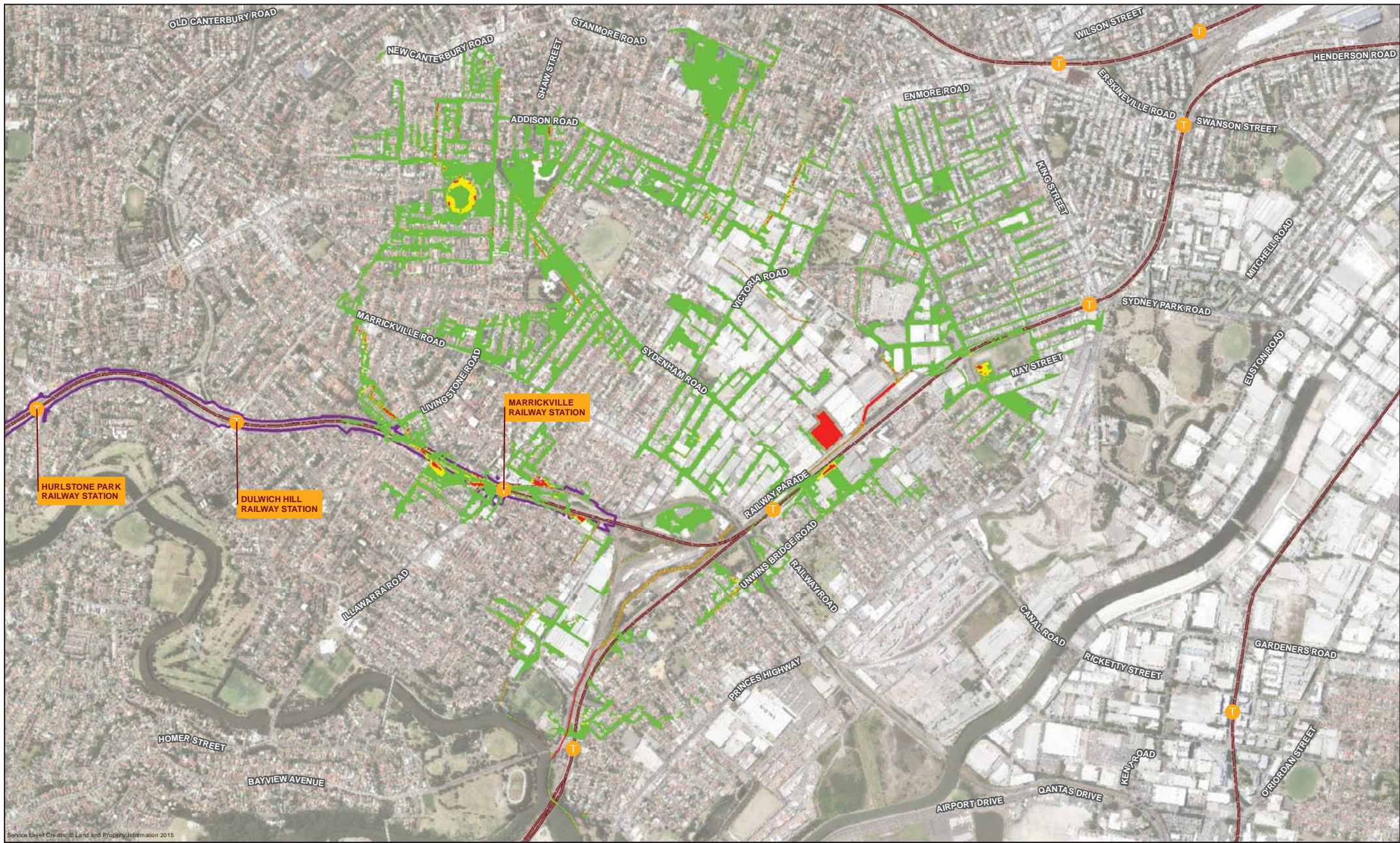
Job Number | 21-25273  
Revision | A  
Date | 22 May 2017

**Existing 63% AEP  
provisional flood hazard**

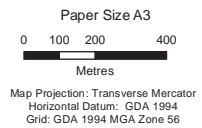
**Figure B.15**

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Data source: Aerial imagery - sixmaps 2016, General topo - NSW LPI DTDB 2012. Created by:afoddy





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**LEGEND**

- Project area
  - Train station
  - Railway
- Provisional Hazard Category**
- 1 - Low Hazard
  - 2 - Transitional Hazard
  - 3 - High Hazard



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**Existing 39% AEP  
provisional flood hazard**

**Figure B.16**

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Paper Size A3  
 0 100 200 400  
 Metres  
 Map Projection: Transverse Mercator  
 Horizontal Datum: GDA 1994  
 Grid: GDA 1994 MGA Zone 56



**LEGEND**

- Project area
  - T Train station
  - Railway
- Provisional Hazard Category**
- 1 - Low Hazard
  - 2 - Transitional Hazard
  - 3 - High Hazard



Transport for NSW  
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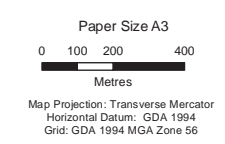
**Existing 18% AEP  
 provisional flood hazard**

**Figure B.17**

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LEGEND	
	Project area
	Train station
	Railway
Provisional Hazard Category	
	1 - Low Hazard
	2 - Transitional Hazard
	3 - High Hazard

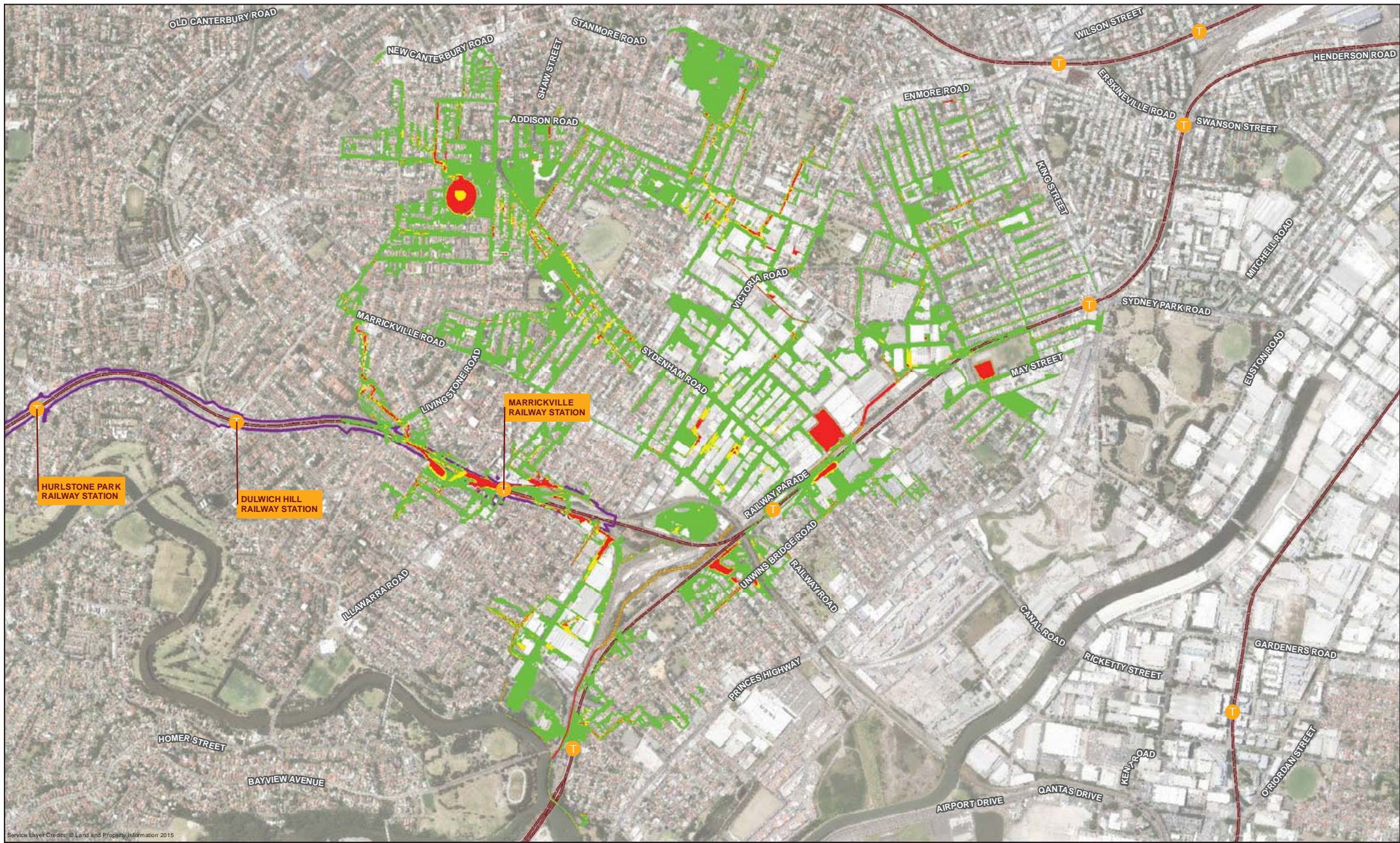


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**Existing 10% AEP  
provisional flood hazard**

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Figure B.18









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 Metres  
 Map Projection: Transverse Mercator  
 Horizontal Datum: GDA 1994  
 Grid: GDA 1994 MGA Zone 56



**LEGEND**

-  Project area
  -  Train station
  -  Railway
- Provisional Hazard Category**
-  1 - Low Hazard
  -  2 - Transitional Hazard
  -  3 - High Hazard



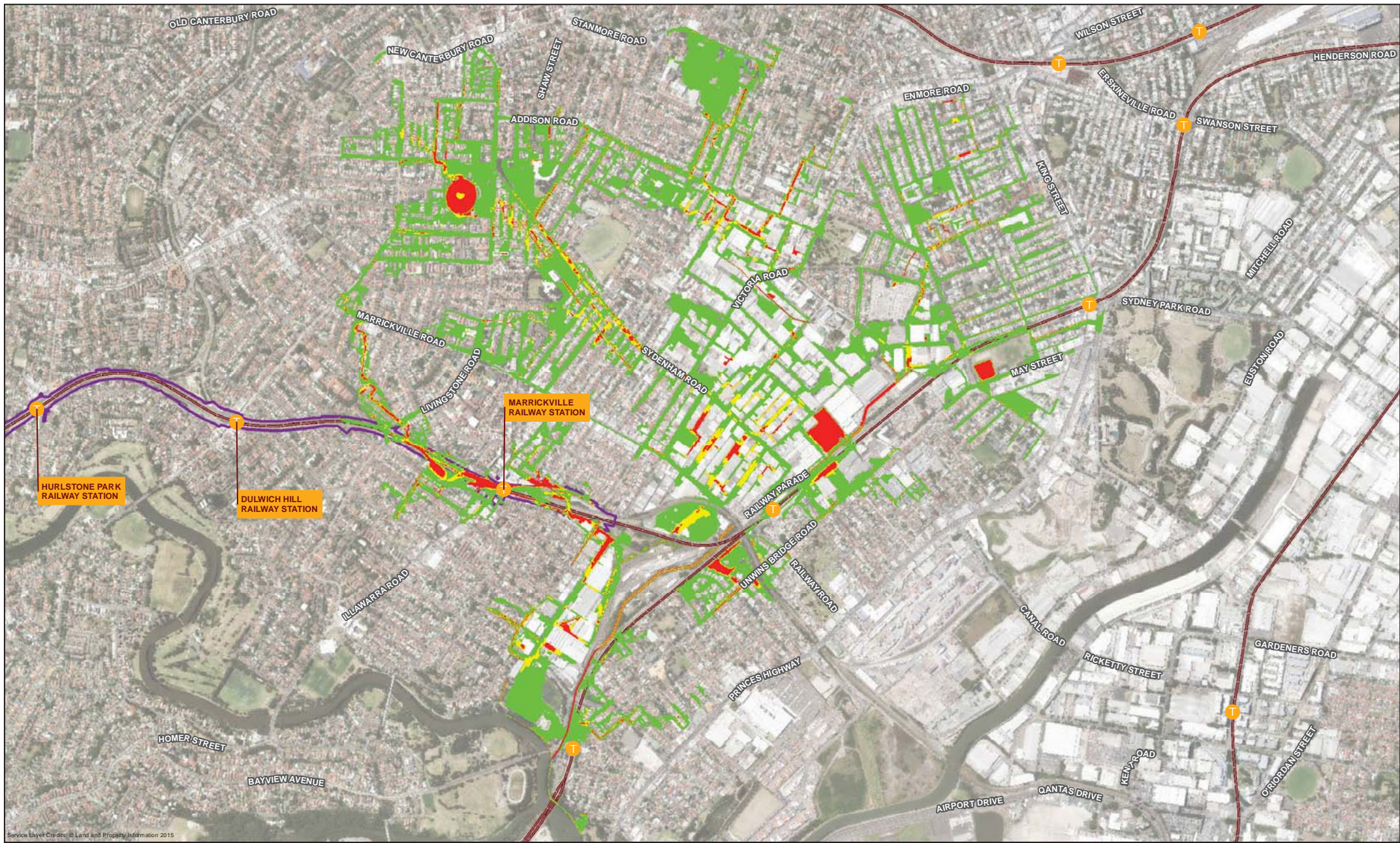
Transport for NSW  
 Sydney Metro - Sydenham to Bankstown upgrade  
 Surface Water Assessment

Job Number | 21-25273  
 Revision | A  
 Date | 22 May 2017

**Existing 5% AEP  
 provisional flood hazard**

**Figure B.19**

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Paper Size A3  
 0 100 200 400  
 Metres  
 Map Projection: Transverse Mercator  
 Horizontal Datum: GDA 1994  
 Grid: GDA 1994 MGA Zone 56



**LEGEND**

- Project area
  - T Train station
  - Railway
- Provisional Hazard Category**
- 1 - Low Hazard
  - 2 - Transitional Hazard
  - 3 - High Hazard



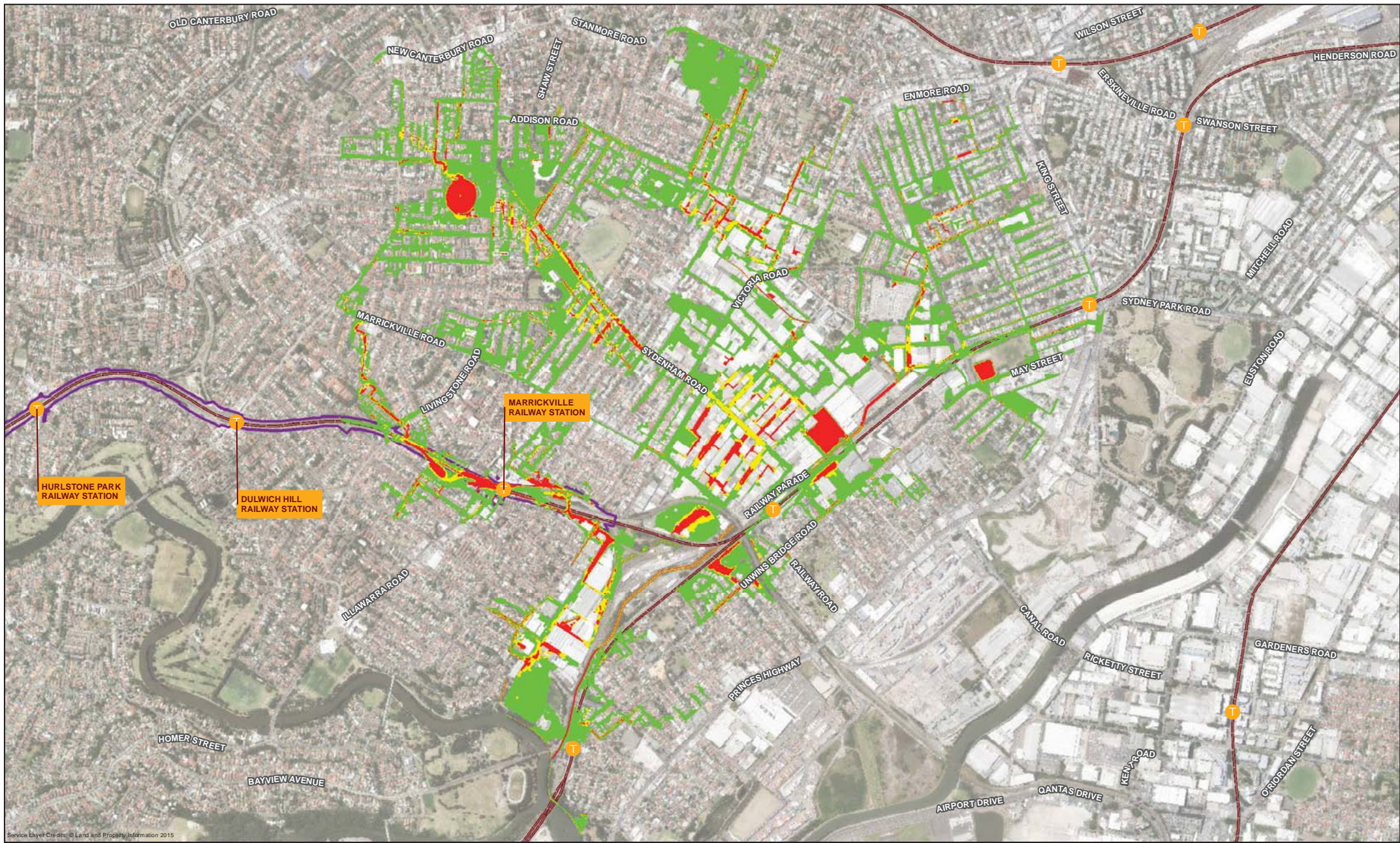
Transport for NSW  
 Sydney Metro - Sydenham to Bankstown upgrade  
 Surface Water Assessment

Job Number | 21-25273  
 Revision | A  
 Date | 22 May 2017

**Existing 2% AEP  
 provisional flood hazard**

**Figure B.20**

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Paper Size A3  
 0 100 200 400  
 Metres  
 Map Projection: Transverse Mercator  
 Horizontal Datum: GDA 1994  
 Grid: GDA 1994 MGA Zone 56



**LEGEND**

- Project area
  - Train station
  - Railway
- Provisional Hazard Category**
- 1 - Low Hazard
  - 2 - Transitional Hazard
  - 3 - High Hazard

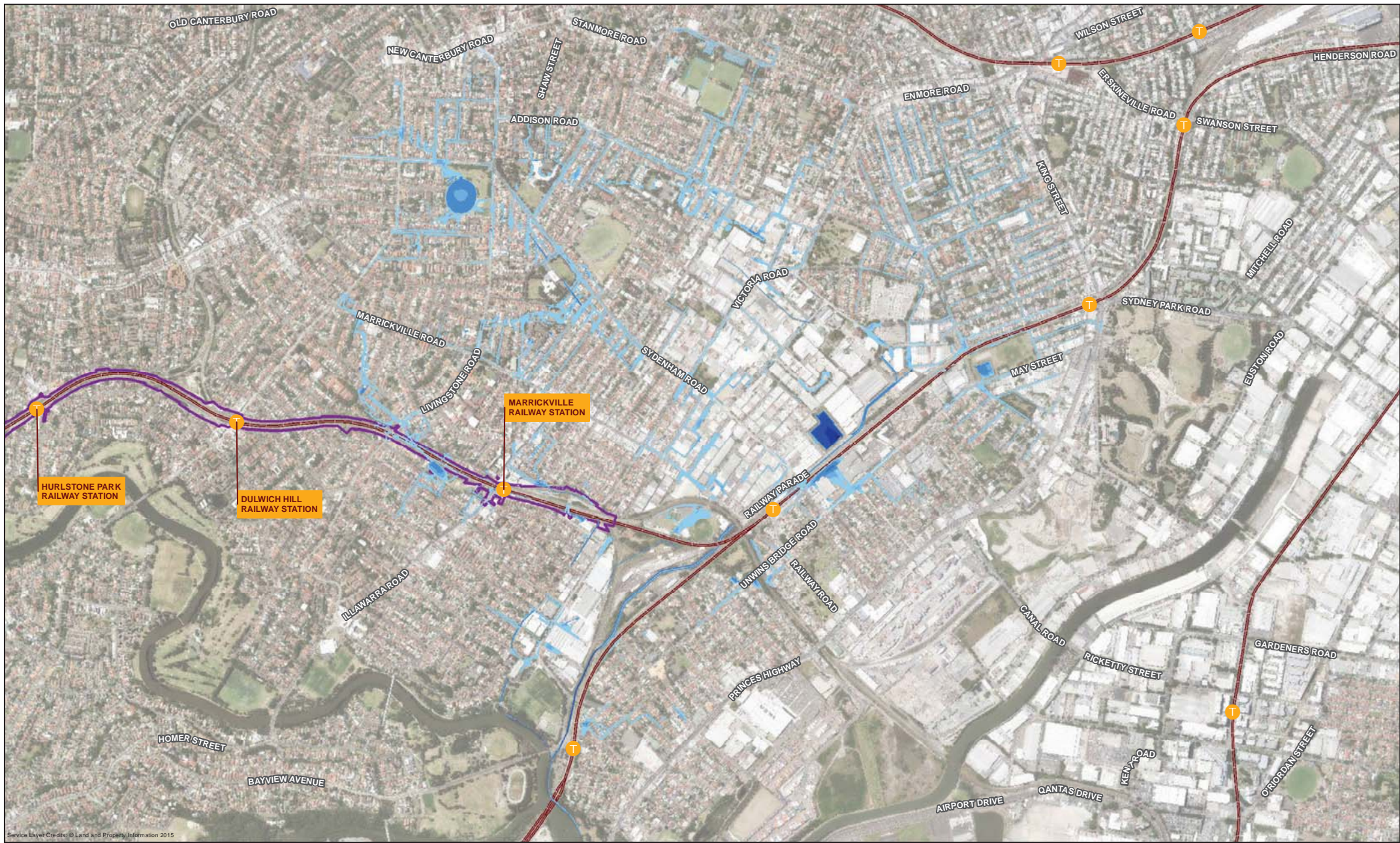


Transport for NSW  
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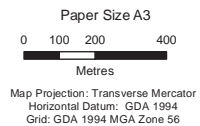
Job Number | 21-25273  
 Revision | A  
 Date | 22 May 2017

**Existing 1% AEP  
 provisional flood hazard**

**Figure B.21**



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LEGEND

Project area	0.00 - 0.05	0.30 - 0.50	1.50 - 2.00
Train station	0.05 - 0.30	0.50 - 1.00	2.00 - 2.50
Railway	1.01 - 1.50	>2.50	



Transport for NSW  
Sydney Metro - Sydenham to Bankstown upgrade  
Surface Water Assessment

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Post-developed 63%  
AEP flood depth

Figure B.22

G:\2125273\GIS\Maps\Deliverables\SurfaceWater\SMA.mxd

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Paper Size A3

0 100 200 400 Metres

Map Projection: Transverse Mercator  
Horizontal Datum: GDA 1994  
Grid: GDA 1994 MGA Zone 56

**LEGEND**

Project area	<b>Depth (m)</b>	0.30 - 0.50	1.50 - 2.00
Train station	0.00 - 0.05	0.50 - 1.00	2.00 - 2.50
Railway	0.05 - 0.30	1.01 - 1.50	>2.50

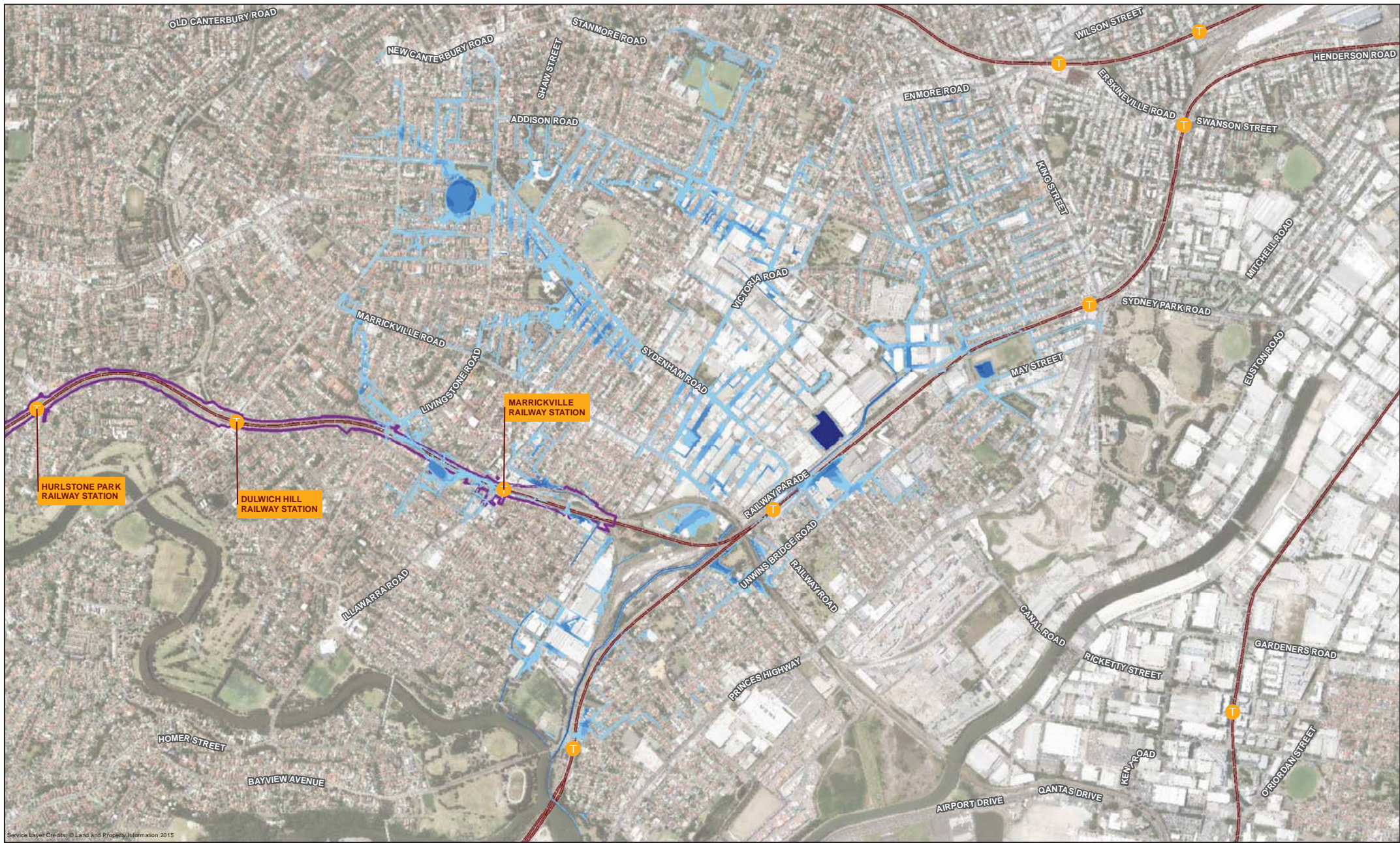
Transport for NSW  
Sydney Metro - Sydenham to Bankstown upgrade  
Surface Water Assessment

Job Number | 21-25273  
Revision | A  
Date | 22 May 2017

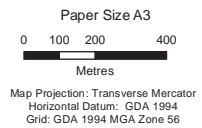
**Post-developed 39%  
AEP flood depth**

Figure B.23





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**LEGEND**

Project area	0.00 - 0.05	0.30 - 0.50	1.50 - 2.00
Train station	0.05 - 0.30	0.50 - 1.00	2.00 - 2.50
Railway	1.01 - 1.50	>2.50	

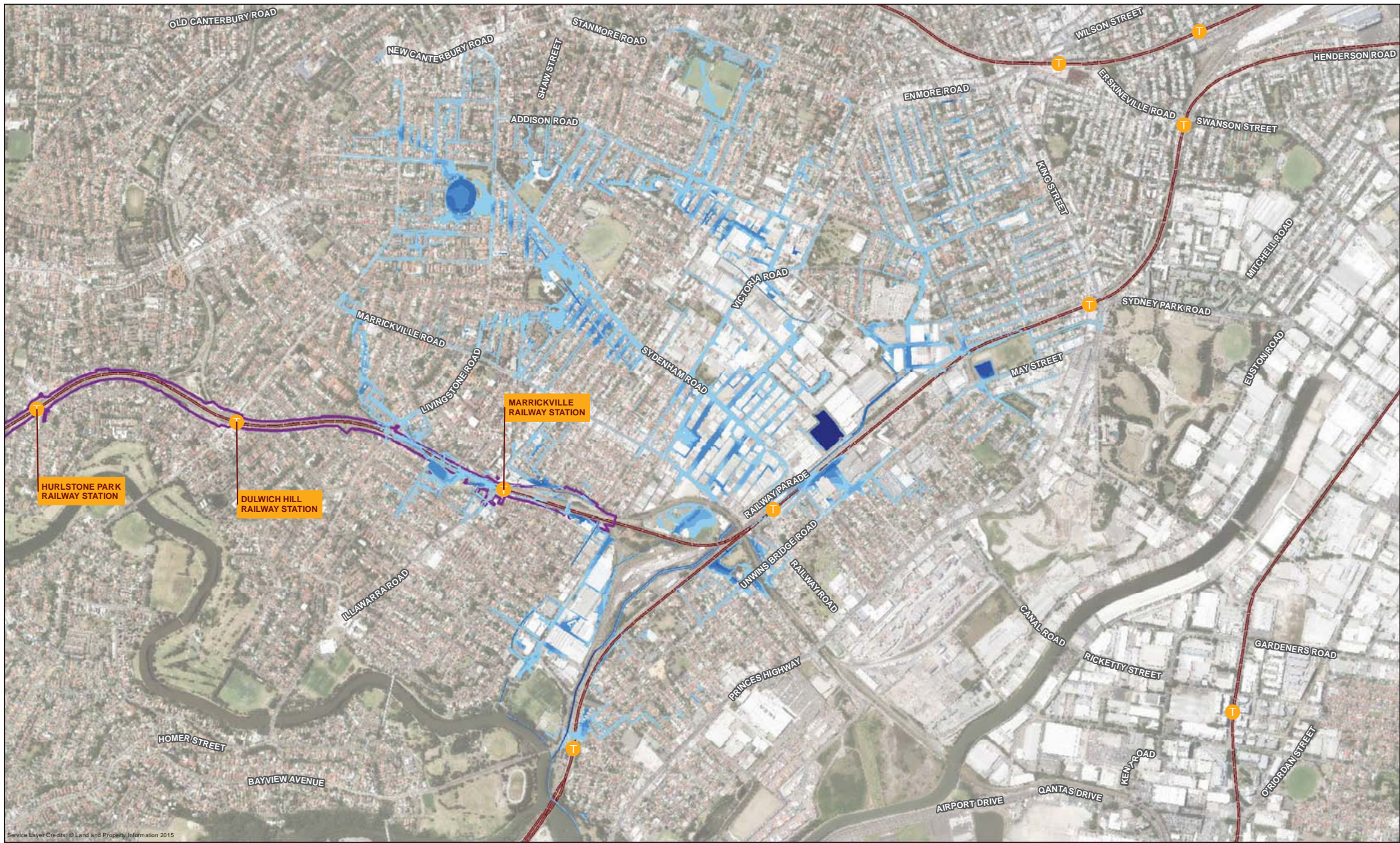


Transport for NSW  
Sydney Metro - Sydenham to Bankstown upgrade  
Surface Water Assessment

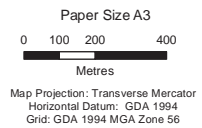
Job Number | 21-25273  
Revision | A  
Date | 22 May 2017

**Post-developed 18%  
AEP flood depth**

**Figure B.24**



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**LEGEND**

Project area	0.00 - 0.05	0.30 - 0.50	1.50 - 2.00
Train station	0.05 - 0.30	0.50 - 1.00	2.00 - 2.50
Railway	>2.50		

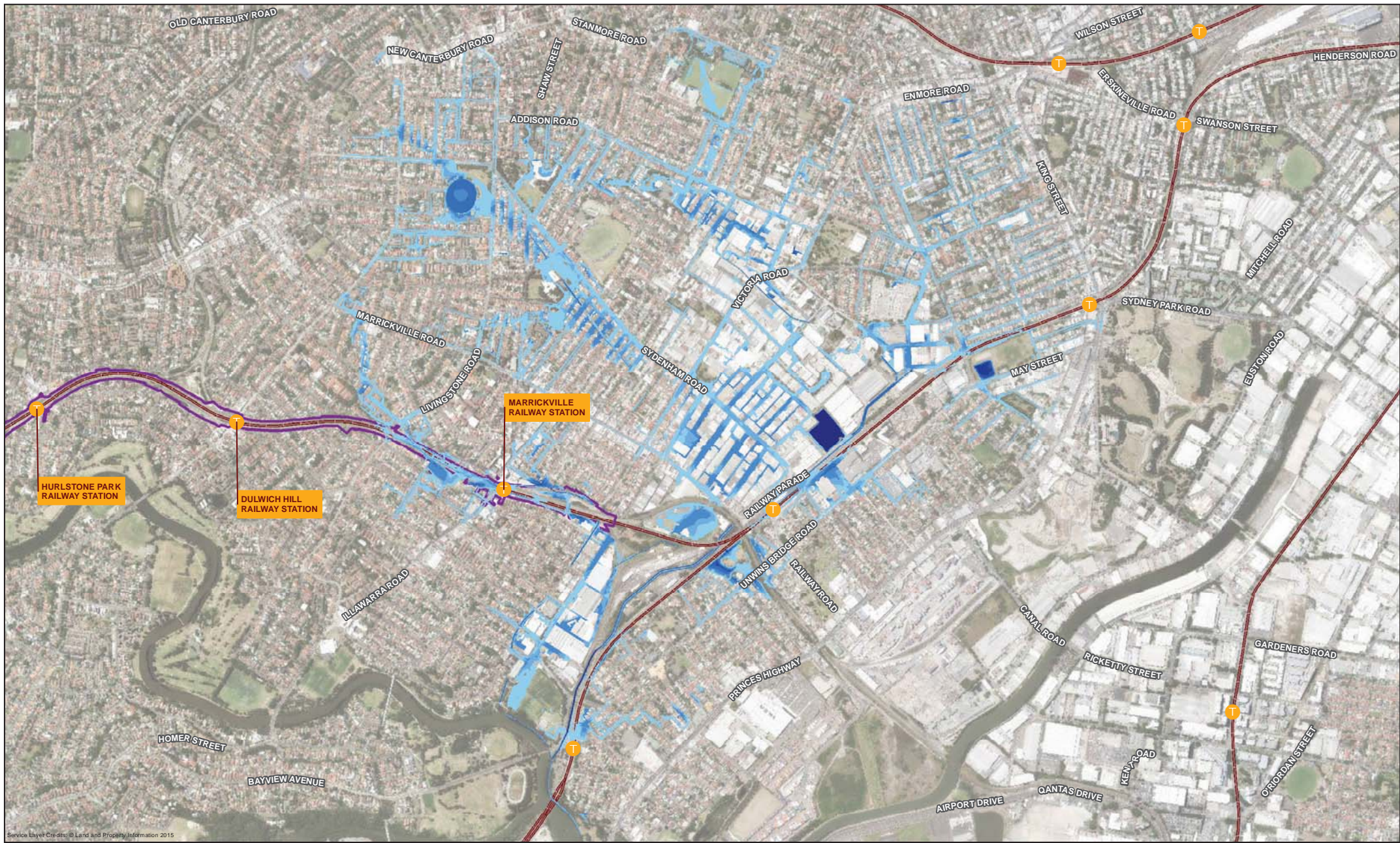


Transport for NSW  
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Surface Water Assessment

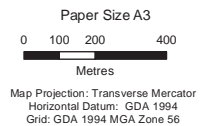
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Revision | A  
Date | 22 May 2017

**Post-developed 10%  
AEP flood depth**

**Figure B.25**



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LEGEND

Project area	0.00 - 0.05	0.30 - 0.50	1.50 - 2.00
Train station	0.05 - 0.30	0.50 - 1.00	2.00 - 2.50
Railway	>2.50		



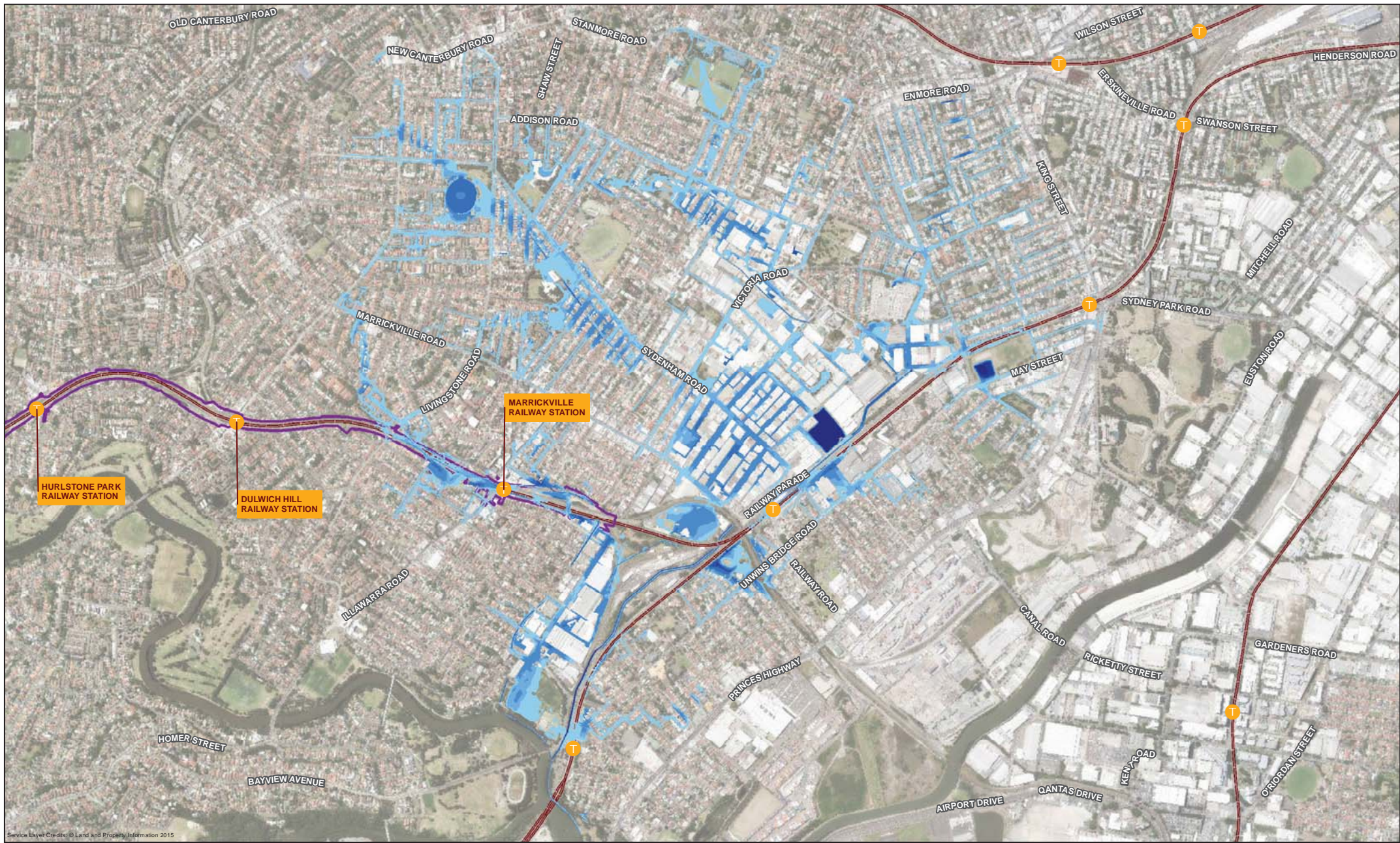
Transport for NSW  
Sydney Metro - Sydenham to Bankstown upgrade  
Surface Water Assessment

Job Number | 21-25273  
Revision | A  
Date | 22 May 2017

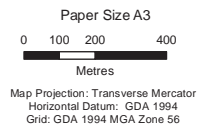
Post-developed 5%  
AEP flood depth

Figure B.26

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**LEGEND**

Project area	0.00 - 0.05	0.30 - 0.50	1.50 - 2.00
Train station	0.05 - 0.30	0.50 - 1.00	2.00 - 2.50
Railway	>2.50		

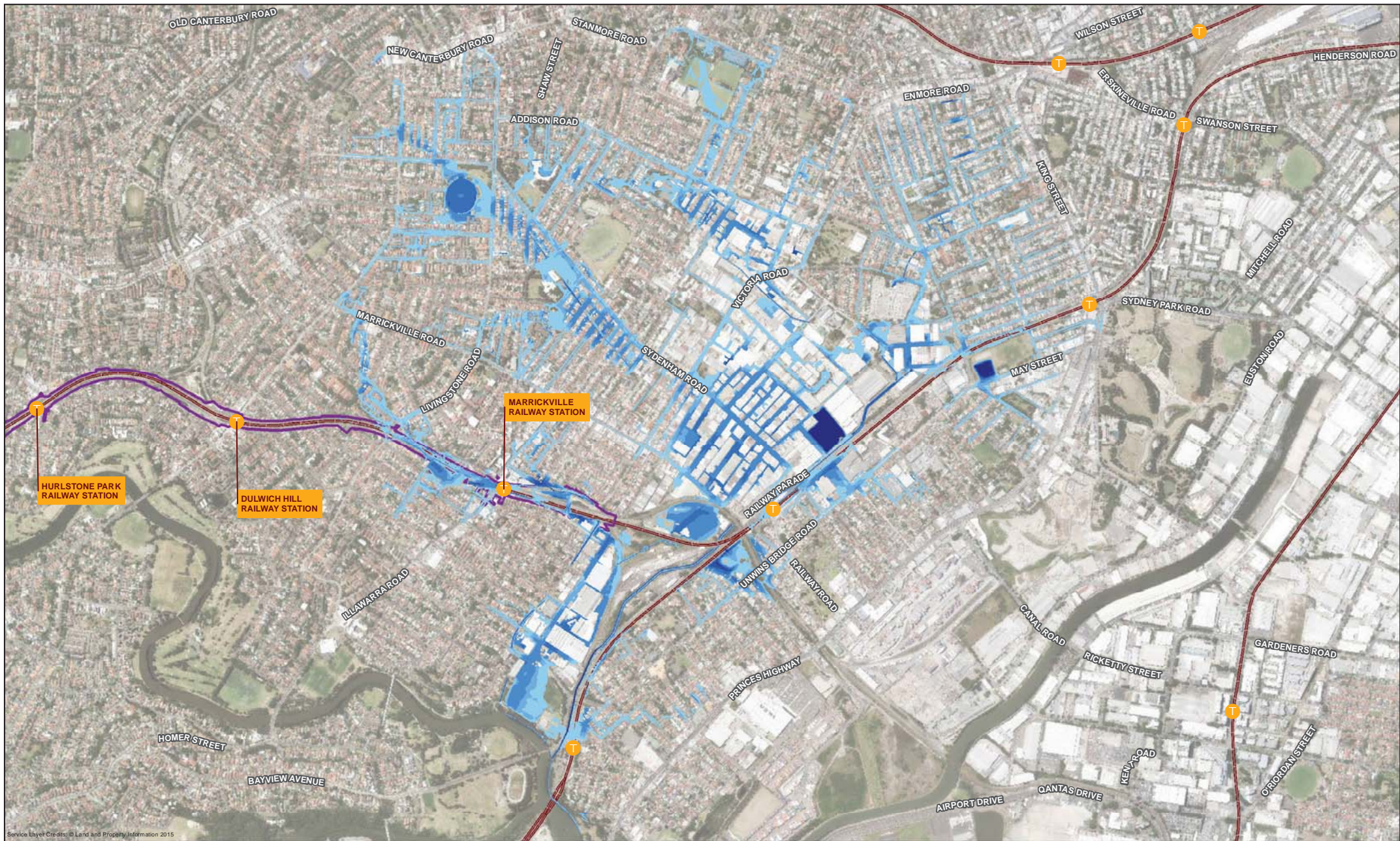


Transport for NSW  
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Surface Water Assessment

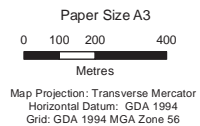
Job Number | 21-25273  
Revision | A  
Date | 22 May 2017

**Post-developed 2%  
AEP flood depth**

**Figure B.27**



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LEGEND

Project area	0.00 - 0.05	0.30 - 0.50	1.50 - 2.00
Train station	0.05 - 0.30	0.50 - 1.00	2.00 - 2.50
Railway	>2.50	1.01 - 1.50	



Transport for NSW  
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Post-developed 1%  
AEP flood depth

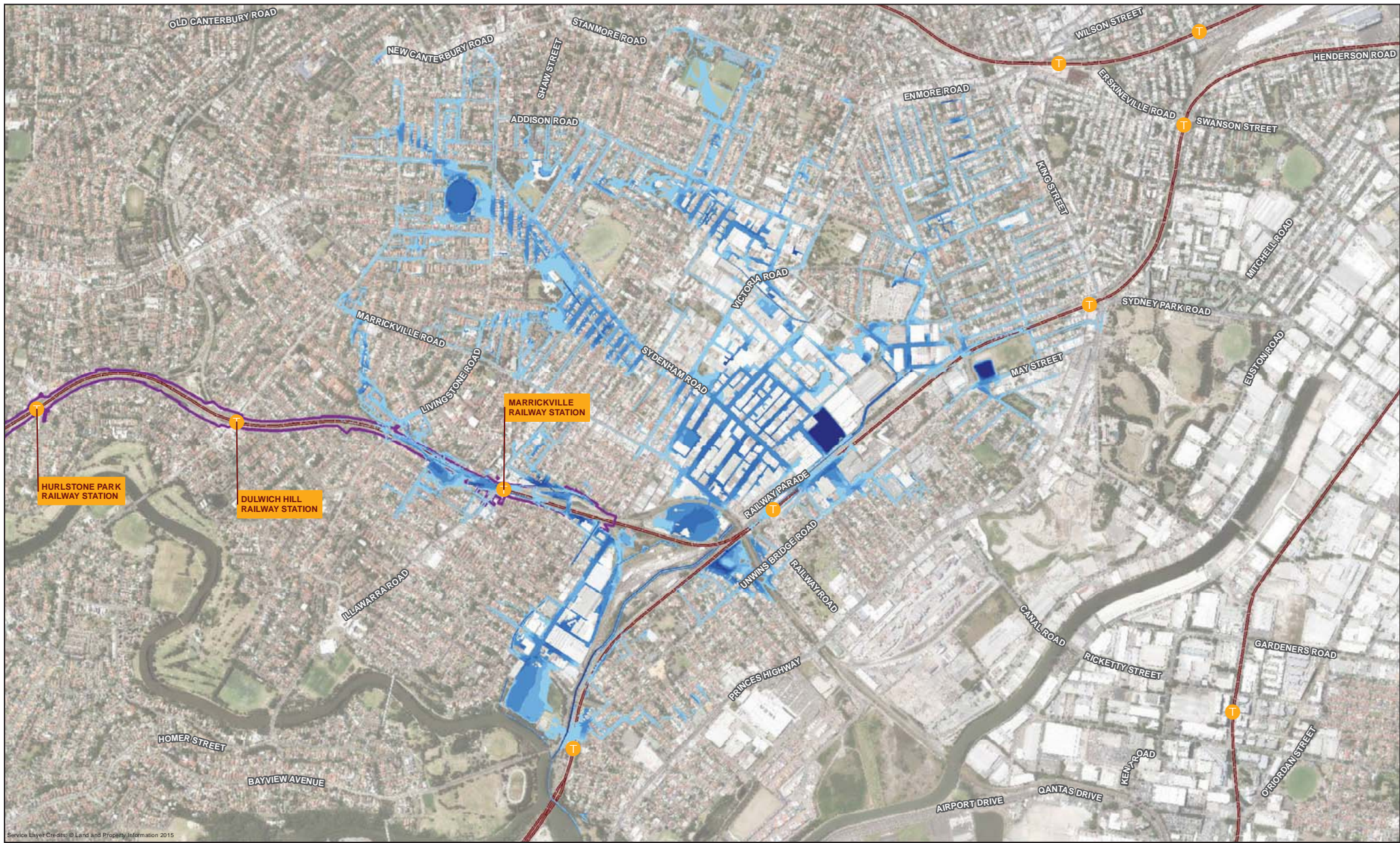
Job Number | 21-25273  
Revision | A  
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Figure B.28

G:\2125273\GIS\Maps\Deliverables\SurfaceWater\SMA.mxd

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Paper Size A3  
 0 100 200 400  
 Metres  
 Map Projection: Transverse Mercator  
 Horizontal Datum: GDA 1994  
 Grid: GDA 1994 MGA Zone 56



LEGEND

Project area	0.00 - 0.05	0.30 - 0.50	1.50 - 2.00
Train station	0.05 - 0.30	0.50 - 1.00	2.00 - 2.50
Railway	1.01 - 1.50	>2.50	



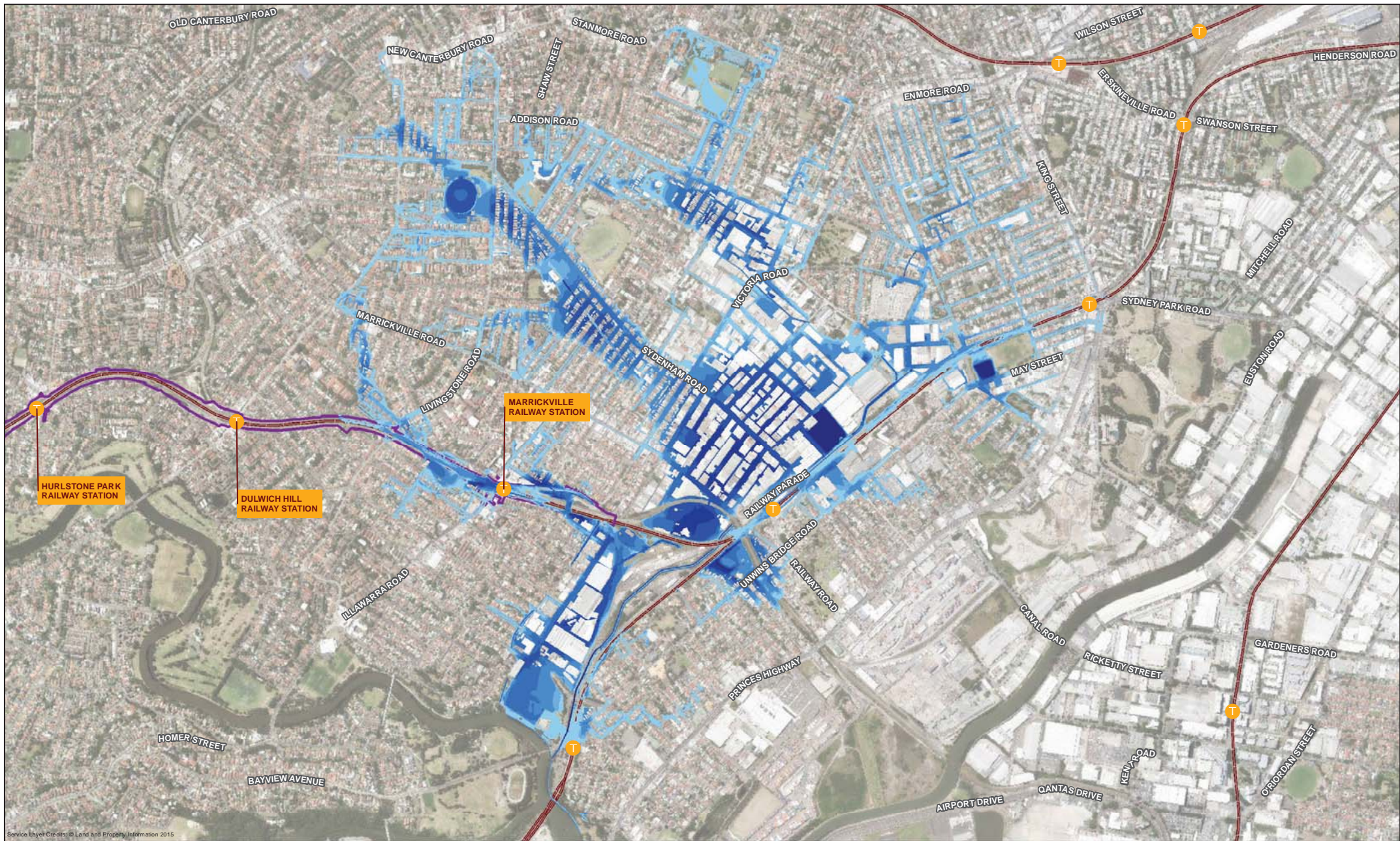
Transport for NSW  
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Post-developed 1% AEP + 10%  
 climate change flood depth

Figure B.29

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Paper Size A3  
 0 100 200 400  
 Metres  
 Map Projection: Transverse Mercator  
 Horizontal Datum: GDA 1994  
 Grid: GDA 1994 MGA Zone 56



**LEGEND**

Project area	<b>Depth (m)</b>	0.30 - 0.50	1.50 - 2.00
Train station	0.00 - 0.05	0.50 - 1.00	2.00 - 2.50
Railway	0.05 - 0.30	1.01 - 1.50	>2.50



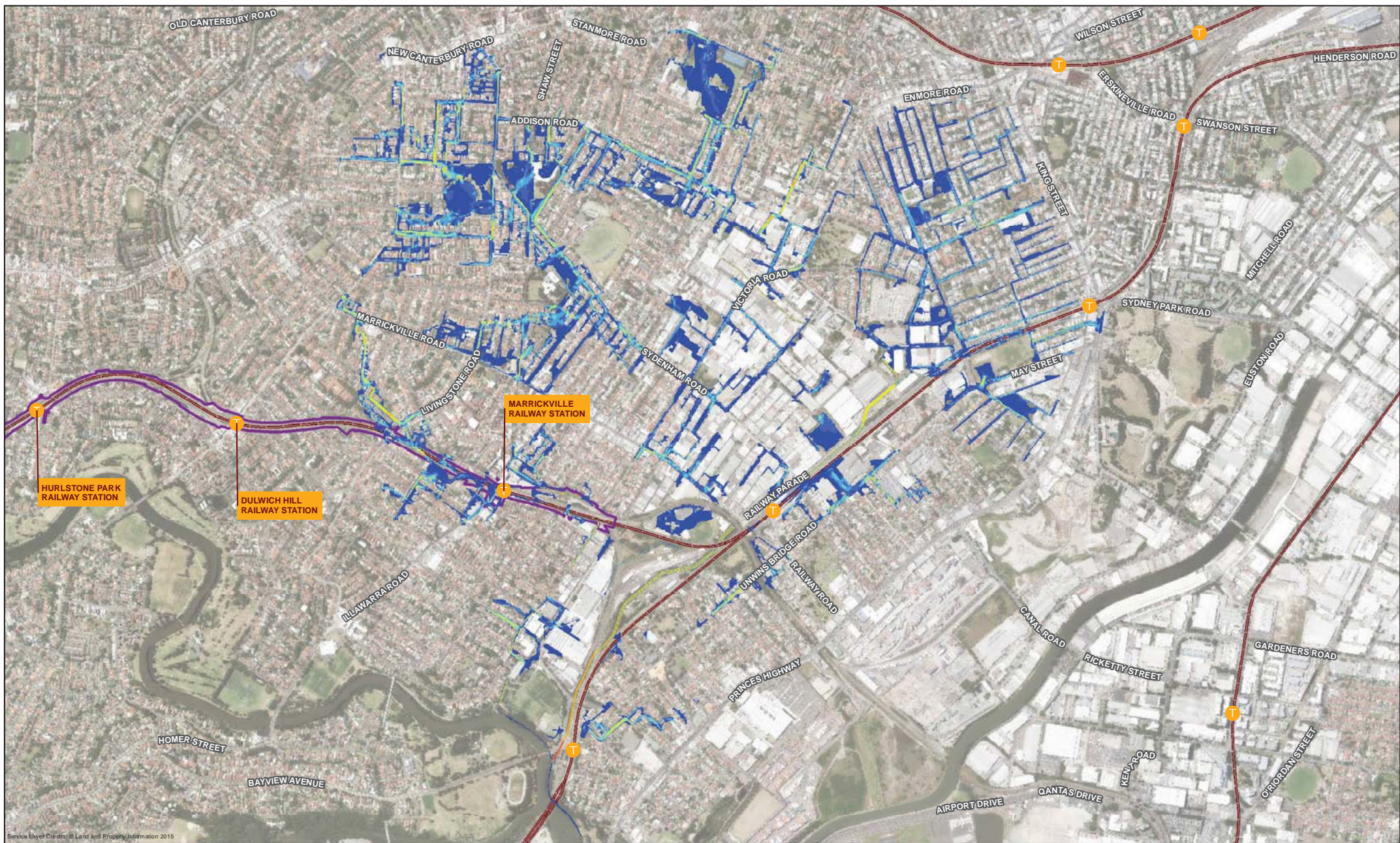
Transport for NSW  
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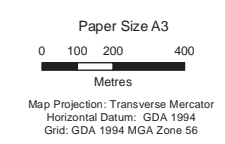
Post-developed PMF flood depth

Figure B.30

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**LEGEND**

Project area	<b>Velocity (m/s)</b>	0.6 to 0.8	2.0 to 3.0
Train station	0 to 0.2	0.8 to 1.0	3.0 to 5.0
Railway	0.2 to 0.4	1.0 to 1.5	Greater than 5.0
	0.4 to 0.6	1.5 to 2.0	



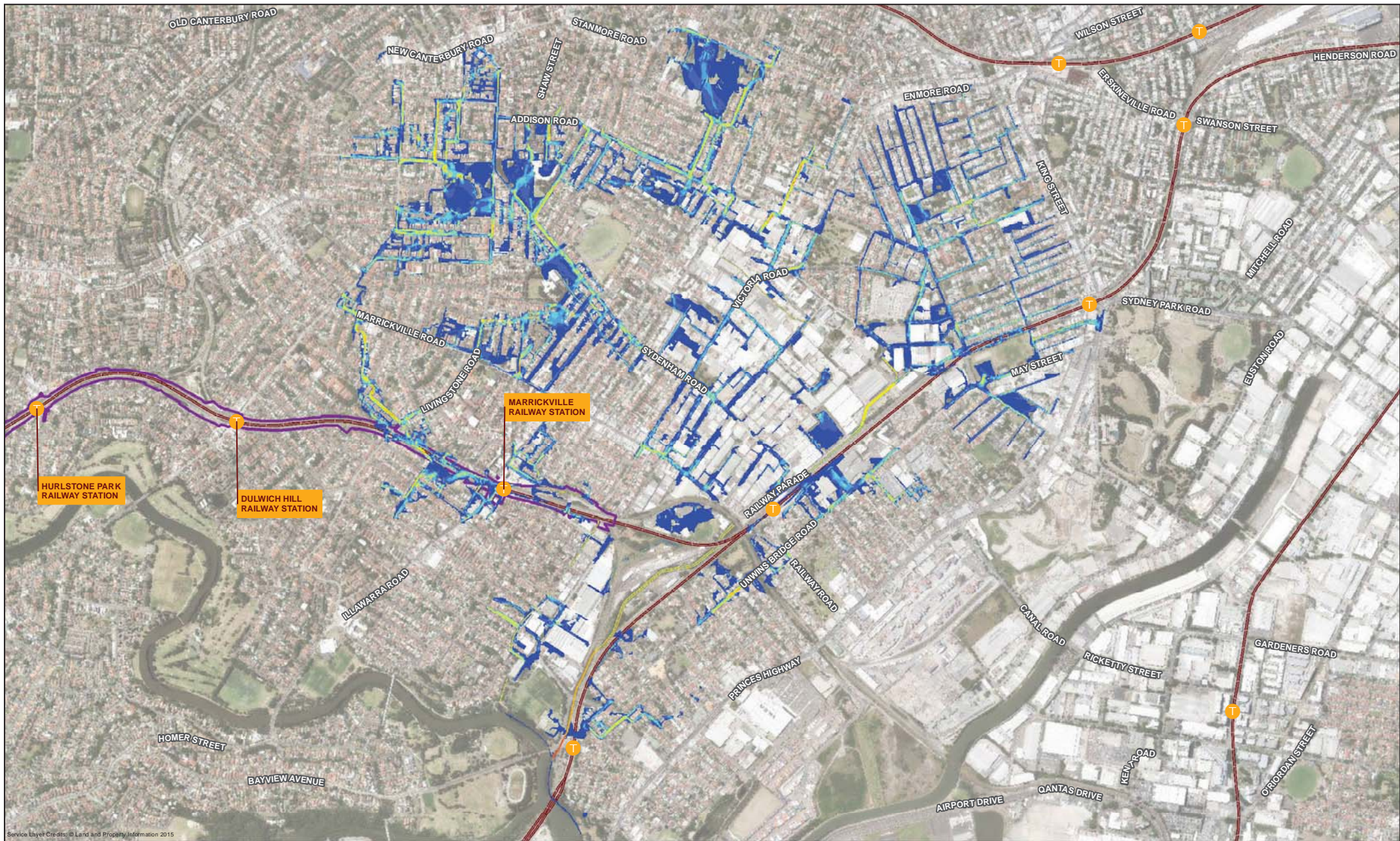
Transport for NSW  
Sydney Metro - Sydenham to Bankstown upgrade  
Surface Water Assessment

**Post-developed 63%  
AEP flood velocity**

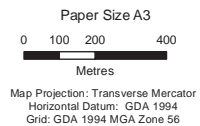
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**Figure B.31**





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**LEGEND**

- Project area
- Train station
- Railway

Velocity (m/s)	Color
0 to 0.2	Blue
0.2 to 0.4	Dark Blue
0.4 to 0.6	Light Blue
0.6 to 0.8	Light Green
0.8 to 1.0	Green
1.0 to 1.5	Yellow-Green
1.5 to 2.0	Yellow
2.0 to 3.0	Orange
3.0 to 5.0	Red
Greater than 5.0	Black



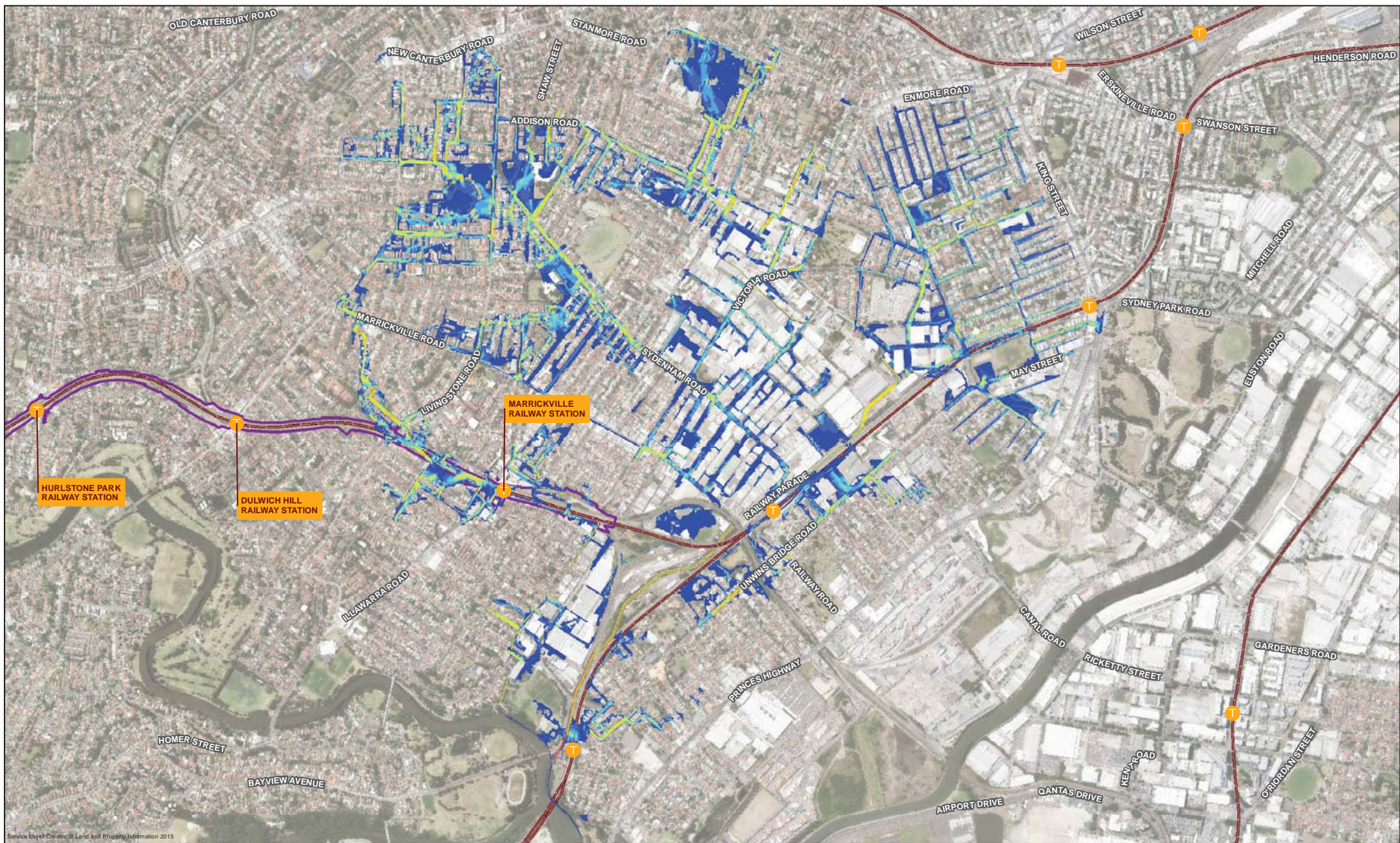
Transport for NSW  
Sydney Metro - Sydenham to Bankstown upgrade  
Surface Water Assessment

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**Post-developed 39%  
AEP flood velocity**

**Figure B.32**

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Paper Size A3  
 0 100 200 400  
 Metres  
 Map Projection: Transverse Mercator  
 Horizontal Datum: GDA 1994  
 Grid: GDA 1994 MGA Zone 56



**LEGEND**

Project area	<b>Velocity (m/s)</b>	0.6 to 0.8	2.0 to 3.0
Train station	0 to 0.2	0.8 to 1.0	3.0 to 5.0
Railway	0.2 to 0.4	1.0 to 1.5	Greater than 5.0
	0.4 to 0.6	1.5 to 2.0	



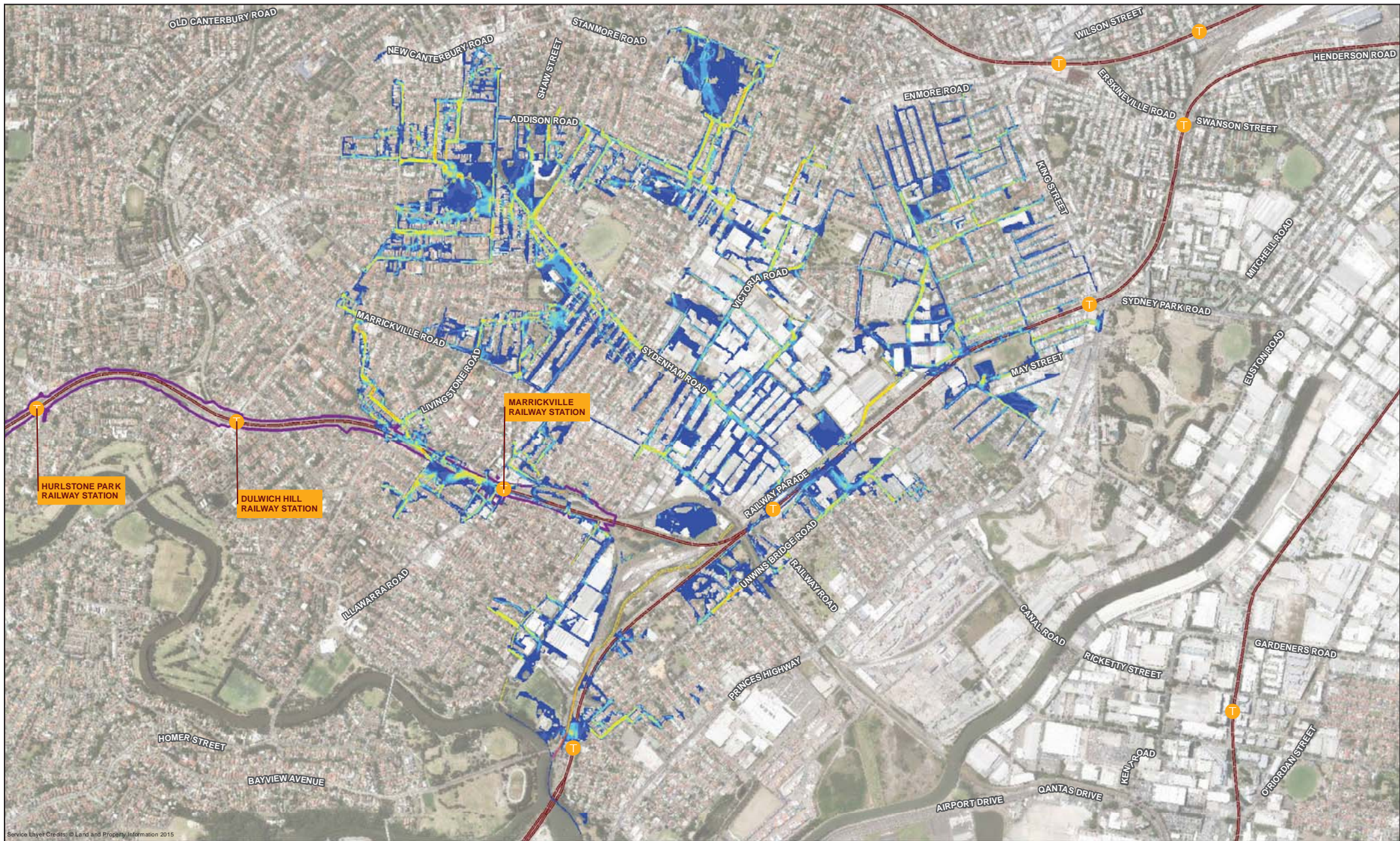
Transport for NSW  
 Sydney Metro - Sydenham to Bankstown upgrade  
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**Post-developed 18%  
 AEP flood velocity**

**Figure B.33**

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0 100 200 400  
Metres

Map Projection: Transverse Mercator  
Horizontal Datum: GDA 1994  
Grid: GDA 1994 MGA Zone 56



**LEGEND**

- Project area
- Train station
- Railway

**Velocity (m/s)**

0 to 0.2	0.2 to 0.4	0.4 to 0.6	0.6 to 0.8	0.8 to 1.0	1.0 to 1.5	1.5 to 2.0	2.0 to 3.0	3.0 to 5.0	Greater than 5.0
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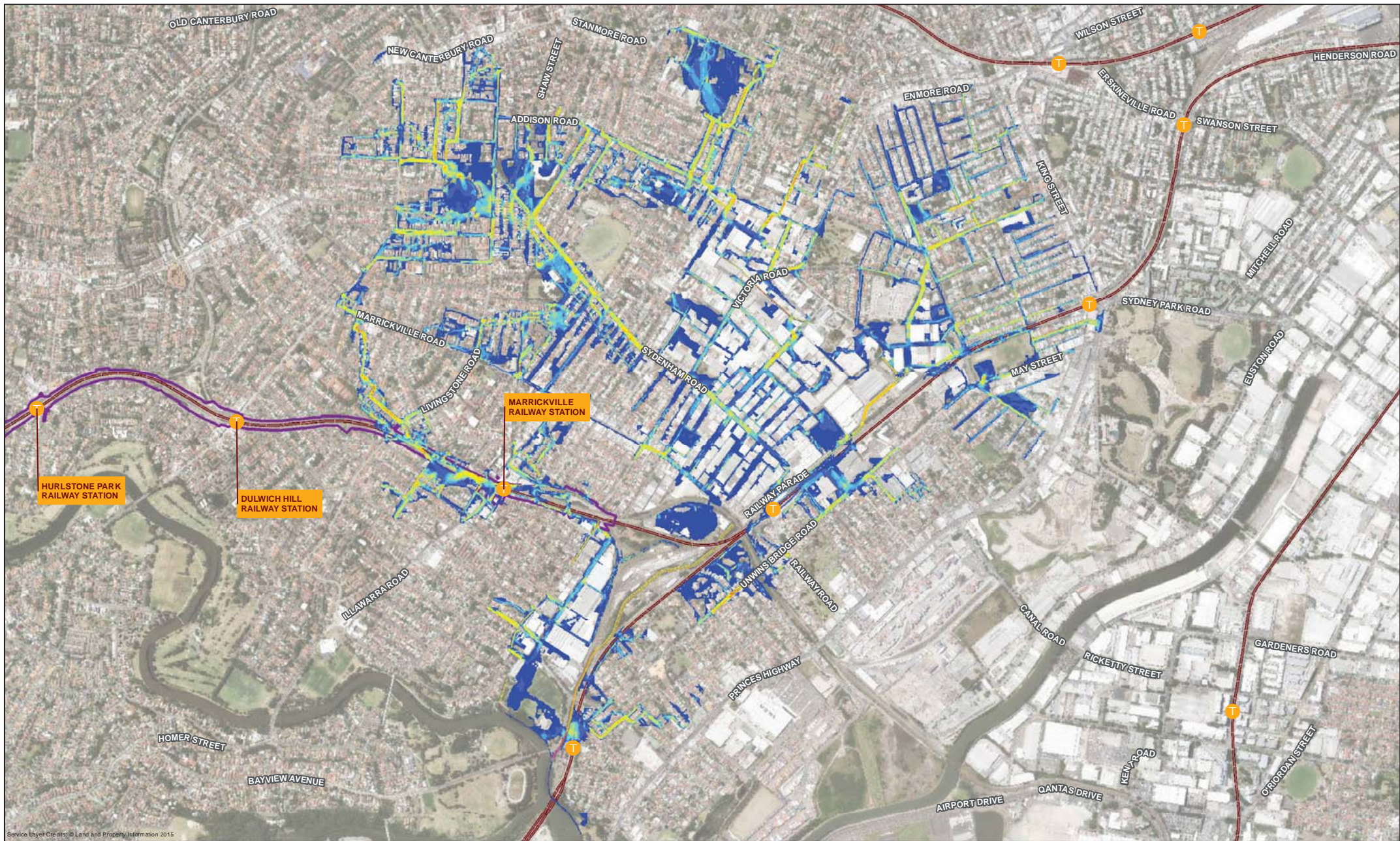
Transport for NSW  
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Surface Water Assessment

**Post-developed 10%  
AEP flood velocity**

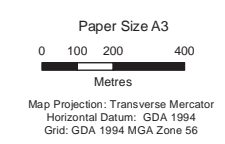
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Figure B.34

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**LEGEND**

- Project area
- Train station
- Railway

Velocity (m/s)	
	0 to 0.2
	0.2 to 0.4
	0.4 to 0.6
	0.6 to 0.8
	0.8 to 1.0
	1.0 to 1.5
	1.5 to 2.0
	2.0 to 3.0
	3.0 to 5.0
	Greater than 5.0



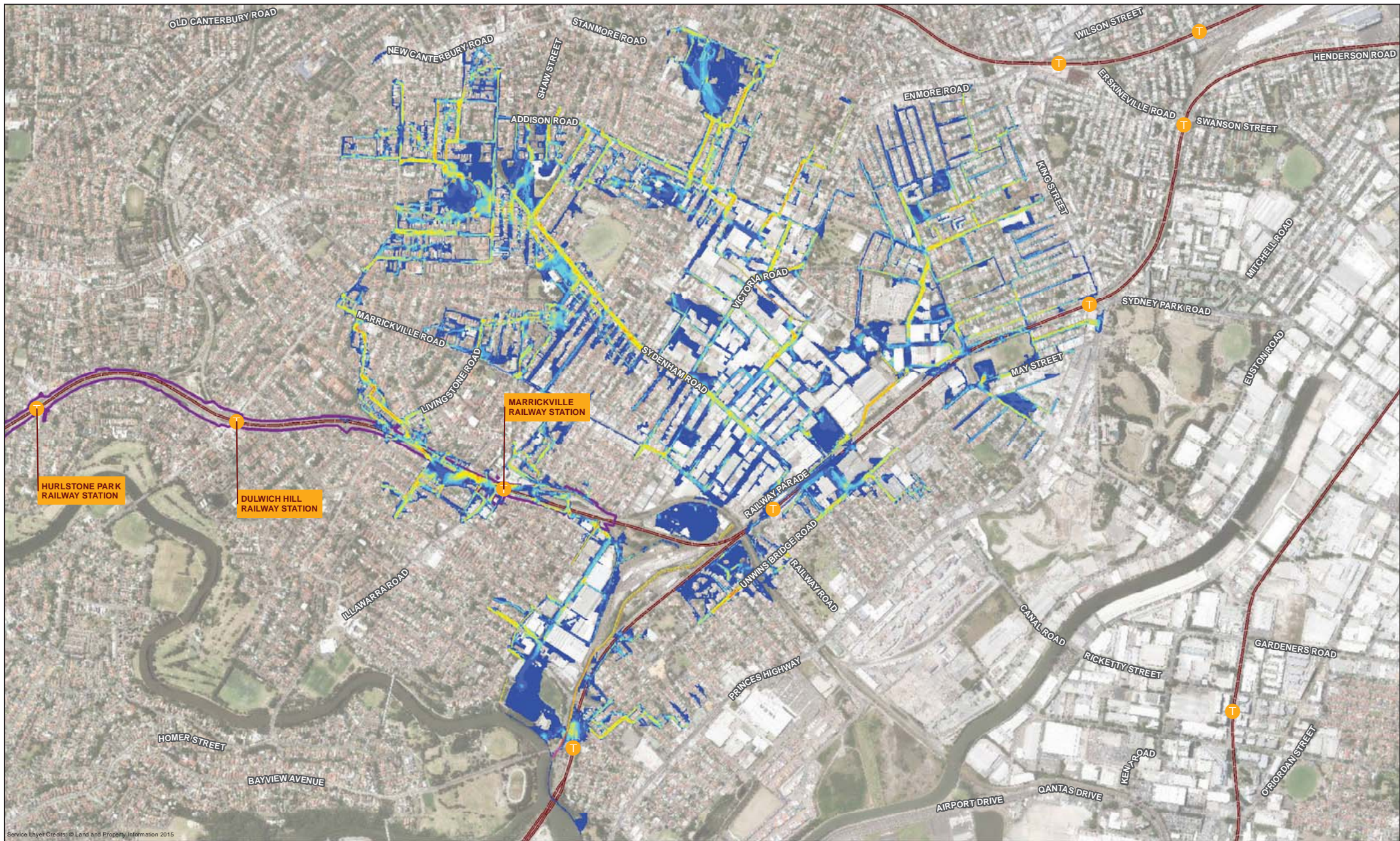
Transport for NSW  
Sydney Metro - Sydenham to Bankstown upgrade  
Surface Water Assessment

**Post-developed 5%  
AEP flood velocity**

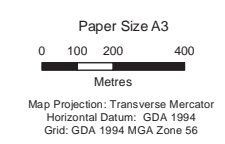
Job Number | 21-25273  
Revision | A  
Date | 22 May 2017

**Figure B.35**

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**LEGEND**

Project area	<b>Velocity (m/s)</b>	0.6 to 0.8	2.0 to 3.0
Train station	0 to 0.2	0.8 to 1.0	3.0 to 5.0
Railway	0.2 to 0.4	1.0 to 1.5	Greater than 5.0
	0.4 to 0.6	1.5 to 2.0	



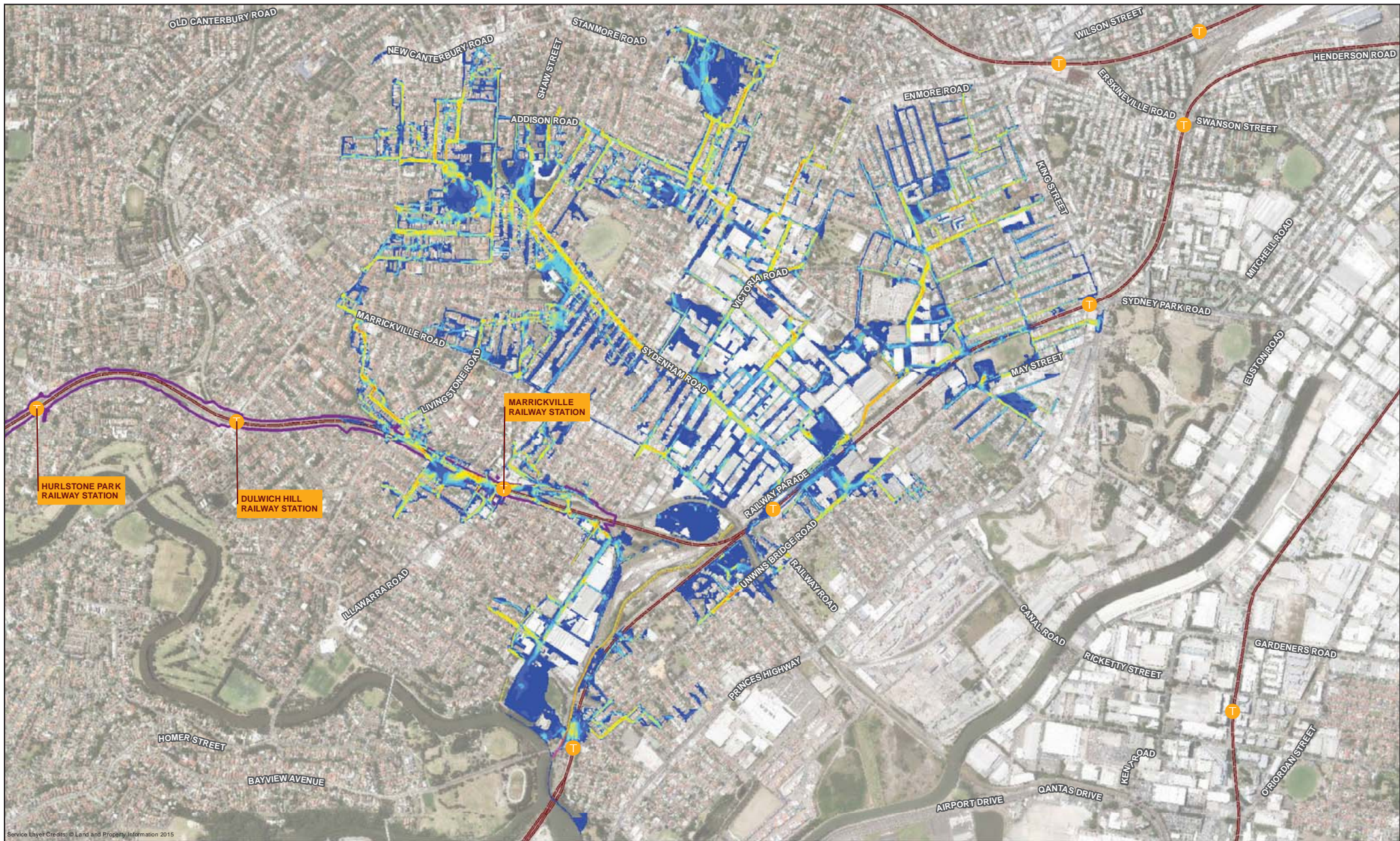
Transport for NSW  
Sydney Metro - Sydenham to Bankstown upgrade  
Surface Water Assessment

**Post-developed 2%  
AEP flood velocity**

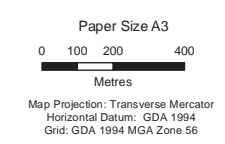
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Figure B.36

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**LEGEND**

Project area	<b>Velocity (m/s)</b>	0.6 to 0.8	2.0 to 3.0
Train station	0 to 0.2	0.8 to 1.0	3.0 to 5.0
Railway	0.2 to 0.4	1.0 to 1.5	Greater than 5.0
	0.4 to 0.6	1.5 to 2.0	



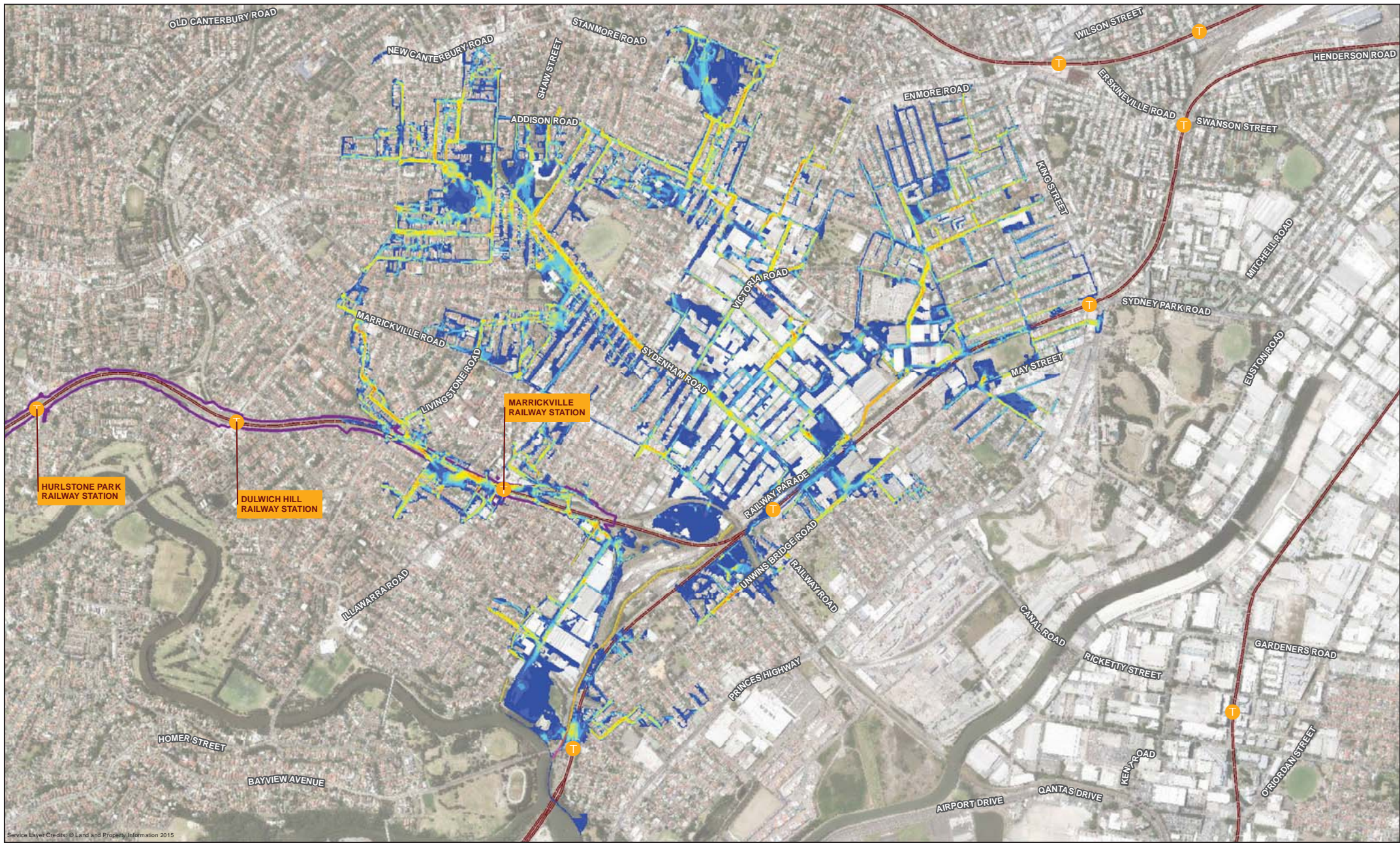
Transport for NSW  
Sydney Metro - Sydenham to Bankstown upgrade  
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**Post-developed 1%  
AEP flood velocity**

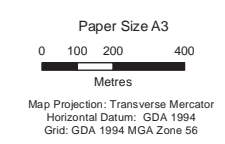
Job Number | 21-25273  
Revision | A  
Date | 22 May 2017

**Figure B.37**

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Data source: Aerial imagery - sixmaps 2016, General topo - NSW LPI DTDB 2012. Created by:afoddy



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**LEGEND**

- Project area
- Train station
- Railway

Velocity (m/s)									
0 to 0.2									
0.2 to 0.4									
0.4 to 0.6									
0.6 to 0.8									
0.8 to 1.0									
1.0 to 1.5									
1.5 to 2.0									
2.0 to 3.0									
3.0 to 5.0									
Greater than 5.0									

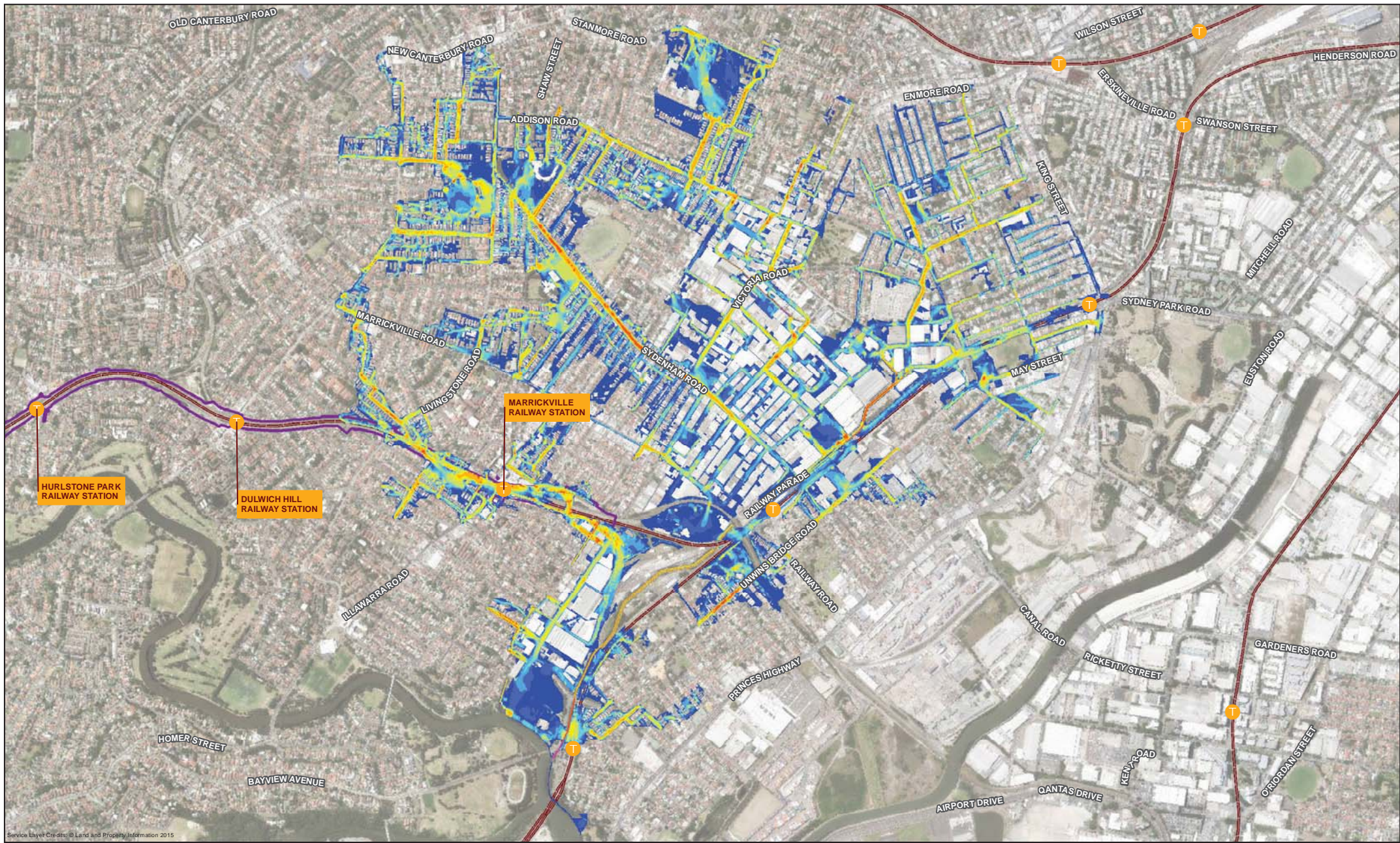


Transport for NSW  
Sydney Metro - Sydenham to Bankstown upgrade  
Surface Water Assessment

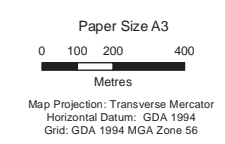
**Post-developed 1% AEP + 10%  
climate change flood velocity**

Job Number | 21-25273  
Revision | A  
Date | 22 May 2017

**Figure B.38**



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**LEGEND**

- Project area
- Train station
- Railway

Velocity (m/s)	Color
0 to 0.2	Dark Blue
0.2 to 0.4	Medium Blue
0.4 to 0.6	Light Blue
0.6 to 0.8	Teal
0.8 to 1.0	Light Green
1.0 to 1.5	Yellow-Green
1.5 to 2.0	Yellow
2.0 to 3.0	Orange
3.0 to 5.0	Red-Orange
Greater than 5.0	Red



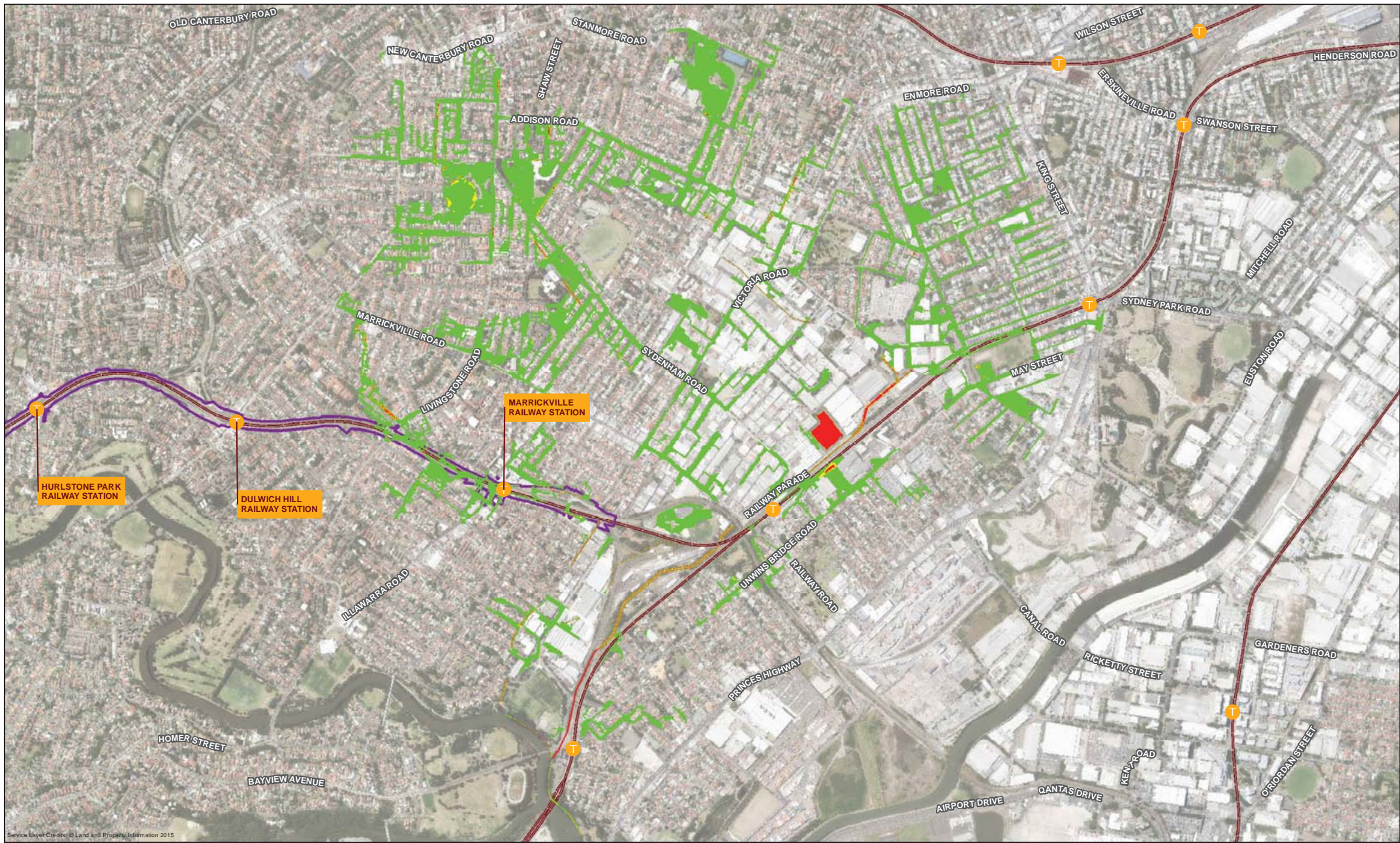
Transport for NSW  
Sydney Metro - Sydenham to Bankstown upgrade  
Surface Water Assessment

Job Number | 21-25273  
Revision | A  
Date | 22 May 2017

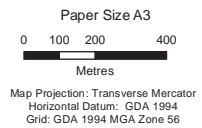
Post-developed PMF flood velocity **Figure B.39**

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**LEGEND**

- Project area
  - Train station
  - Railway
- Provisional Hazard Category**
- 1 - Low Hazard
  - 2 - Transitional Hazard
  - 3 - High Hazard



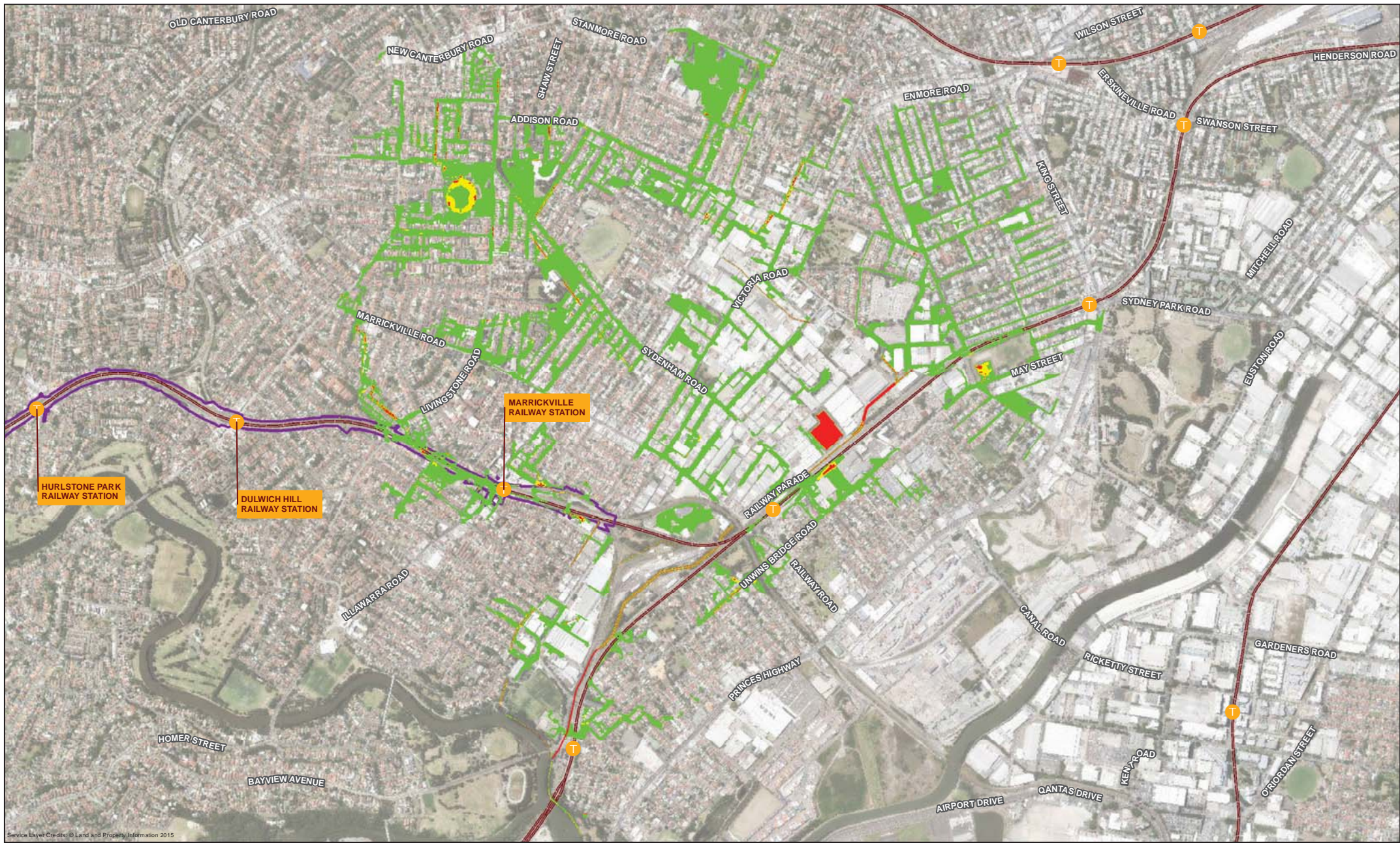
Transport for NSW  
Sydney Metro - Sydenham to Bankstown upgrade  
Surface Water Assessment

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Revision | A  
Date | 22 May 2017

**Post-developed 63% AEP  
provisional flood hazard**

**Figure B.40**

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Paper Size A3  
 0 100 200 400  
 Metres  
 Map Projection: Transverse Mercator  
 Horizontal Datum: GDA 1994  
 Grid: GDA 1994 MGA Zone 56



**LEGEND**

- Project area
  - Train station
  - Railway
- Provisional Hazard Category**
- 1 - Low Hazard
  - 2 - Transitional Hazard
  - 3 - High Hazard



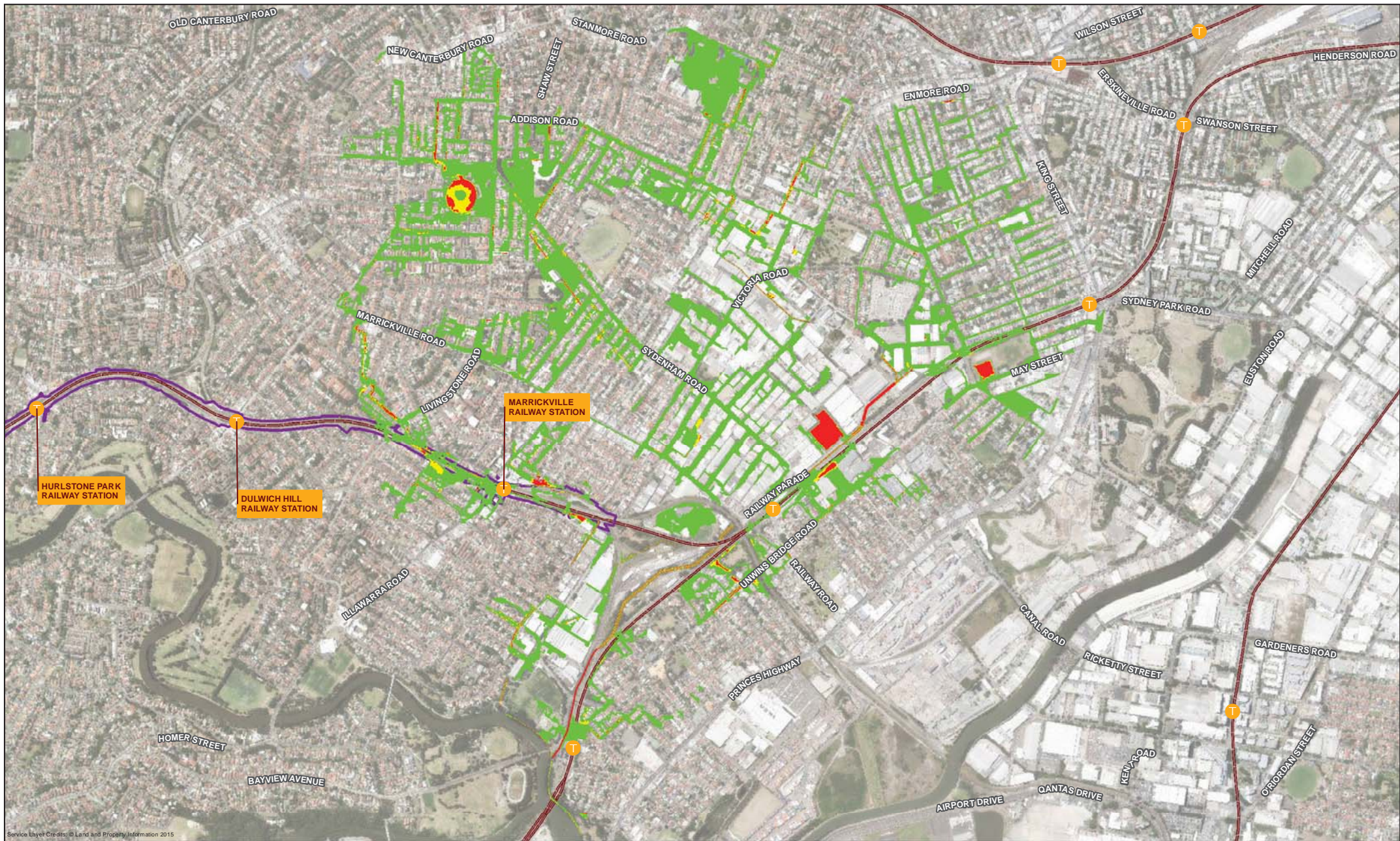
Transport for NSW  
 Sydney Metro - Sydenham to Bankstown upgrade  
 Surface Water Assessment

Job Number | 21-25273  
 Revision | A  
 Date | 22 May 2017

**Post-developed 39% AEP  
 provisional flood hazard**

**Figure B.41**

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 Data source: Aerial imagery - sixmaps 2016, General topo - NSW LPI DTDB 2012. Created by:afoddy



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Paper Size A3  
 0 100 200 400  
 Metres  
 Map Projection: Transverse Mercator  
 Horizontal Datum: GDA 1994  
 Grid: GDA 1994 MGA Zone 56



LEGEND

- Project area
  - T Train station
  - Railway
- Provisional Hazard Category**
- 1 - Low Hazard
  - 2 - Transitional Hazard
  - 3 - High Hazard



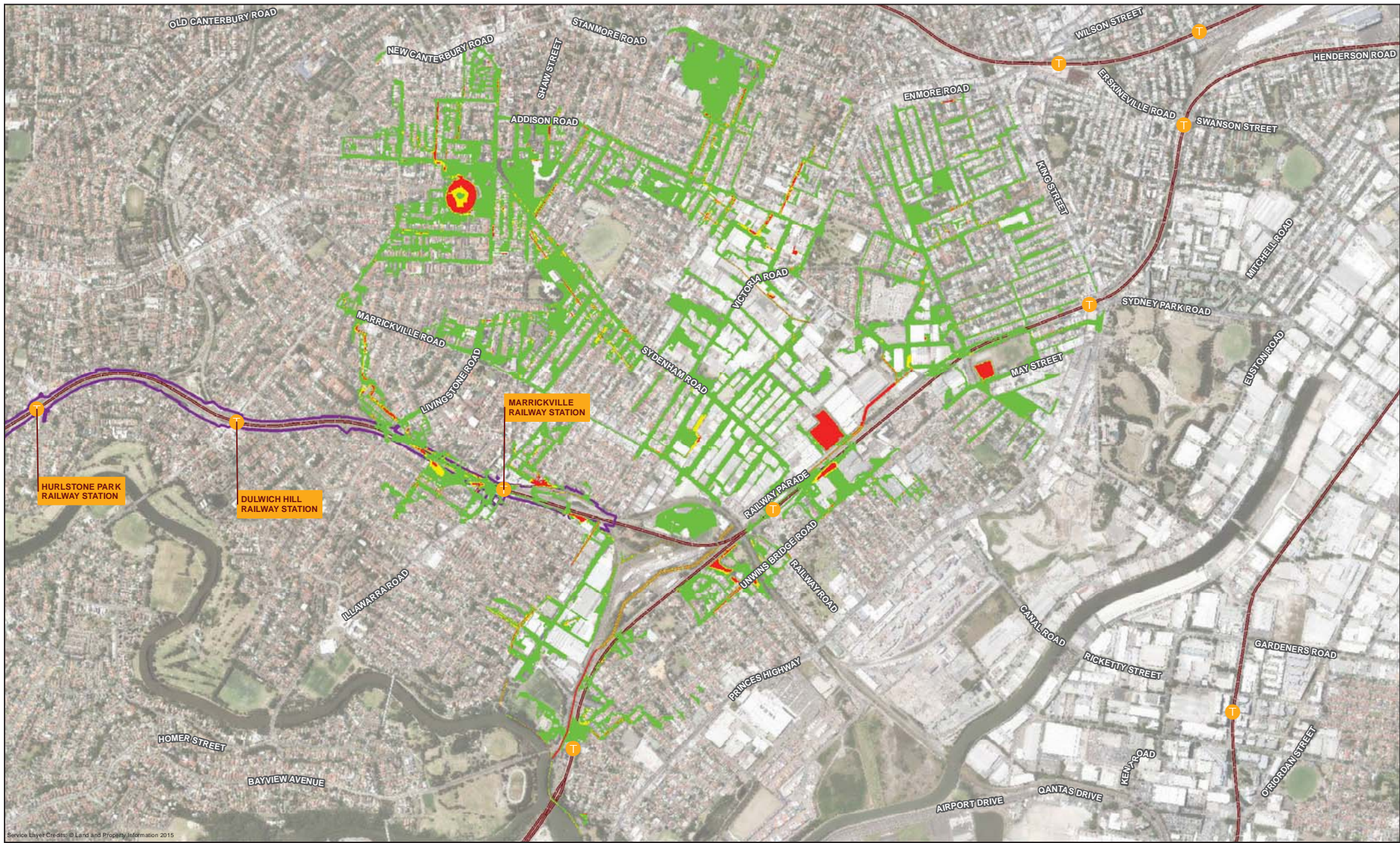
Transport for NSW  
 Sydney Metro - Sydenham to Bankstown upgrade  
 Surface Water Assessment

Job Number | 21-25273  
 Revision | A  
 Date | 22 May 2017

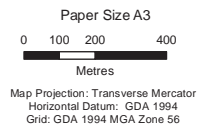
Post-developed 18% AEP  
 provisional flood hazard

Figure B.42

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**LEGEND**

- Project area
  - Train station
  - Railway
- Provisional Hazard Category**
- 1 - Low Hazard
  - 2 - Transitional Hazard
  - 3 - High Hazard



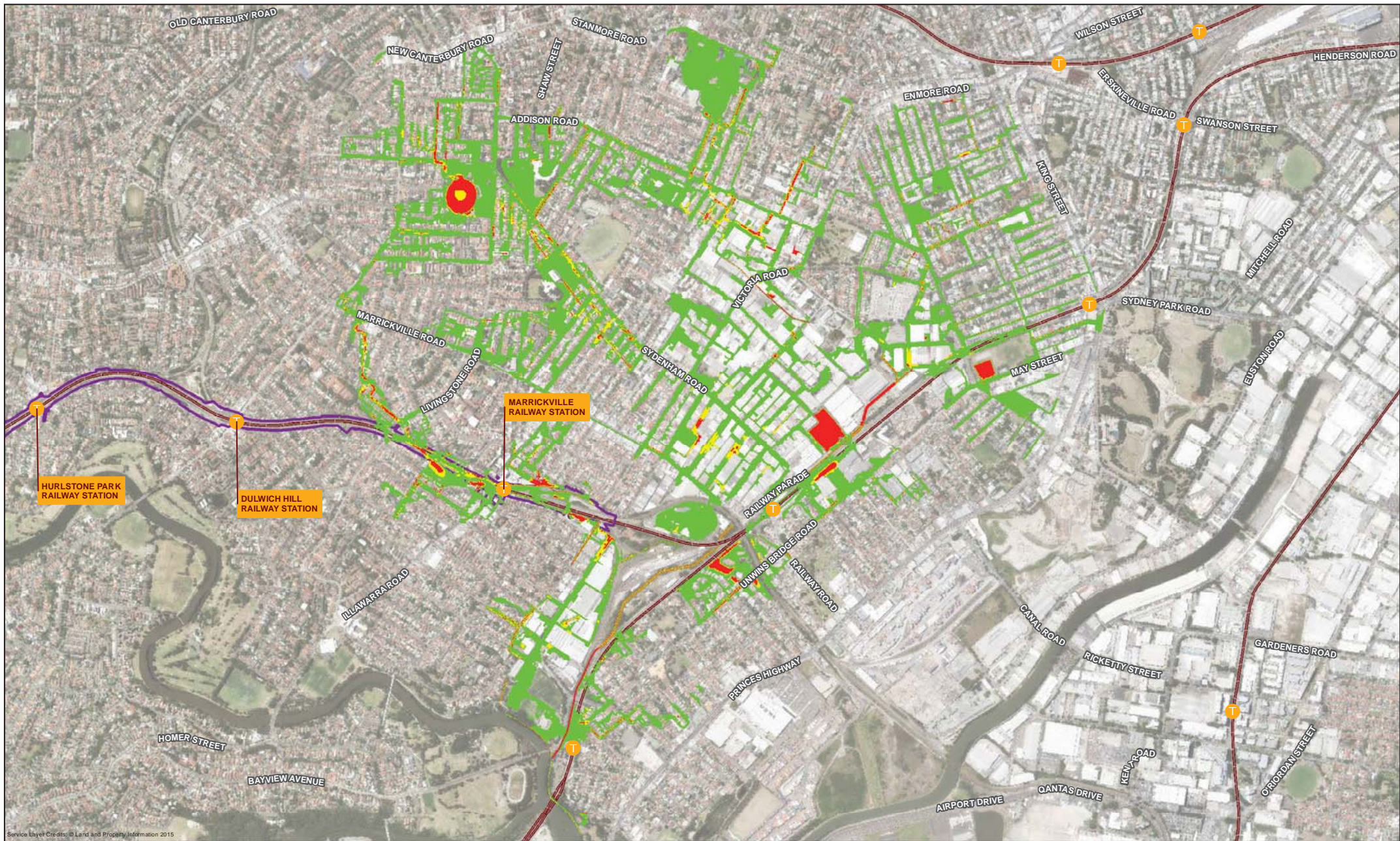
Transport for NSW  
Sydney Metro - Sydenham to Bankstown upgrade  
Surface Water Assessment

Job Number | 21-25273  
Revision | A  
Date | 22 May 2017

**Post-developed 10% AEP  
provisional flood hazard**

**Figure B.43**

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Paper Size A3  
 0 100 200 400  
 Metres  
 Map Projection: Transverse Mercator  
 Horizontal Datum: GDA 1994  
 Grid: GDA 1994 MGA Zone 56



**LEGEND**

- Project area
  - Train station
  - Railway
- Provisional Hazard Category**
- 1 - Low Hazard
  - 2 - Transitional Hazard
  - 3 - High Hazard



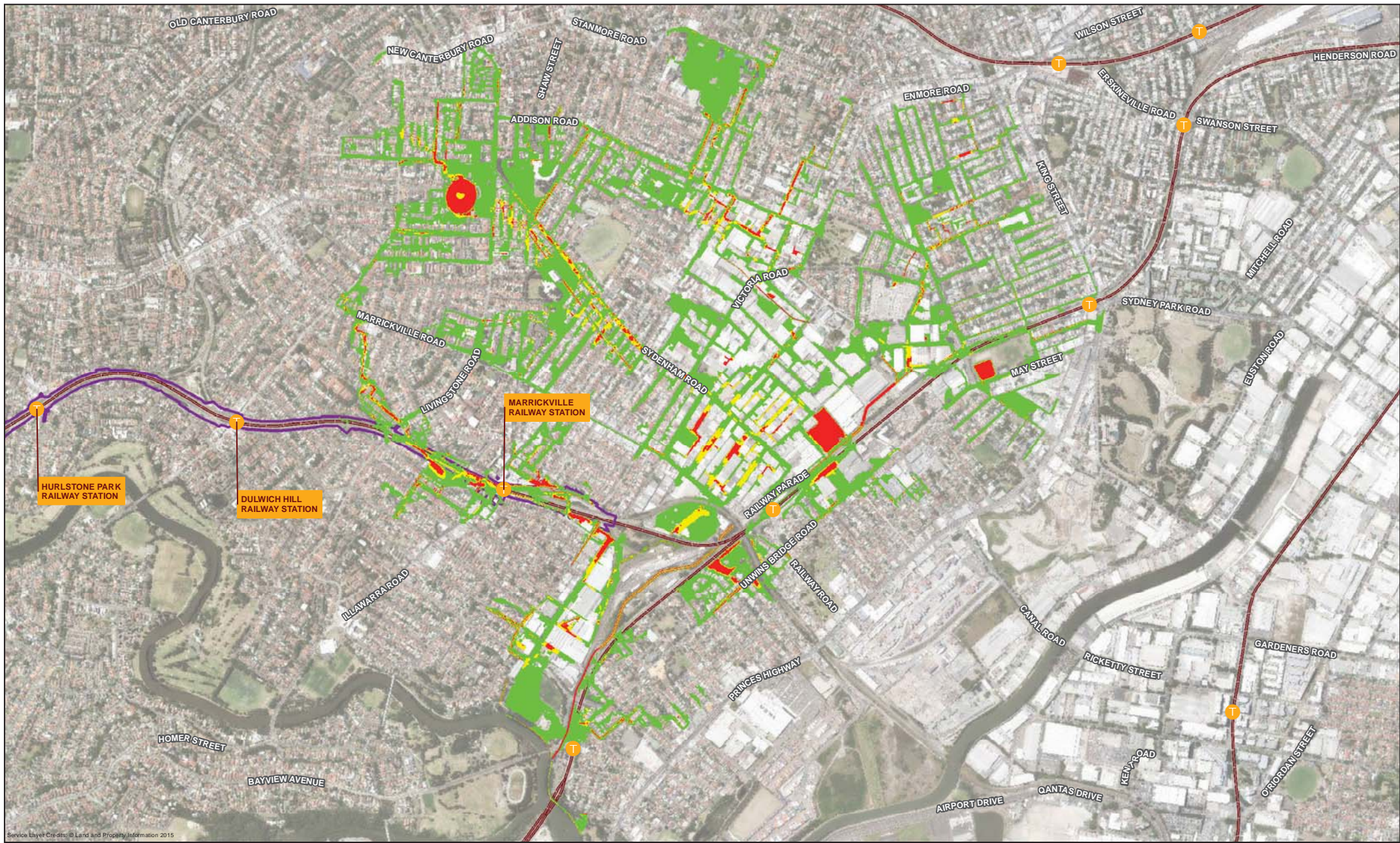
Transport for NSW  
 Sydney Metro - Sydenham to Bankstown upgrade  
 Surface Water Assessment

Job Number | 21-25273  
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**Post-developed 5%  
 AEP provisional flood hazard**

**Figure B.44**

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Paper Size A3  
 0 100 200 400  
 Metres  
 Map Projection: Transverse Mercator  
 Horizontal Datum: GDA 1994  
 Grid: GDA 1994 MGA Zone 56



**LEGEND**

- Project area
- T Train station
- Railway
- 1 - Low Hazard
- 2 - Transitional Hazard
- 3 - High Hazard



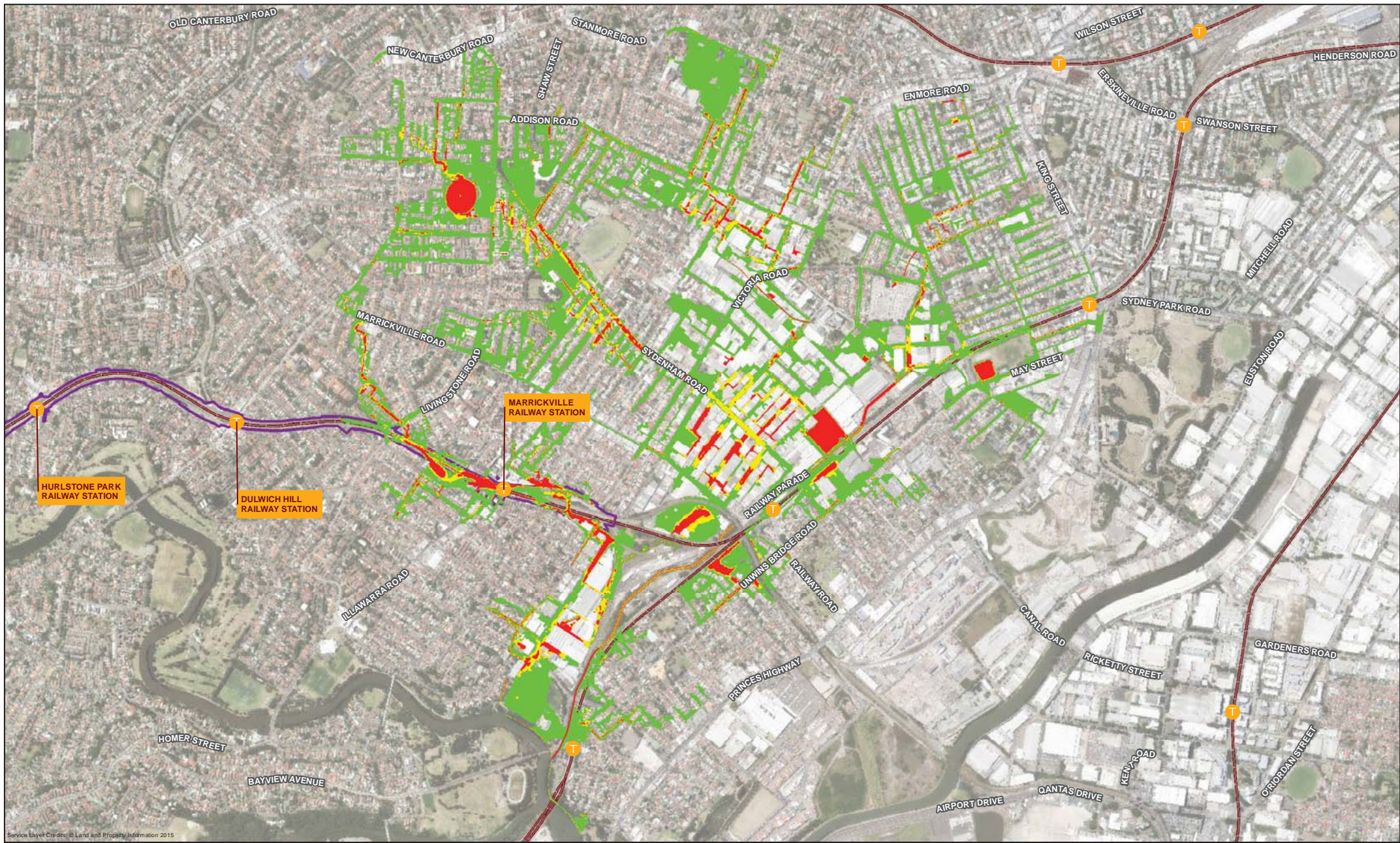
Transport for NSW  
 Sydney Metro - Sydenham to Bankstown upgrade  
 Surface Water Assessment

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**Post-developed 2%  
 AEP provisional flood hazard**

**Figure B.45**

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 0 100 200 400  
 Metres  
 Map Projection: Transverse Mercator  
 Horizontal Datum: GDA 1994  
 Grid: GDA 1994 MGA Zone 56



**LEGEND**

-  Project area
-  Train station
-  Railway
-  1 - Low Hazard
-  2 - Transitional Hazard
-  3 - High Hazard



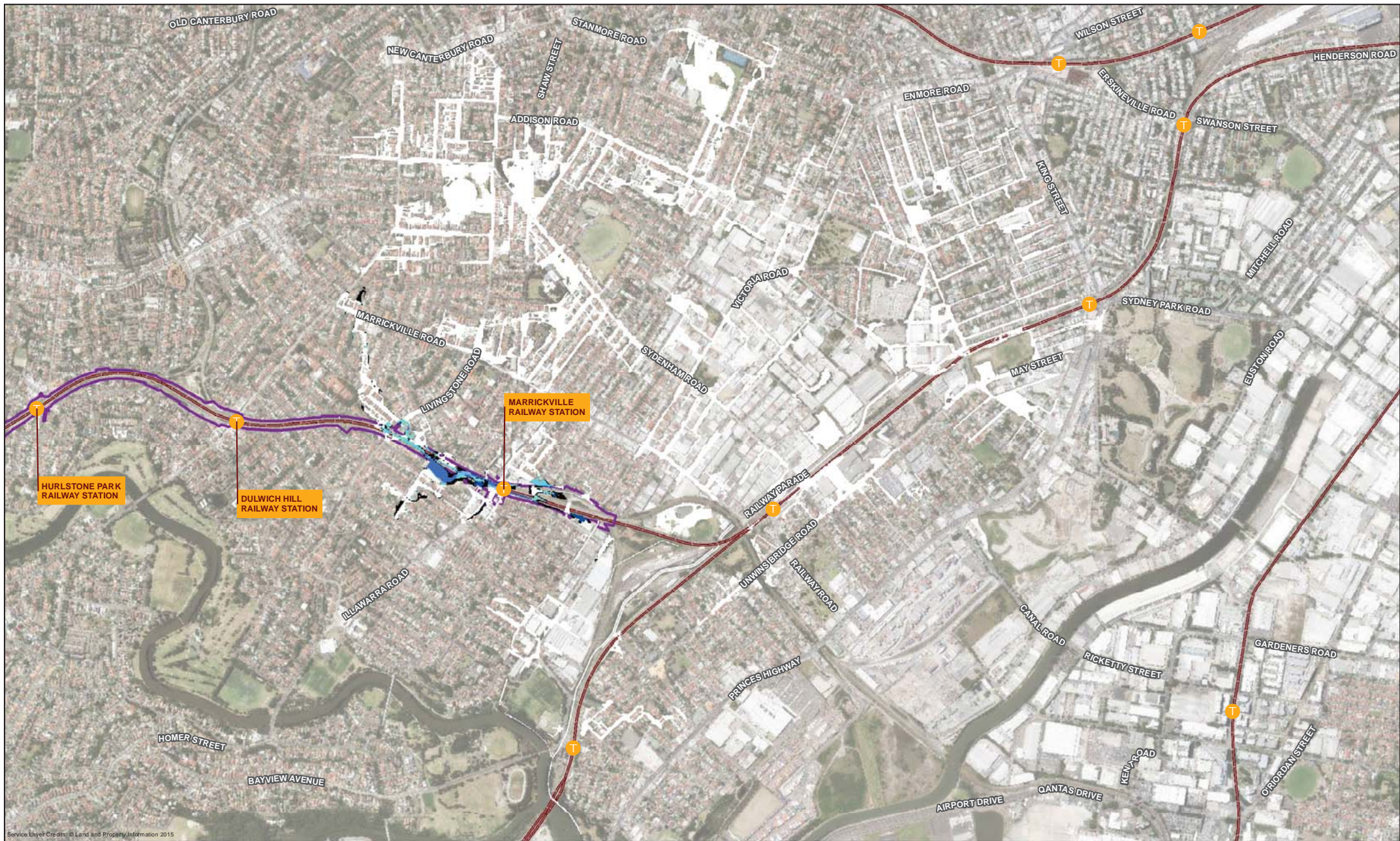
Transport for NSW  
 Sydney Metro - Sydenham to Bankstown upgrade  
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**Post-developed 1%  
 AEP provisional flood hazard**

**Figure B.46**

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Paper Size A3

0 100 200 400  
Metres

Map Projection: Transverse Mercator  
Horizontal Datum: GDA 1994  
Grid: GDA 1994 MGA Zone 56



**LEGEND**

- Project area
- T Train station
- Railway

Change in Flood Level (m)					
	<-0.3m		-0.15m - -0.1m		+0.1m - +0.15m
	-0.3m - -0.2m		-0.1m - -0.05m		+0.15m - +0.2m
	-0.2m - -0.15m		-0.05m - +0.05m		+0.2m - +0.3m
			+0.05m - +0.1m		+0.3m - +0.4m
	Was wet now dry		Was dry now wet		> 0.5m



Transport for NSW  
Sydney Metro - Sydenham to Bankstown upgrade  
Surface Water Assessment

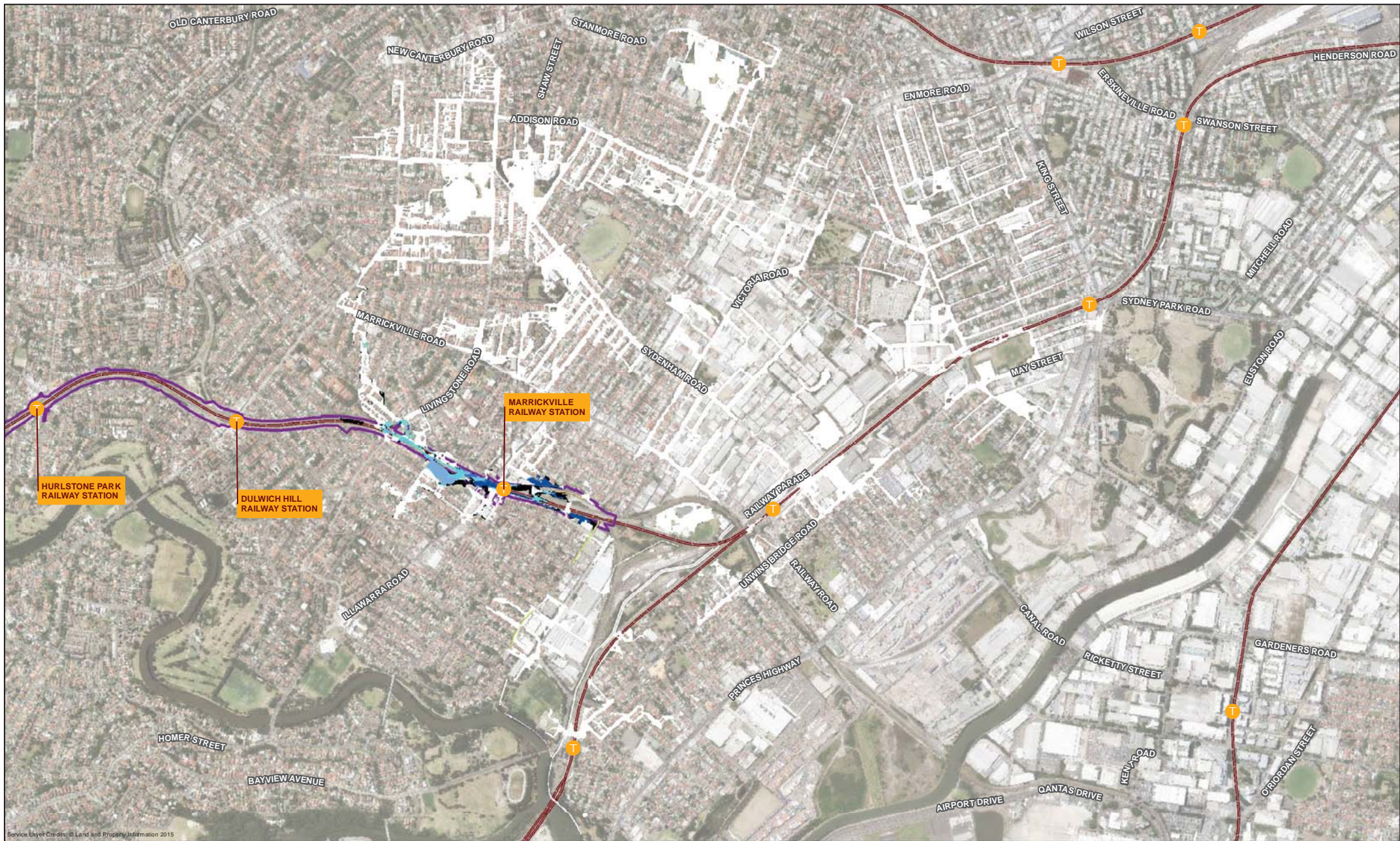
**63% AEP  
flood level change**

Job Number | 21-25273  
Revision | A  
Date | 22 May 2017

Figure B.47

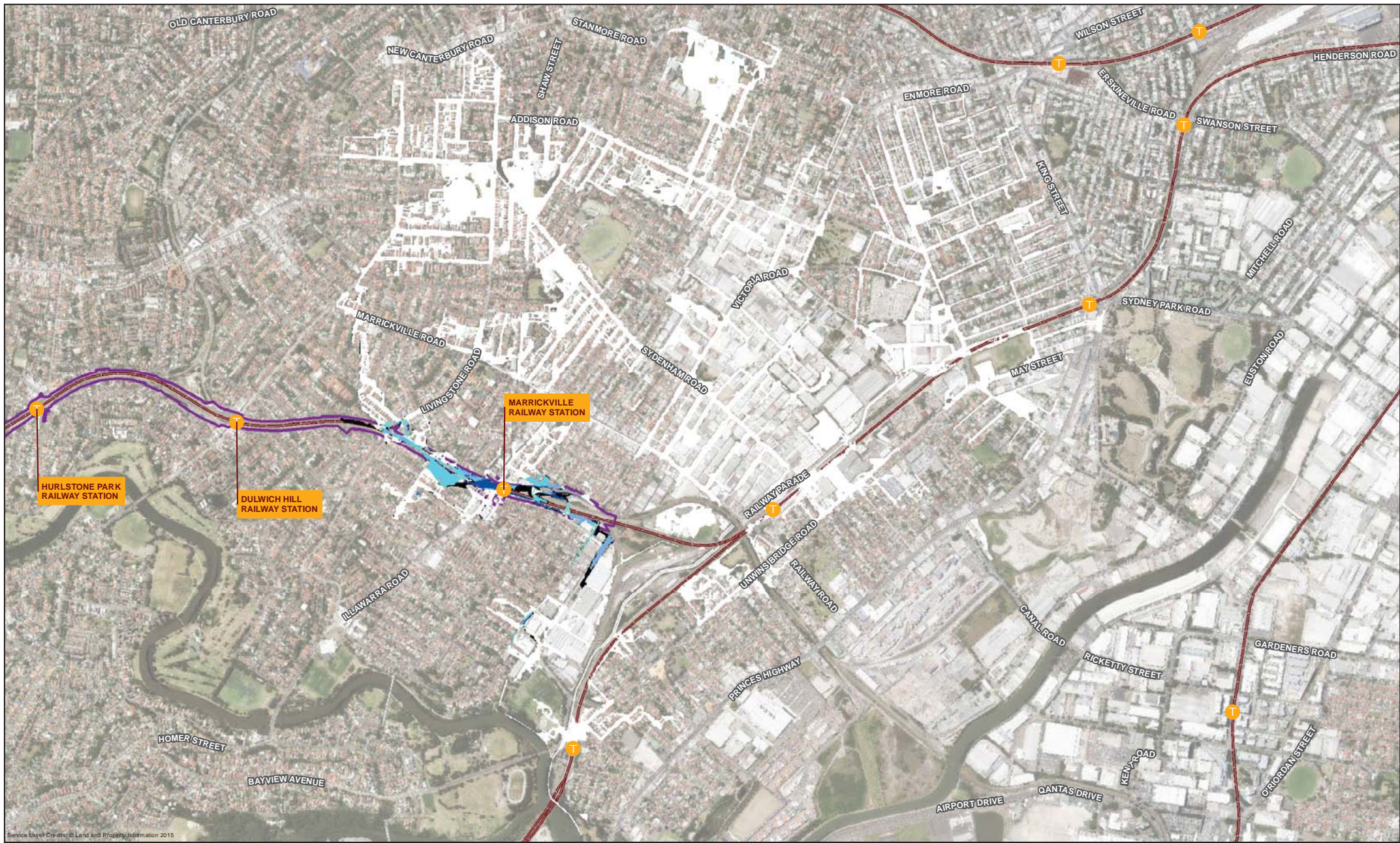
© 2017. Whilst every care has been taken to prepare this map, GHD (and sixmaps 2016, NSW Department of Lands) make no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and cannot accept liability and responsibility of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred by any party as a result of the map being inaccurate, incomplete or unsuitable in any way and for any reason.  
Data source: Aerial imagery - sixmaps 2016, General topo - NSW LPI DTDB 2012. Created by:afoddy





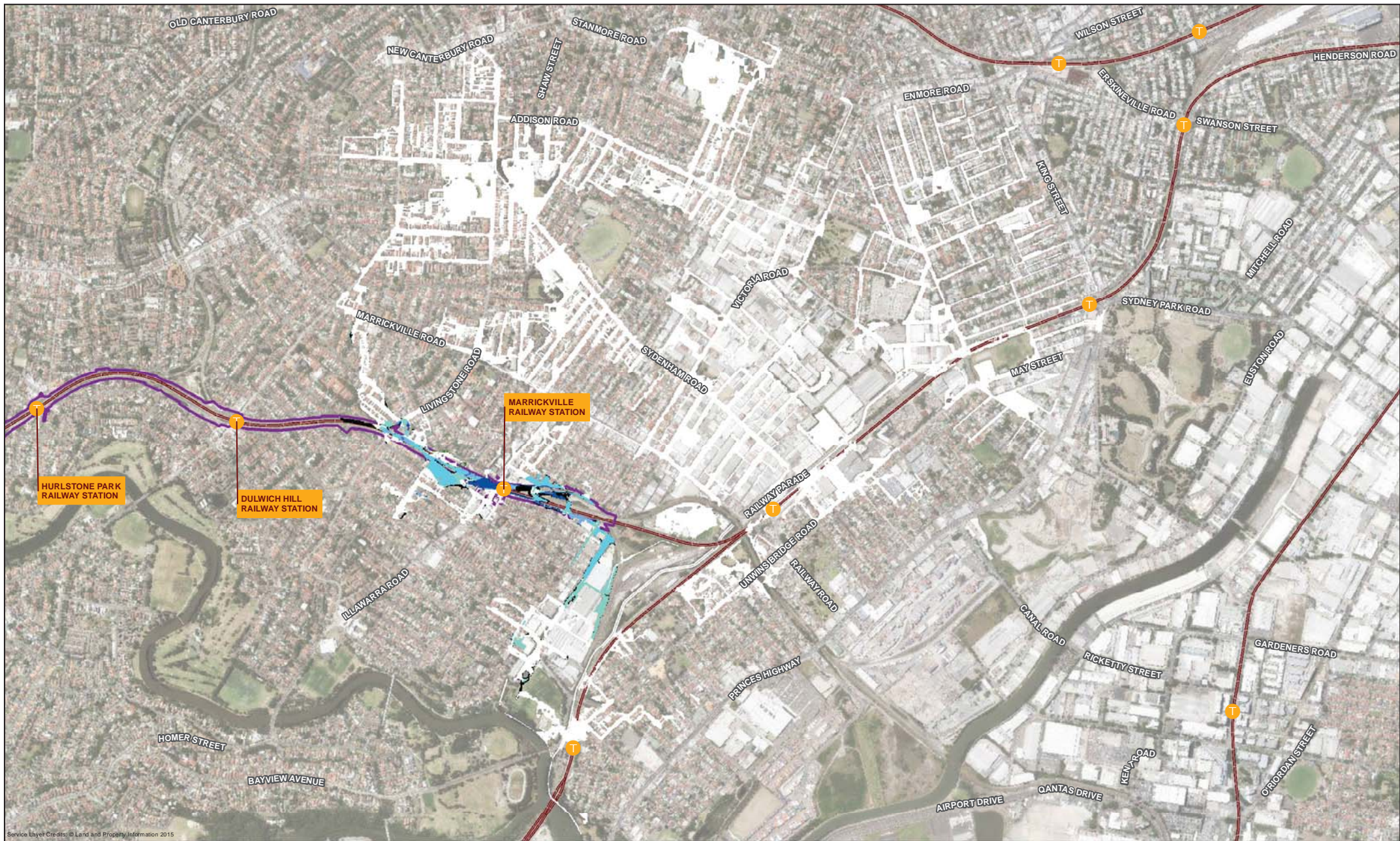
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<p>Paper Size A3</p> <p>0 100 200 400 Metres</p> <p>Map Projection: Transverse Mercator Horizontal Datum: GDA 1994 Grid: GDA 1994 MGA Zone 56</p>		<p><b>LEGEND</b></p> <p> Project area</p> <p> Train station</p> <p> Railway</p>	<p><b>Change in Flood Level (m)</b></p> <table border="0"> <tr> <td> &lt;-0.3m</td> <td> -0.2m - -0.15m</td> <td> -0.15m - -0.1m</td> <td> -0.1m - -0.05m</td> <td> -0.05m - +0.05m</td> <td> +0.05m - +0.1m</td> </tr> <tr> <td> -0.3m - -0.2m</td> <td> -0.2m - -0.15m</td> <td> -0.15m - -0.1m</td> <td> -0.1m - -0.05m</td> <td> -0.05m - +0.05m</td> <td> +0.05m - +0.1m</td> </tr> <tr> <td> -0.3m - -0.2m</td> <td> -0.2m - -0.15m</td> <td> -0.15m - -0.1m</td> <td> -0.1m - -0.05m</td> <td> -0.05m - +0.05m</td> <td> +0.05m - +0.1m</td> </tr> <tr> <td> -0.3m - -0.2m</td> <td> -0.2m - -0.15m</td> <td> -0.15m - -0.1m</td> <td> -0.1m - -0.05m</td> <td> -0.05m - +0.05m</td> <td> +0.05m - +0.1m</td> </tr> </table>	<-0.3m	-0.2m - -0.15m	-0.15m - -0.1m	-0.1m - -0.05m	-0.05m - +0.05m	+0.05m - +0.1m	-0.3m - -0.2m	-0.2m - -0.15m	-0.15m - -0.1m	-0.1m - -0.05m	-0.05m - +0.05m	+0.05m - +0.1m	-0.3m - -0.2m	-0.2m - -0.15m	-0.15m - -0.1m	-0.1m - -0.05m	-0.05m - +0.05m	+0.05m - +0.1m	-0.3m - -0.2m	-0.2m - -0.15m	-0.15m - -0.1m	-0.1m - -0.05m	-0.05m - +0.05m	+0.05m - +0.1m	<table border="0"> <tr> <td> +0.1m - +0.15m</td> <td> +0.15m - +0.2m</td> <td> +0.2m - +0.3m</td> <td> +0.3m - +0.4m</td> <td> +0.4m - +0.5m</td> <td> &gt; 0.5m</td> </tr> <tr> <td> +0.1m - +0.15m</td> <td> +0.15m - +0.2m</td> <td> +0.2m - +0.3m</td> <td> +0.3m - +0.4m</td> <td> +0.4m - +0.5m</td> <td> &gt; 0.5m</td> </tr> </table>	+0.1m - +0.15m	+0.15m - +0.2m	+0.2m - +0.3m	+0.3m - +0.4m	+0.4m - +0.5m	> 0.5m	+0.1m - +0.15m	+0.15m - +0.2m	+0.2m - +0.3m	+0.3m - +0.4m	+0.4m - +0.5m	> 0.5m	<table border="0"> <tr> <td> Was wet now dry</td> <td> Was dry now wet</td> </tr> </table>	Was wet now dry	Was dry now wet	<p>Transport for NSW Sydney Metro - Sydenham to Bankstown upgrade Surface Water Assessment</p> <p><b>39% AEP flood level change</b></p>	<table border="0"> <tr> <td>Job Number</td> <td>21-25273</td> </tr> <tr> <td>Revision</td> <td>A</td> </tr> <tr> <td>Date</td> <td>22 May 2017</td> </tr> </table>	Job Number	21-25273	Revision	A	Date	22 May 2017
<-0.3m	-0.2m - -0.15m	-0.15m - -0.1m	-0.1m - -0.05m	-0.05m - +0.05m	+0.05m - +0.1m																																														
-0.3m - -0.2m	-0.2m - -0.15m	-0.15m - -0.1m	-0.1m - -0.05m	-0.05m - +0.05m	+0.05m - +0.1m																																														
-0.3m - -0.2m	-0.2m - -0.15m	-0.15m - -0.1m	-0.1m - -0.05m	-0.05m - +0.05m	+0.05m - +0.1m																																														
-0.3m - -0.2m	-0.2m - -0.15m	-0.15m - -0.1m	-0.1m - -0.05m	-0.05m - +0.05m	+0.05m - +0.1m																																														
+0.1m - +0.15m	+0.15m - +0.2m	+0.2m - +0.3m	+0.3m - +0.4m	+0.4m - +0.5m	> 0.5m																																														
+0.1m - +0.15m	+0.15m - +0.2m	+0.2m - +0.3m	+0.3m - +0.4m	+0.4m - +0.5m	> 0.5m																																														
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Job Number	21-25273																																																		
Revision	A																																																		
Date	22 May 2017																																																		



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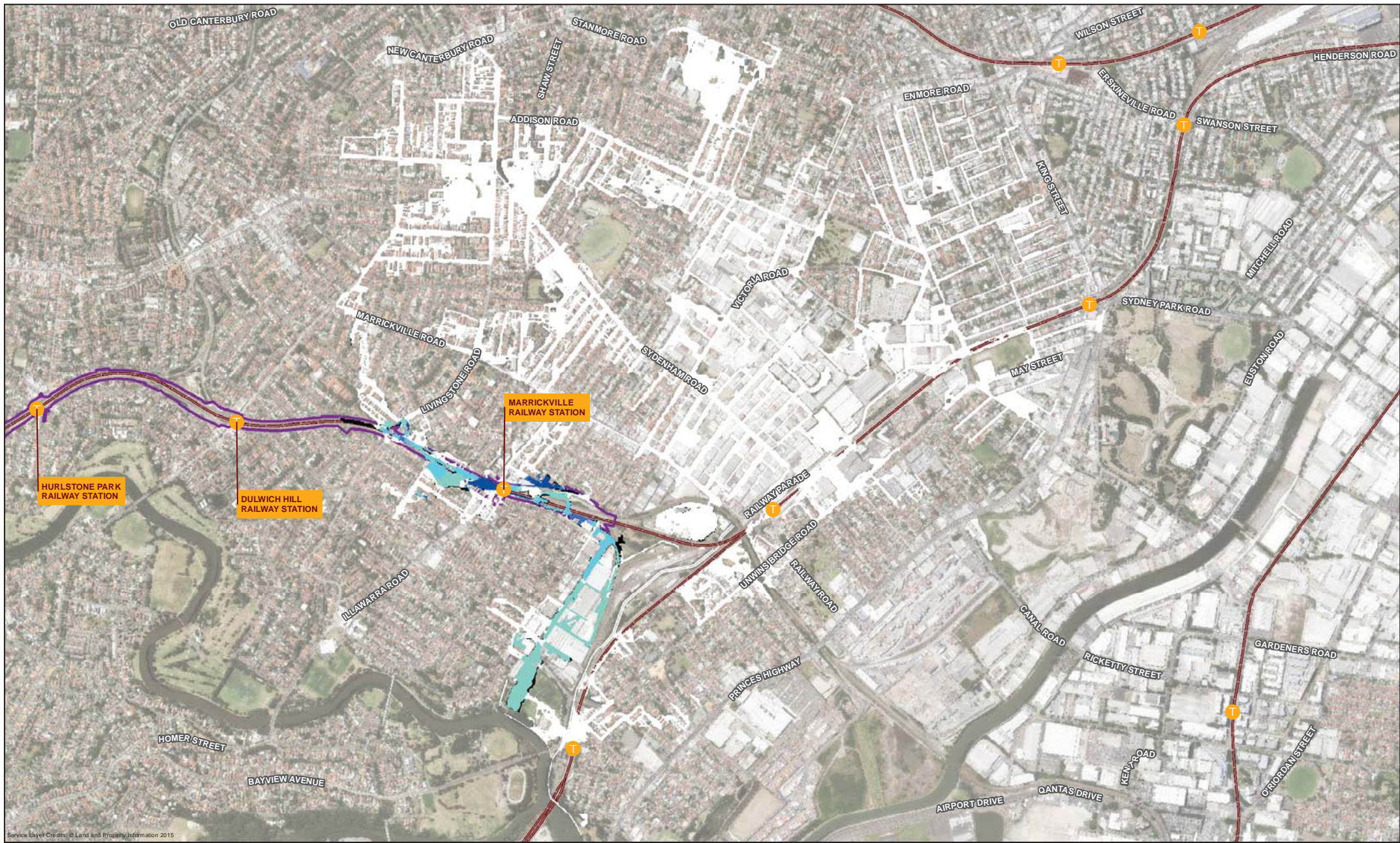
<p>Paper Size A3</p> <p>0 100 200 400 Metres</p> <p>Map Projection: Transverse Mercator Horizontal Datum: GDA 1994 Grid: GDA 1994 MGA Zone 56</p>		<p><b>LEGEND</b></p> <ul style="list-style-type: none"> <li> Project area</li> <li> Train station</li> <li> Railway</li> </ul>	<p><b>Change in Flood Level (m)</b></p> <table border="0"> <tr> <td> &lt;-0.3m</td> <td> -0.3m - -0.2m</td> <td> -0.2m - -0.15m</td> <td> -0.15m - -0.1m</td> <td> -0.1m - -0.05m</td> <td> -0.05m - +0.05m</td> <td> +0.05m - +0.1m</td> <td> +0.1m - +0.15m</td> <td> +0.15m - +0.2m</td> <td> +0.2m - +0.3m</td> <td> +0.3m - +0.4m</td> <td> +0.4m - +0.5m</td> <td> &gt; 0.5m</td> <td> Was wet now dry</td> <td> Was dry now wet</td> </tr> </table>	<-0.3m	-0.3m - -0.2m	-0.2m - -0.15m	-0.15m - -0.1m	-0.1m - -0.05m	-0.05m - +0.05m	+0.05m - +0.1m	+0.1m - +0.15m	+0.15m - +0.2m	+0.2m - +0.3m	+0.3m - +0.4m	+0.4m - +0.5m	> 0.5m	Was wet now dry	Was dry now wet	<p>Transport for NSW Sydney Metro - Sydenham to Bankstown upgrade Surface Water Assessment</p> <p><b>18% AEP flood level change</b></p>	<table border="0"> <tr> <td>Job Number</td> <td>21-25273</td> </tr> <tr> <td>Revision</td> <td>A</td> </tr> <tr> <td>Date</td> <td>22 May 2017</td> </tr> </table>	Job Number	21-25273	Revision	A	Date	22 May 2017
<-0.3m	-0.3m - -0.2m	-0.2m - -0.15m	-0.15m - -0.1m	-0.1m - -0.05m	-0.05m - +0.05m	+0.05m - +0.1m	+0.1m - +0.15m	+0.15m - +0.2m	+0.2m - +0.3m	+0.3m - +0.4m	+0.4m - +0.5m	> 0.5m	Was wet now dry	Was dry now wet												
Job Number	21-25273																									
Revision	A																									
Date	22 May 2017																									



Service Layer Credits: © Land and Property Information 2015

<p>Paper Size A3</p> <p>0 100 200 400 Metres</p> <p>Map Projection: Transverse Mercator Horizontal Datum: GDA 1994 Grid: GDA 1994 MGA Zone 56</p>		<p><b>LEGEND</b></p> <p> Project area</p> <p> Train station</p> <p> Railway</p>	<p><b>Change in Flood Level (m)</b></p> <table border="0"> <tr> <td> &lt;-0.3m</td> <td> -0.2m - -0.15m</td> <td> -0.15m - -0.1m</td> <td> -0.05m - +0.05m</td> <td> +0.05m - +0.1m</td> <td> +0.1m - +0.15m</td> <td> +0.15m - +0.2m</td> <td> +0.2m - +0.3m</td> <td> +0.3m - +0.4m</td> <td> +0.4m - +0.5m</td> <td> &gt; 0.5m</td> <td> Was wet now dry</td> <td> Was dry now wet</td> </tr> </table>	<-0.3m	-0.2m - -0.15m	-0.15m - -0.1m	-0.05m - +0.05m	+0.05m - +0.1m	+0.1m - +0.15m	+0.15m - +0.2m	+0.2m - +0.3m	+0.3m - +0.4m	+0.4m - +0.5m	> 0.5m	Was wet now dry	Was dry now wet		<p>Transport for NSW Sydney Metro - Sydenham to Bankstown upgrade Surface Water Assessment</p> <p><b>10% AEP flood level change</b></p>	<p>Job Number   21-25273 Revision   A Date   22 May 2017</p>
<-0.3m	-0.2m - -0.15m	-0.15m - -0.1m	-0.05m - +0.05m	+0.05m - +0.1m	+0.1m - +0.15m	+0.15m - +0.2m	+0.2m - +0.3m	+0.3m - +0.4m	+0.4m - +0.5m	> 0.5m	Was wet now dry	Was dry now wet							

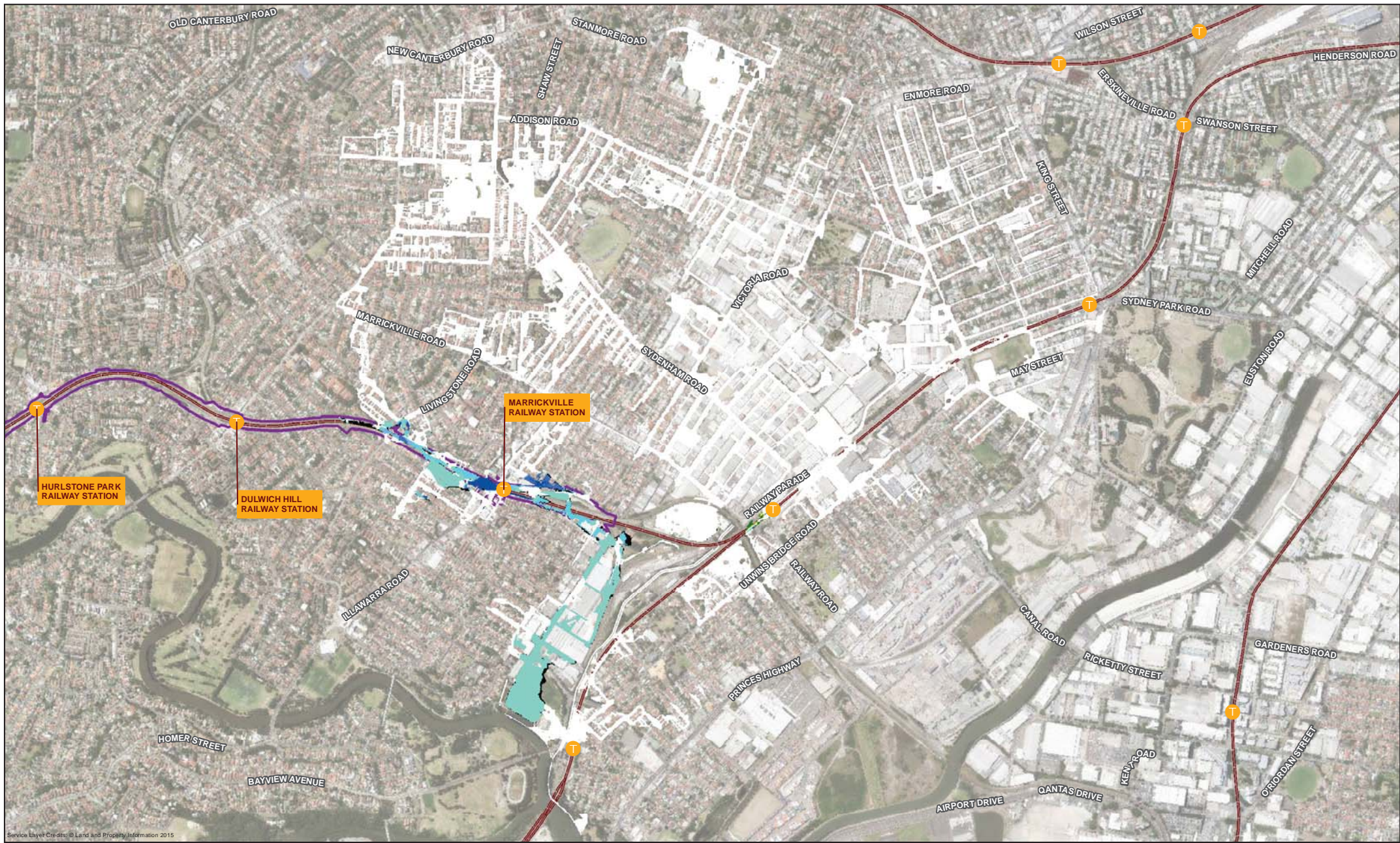
Figure B.50



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<p>Paper Size A3</p> <p>0 100 200 400 Metres</p> <p>Map Projection: Transverse Mercator Horizontal Datum: GDA 1994 Grid: GDA 1994 MGA Zone 56</p>		<p><b>LEGEND</b></p> <p> Project area</p> <p> Train station</p> <p> Railway</p>	<p><b>Change in Flood Level (m)</b></p> <table border="0"> <tr> <td> &lt;-0.3m</td> <td> -0.3m - -0.2m</td> <td> -0.2m - -0.15m</td> <td> -0.15m - -0.1m</td> <td> -0.1m - -0.05m</td> <td> -0.05m - +0.05m</td> <td> +0.05m - +0.1m</td> <td> +0.1m - +0.15m</td> <td> +0.15m - +0.2m</td> <td> +0.2m - +0.3m</td> <td> +0.3m - +0.4m</td> <td> +0.4m - +0.5m</td> <td> &gt; 0.5m</td> <td> Was wet now dry</td> <td> Was dry now wet</td> </tr> </table>	<-0.3m	-0.3m - -0.2m	-0.2m - -0.15m	-0.15m - -0.1m	-0.1m - -0.05m	-0.05m - +0.05m	+0.05m - +0.1m	+0.1m - +0.15m	+0.15m - +0.2m	+0.2m - +0.3m	+0.3m - +0.4m	+0.4m - +0.5m	> 0.5m	Was wet now dry	Was dry now wet	<p>Transport for NSW Sydney Metro - Sydenham to Bankstown upgrade Surface Water Assessment</p> <p><b>5% AEP flood level change</b></p>	<table border="0"> <tr> <td>Job Number</td> <td>21-25273</td> </tr> <tr> <td>Revision</td> <td>A</td> </tr> <tr> <td>Date</td> <td>22 May 2017</td> </tr> </table>	Job Number	21-25273	Revision	A	Date	22 May 2017
<-0.3m	-0.3m - -0.2m	-0.2m - -0.15m	-0.15m - -0.1m	-0.1m - -0.05m	-0.05m - +0.05m	+0.05m - +0.1m	+0.1m - +0.15m	+0.15m - +0.2m	+0.2m - +0.3m	+0.3m - +0.4m	+0.4m - +0.5m	> 0.5m	Was wet now dry	Was dry now wet												
Job Number	21-25273																									
Revision	A																									
Date	22 May 2017																									

Figure B.51



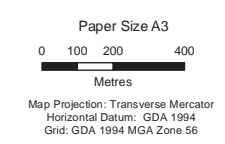
Service Layer Credits: © Land and Property Information 2015

<p>Paper Size A3</p> <p>0 100 200 400 Metres</p> <p>Map Projection: Transverse Mercator Horizontal Datum: GDA 1994 Grid: GDA 1994 MGA Zone 56</p>		<p><b>LEGEND</b></p> <p> Project area</p> <p> Train station</p> <p> Railway</p>	<p><b>Change in Flood Level (m)</b></p> <table border="0"> <tr> <td> &lt;-0.3m</td> <td> -0.3m - -0.2m</td> <td> -0.2m - -0.15m</td> <td> -0.15m - -0.1m</td> <td> -0.1m - -0.05m</td> <td> -0.05m - +0.05m</td> <td> +0.05m - +0.1m</td> <td> +0.1m - +0.15m</td> <td> +0.15m - +0.2m</td> <td> +0.2m - +0.3m</td> <td> +0.3m - +0.4m</td> <td> +0.4m - +0.5m</td> <td> +0.5m</td> <td> Was wet now dry</td> <td> Was dry now wet</td> </tr> </table>	<-0.3m	-0.3m - -0.2m	-0.2m - -0.15m	-0.15m - -0.1m	-0.1m - -0.05m	-0.05m - +0.05m	+0.05m - +0.1m	+0.1m - +0.15m	+0.15m - +0.2m	+0.2m - +0.3m	+0.3m - +0.4m	+0.4m - +0.5m	+0.5m	Was wet now dry	Was dry now wet		<p>Transport for NSW Sydney Metro - Sydenham to Bankstown upgrade Surface Water Assessment</p> <p><b>2% AEP flood level change</b></p>	<p>Job Number   21-25273 Revision   A Date   22 May 2017</p>
<-0.3m	-0.3m - -0.2m	-0.2m - -0.15m	-0.15m - -0.1m	-0.1m - -0.05m	-0.05m - +0.05m	+0.05m - +0.1m	+0.1m - +0.15m	+0.15m - +0.2m	+0.2m - +0.3m	+0.3m - +0.4m	+0.4m - +0.5m	+0.5m	Was wet now dry	Was dry now wet							

Figure B.52



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**LEGEND**

- Project area
- Train station
- Railway

**Change in Flood Level (m)**

	<-0.3m
	-0.3m - -0.2m
	-0.2m - -0.15m

	-0.15m - -0.1m
	-0.1m - -0.05m
	-0.05m - +0.05m
	+0.05m - +0.1m

	+0.1m - +0.15m
	+0.15m - +0.2m
	+0.2m - +0.3m
	+0.3m - +0.4m

	+0.4m - +0.5m
	> 0.5m

- Was wet now dry
- Was dry now wet



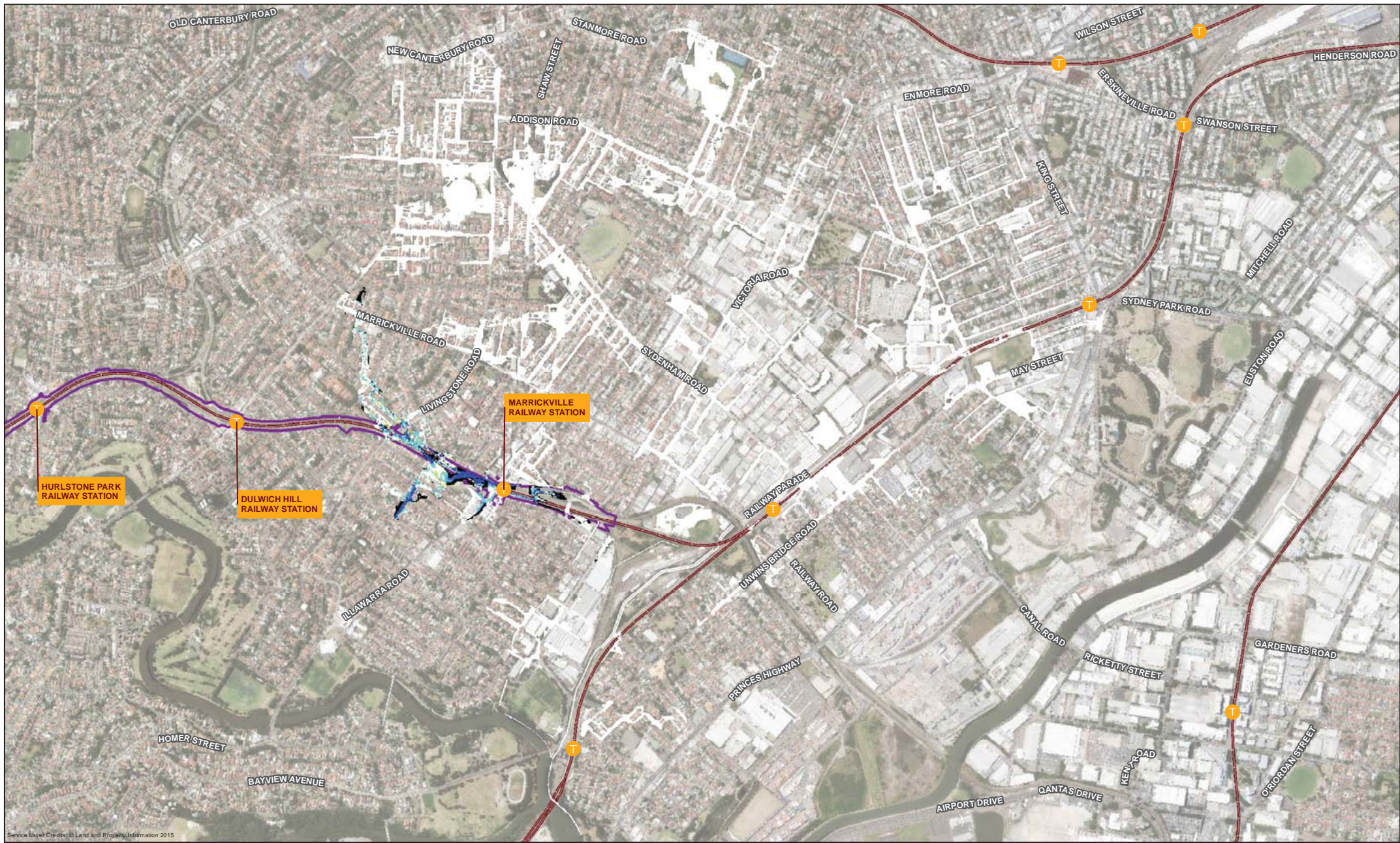
Transport for NSW  
Sydney Metro - Sydenham to Bankstown upgrade  
Surface Water Assessment

**1% AEP  
flood level change**

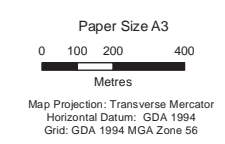
Job Number | 21-25273  
Revision | A  
Date | 22 May 2017

**Figure B.53**

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Data source: Aerial imagery - sixmaps 2016, General topo - NSW LPI DTDB 2012. Created by:afoddy



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**LEGEND**

- Project area
- Train station
- Railway

- Change in Flood Velocity (m/s)**
- Greater than -0.5
  - 0.5 to -0.4

- 0.4 to -0.3
- 0.3 to -0.2
- 0.2 to -0.1

- 0.1 to +0.1
- +0.1 to +0.2
- +0.2 to +0.3

- +0.3 to +0.4
- +0.4 to +0.5
- Greater than +0.5

- Was wet now dry
- Was dry now wet

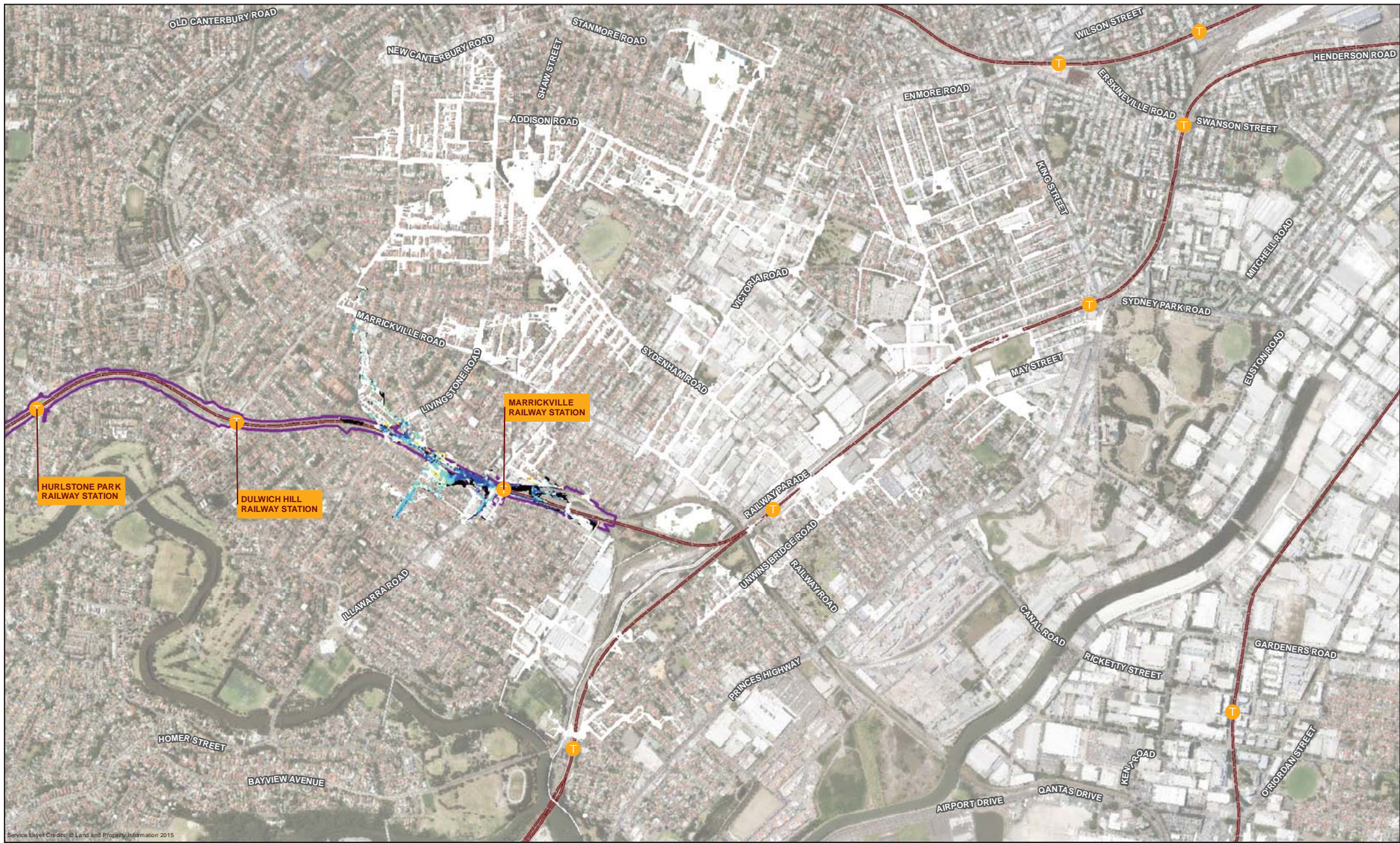


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**63% AEP  
flood velocity change**

Job Number | 21-25273  
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Date | 22 May 2017

Figure B.54



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Paper Size A3

0 100 200 400  
Metres

Map Projection: Transverse Mercator  
Horizontal Datum: GDA 1994  
Grid: GDA 1994 MGA Zone 56



**LEGEND**

- Project area
- Train station
- Railway

- Change in Flood Velocity (m/s)**
- Greater than -0.5
  - 0.5 to -0.4

- 0.4 to -0.3
- 0.3 to -0.2
- 0.2 to -0.1

- 0.1 to +0.1
- +0.1 to +0.2
- +0.2 to +0.3

- +0.3 to +0.4
- +0.4 to +0.5
- Greater than +0.5

- Was wet now dry
- Was dry now wet



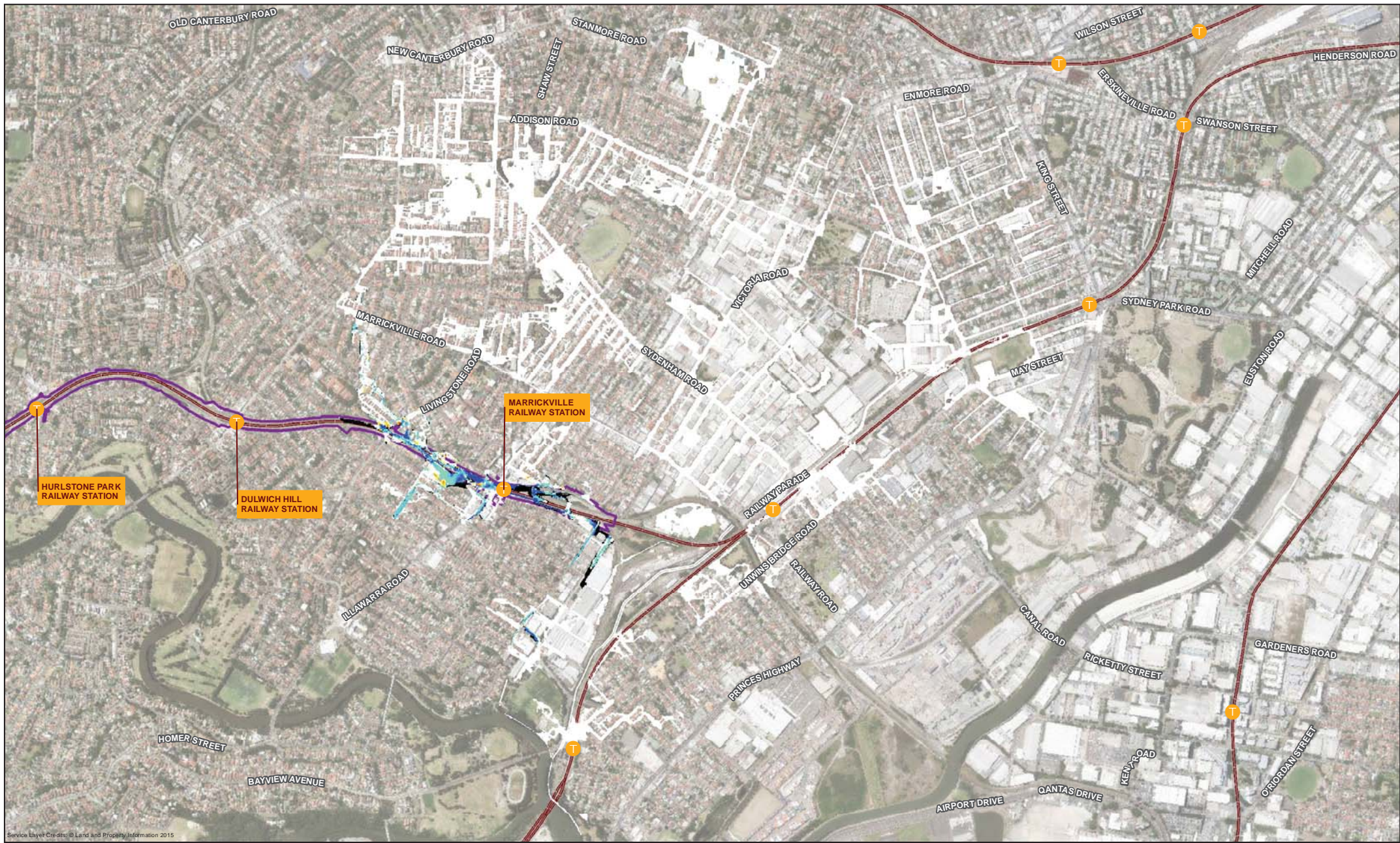
Transport for NSW  
Sydney Metro - Sydenham to Bankstown upgrade  
Surface Water Assessment

**39% AEP  
flood velocity change**

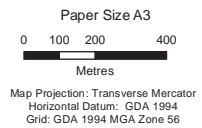
Job Number | 21-25273  
Revision | A  
Date | 22 May 2017

**Figure B.55**





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**LEGEND**

- Project area
- Train station
- Railway

- Change in Flood Velocity (m/s)**
- Greater than -0.5
  - 0.5 to -0.4

- 0.4 to -0.3
- 0.3 to -0.2
- 0.2 to -0.1

- 0.1 to +0.1
- +0.1 to +0.2
- +0.2 to +0.3

- +0.3 to +0.4
- +0.4 to +0.5
- Greater than +0.5

- Was wet now dry
- Was dry now wet

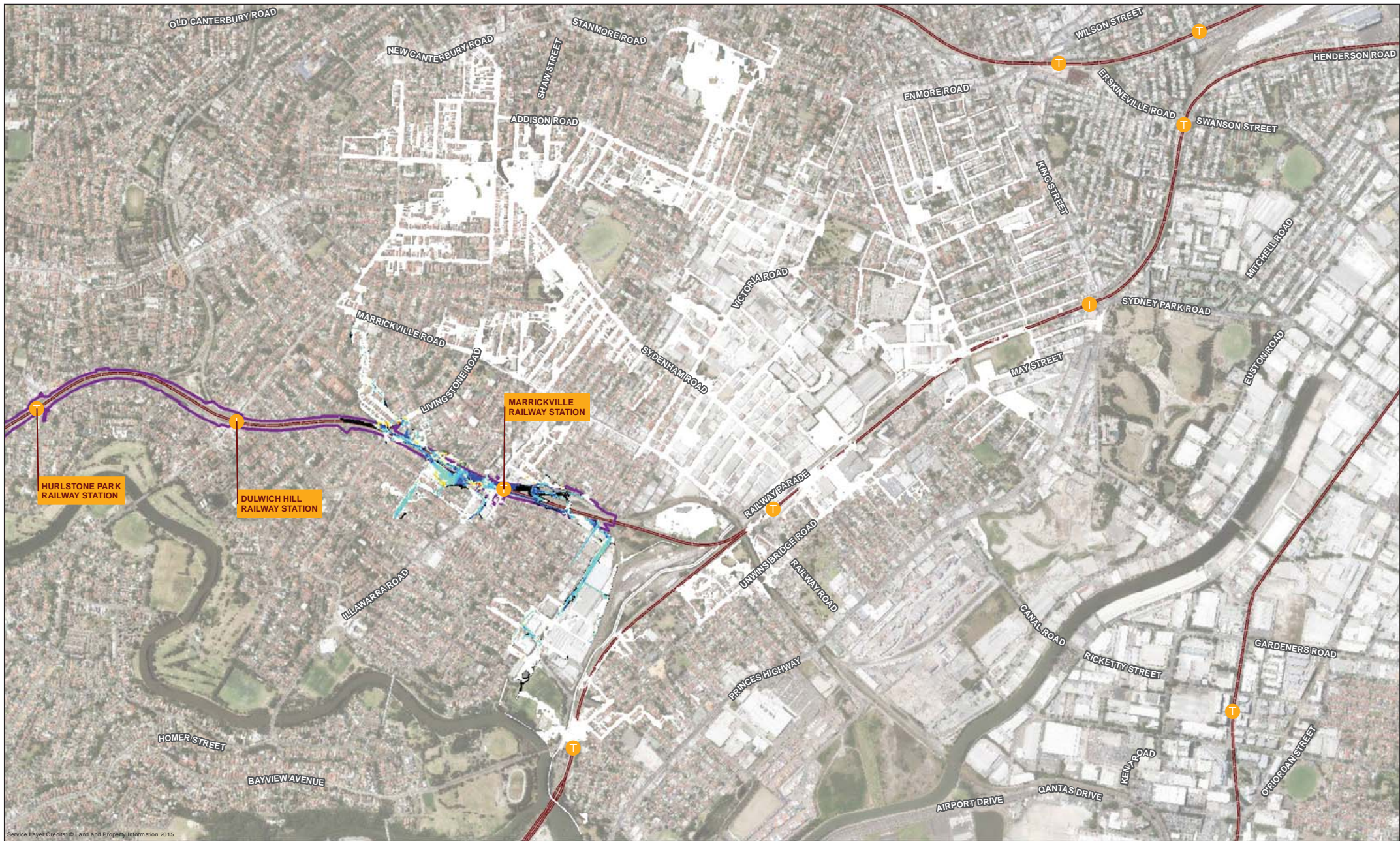


Transport for NSW  
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Surface Water Assessment

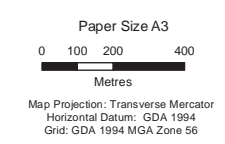
**18% AEP  
flood velocity change**

Job Number | 21-25273  
Revision | A  
Date | 22 May 2017

**Figure B.56**



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**LEGEND**

- Project area
- Train station
- Railway

- Change in Flood Velocity (m/s)**
- Greater than -0.5
  - 0.5 to -0.4

- 0.4 to -0.3
- 0.3 to -0.2
- 0.2 to -0.1

- 0.1 to +0.1
- +0.1 to +0.2
- +0.2 to +0.3

- +0.3 to +0.4
- +0.4 to +0.5
- Greater than +0.5

- Was wet now dry
- Was dry now wet

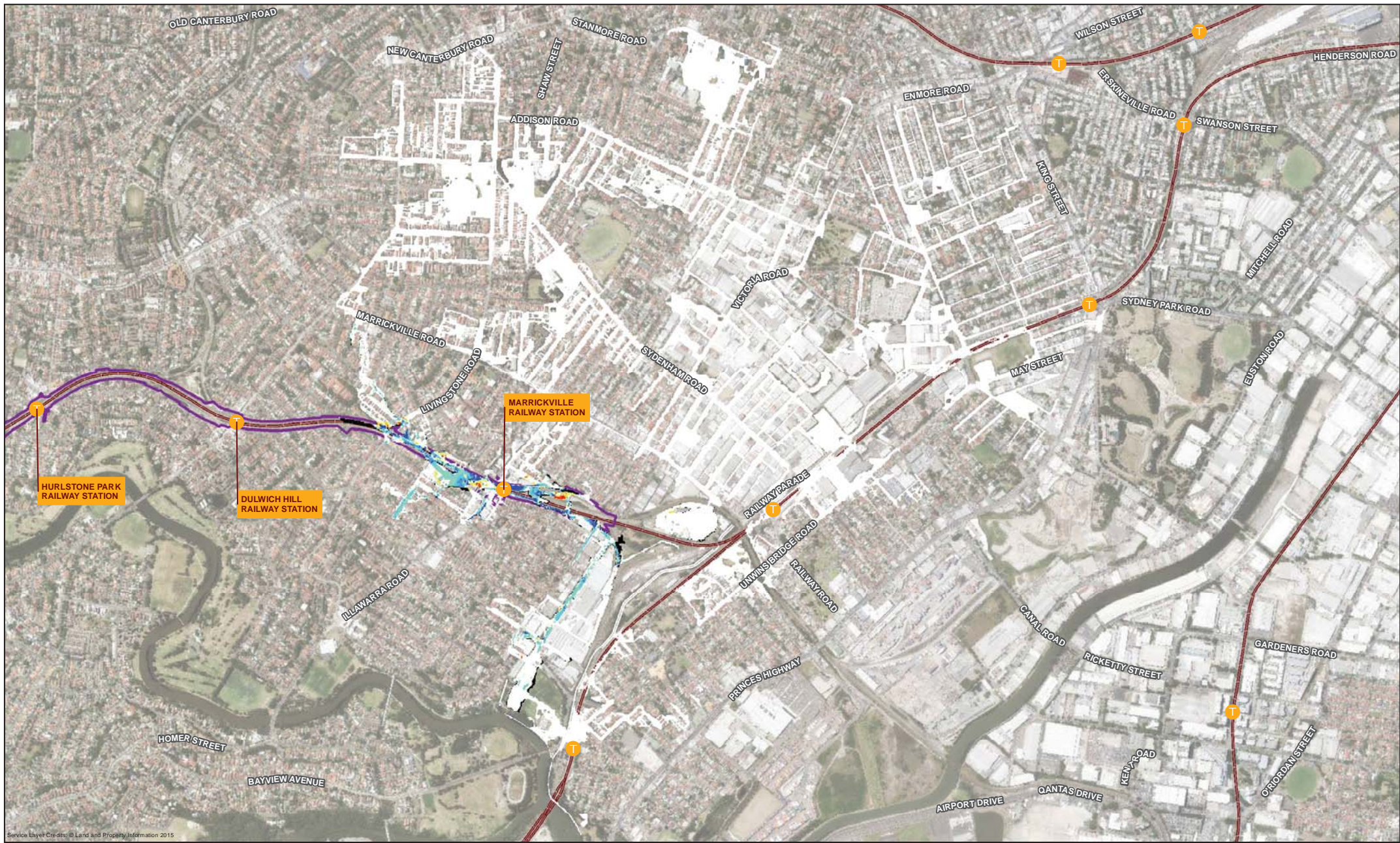


Transport for NSW  
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Surface Water Assessment

**10% AEP  
flood velocity change**

Job Number | 21-25273  
Revision | A  
Date | 22 May 2017

**Figure B.57**



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Paper Size A3  
 0 100 200 400  
 Metres  
 Map Projection: Transverse Mercator  
 Horizontal Datum: GDA 1994  
 Grid: GDA 1994 MGA Zone 56



**LEGEND**

- Project area
- Train station
- Railway

**Change in Flood Velocity (m/s)**

- |                   |              |              |                   |
|-------------------|--------------|--------------|-------------------|
| Greater than -0.5 | -0.4 to -0.3 | -0.1 to +0.1 | +0.3 to +0.4      |
| -0.5 to -0.4      | -0.3 to -0.2 | +0.1 to +0.2 | +0.4 to +0.5      |
|                   | -0.2 to -0.1 | +0.2 to +0.3 | Greater than +0.5 |

- Was wet now dry
- Was dry now wet



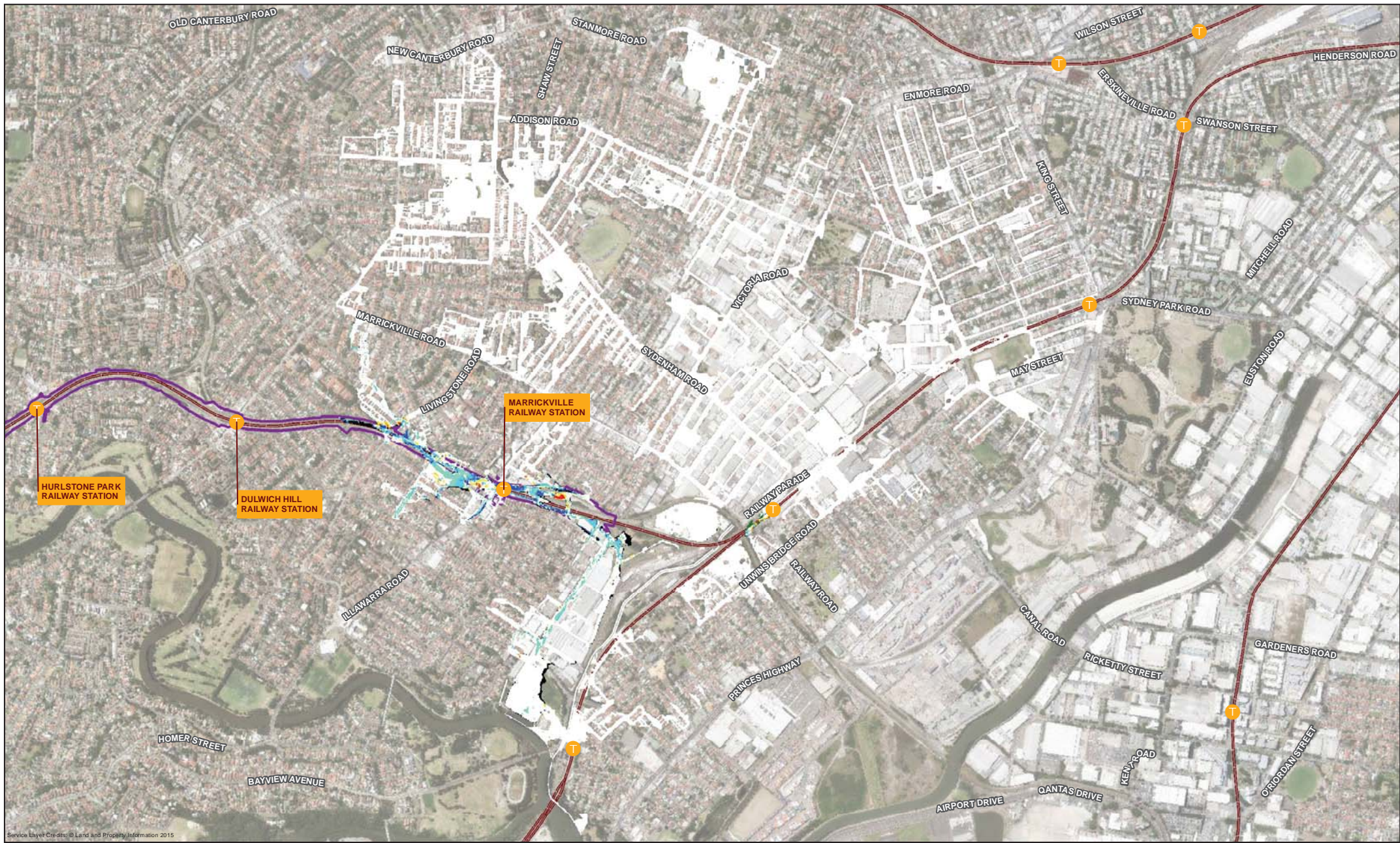
Transport for NSW  
 Sydney Metro - Sydenham to Bankstown upgrade  
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Job Number | 21-25273  
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 Date | 22 May 2017

**5% AEP  
 flood velocity change**

**Figure B.58**

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 Data source: Aerial imagery - sixmaps 2016, General topo - NSW LPI DTDB 2012. Created by:afoddy



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<p>Paper Size A3</p> <p>0 100 200 400 Metres</p> <p>Map Projection: Transverse Mercator Horizontal Datum: GDA 1994 Grid: GDA 1994 MGA Zone 56</p>		<p><b>LEGEND</b></p> <p> Project area</p> <p> Train station</p> <p> Railway</p>	<p><b>Change in Flood Velocity (m/s)</b></p> <table border="0"> <tr> <td> Greater than -0.5</td> <td> -0.4 to -0.3</td> <td> -0.1 to +0.1</td> <td> +0.3 to +0.4</td> <td> Was wet now dry</td> </tr> <tr> <td> -0.5 to -0.4</td> <td> -0.3 to -0.2</td> <td> +0.1 to +0.2</td> <td> +0.4 to +0.5</td> <td> Was dry now wet</td> </tr> <tr> <td></td> <td> -0.2 to -0.1</td> <td> +0.2 to +0.3</td> <td> Greater than +0.5</td> <td></td> </tr> </table>	Greater than -0.5	-0.4 to -0.3	-0.1 to +0.1	+0.3 to +0.4	Was wet now dry	-0.5 to -0.4	-0.3 to -0.2	+0.1 to +0.2	+0.4 to +0.5	Was dry now wet		-0.2 to -0.1	+0.2 to +0.3	Greater than +0.5		<p>Transport for NSW Sydney Metro - Sydenham to Bankstown upgrade Surface Water Assessment</p>	<p>Job Number   21-25273 Revision   A Date   22 May 2017</p>
Greater than -0.5	-0.4 to -0.3	-0.1 to +0.1	+0.3 to +0.4	Was wet now dry																
-0.5 to -0.4	-0.3 to -0.2	+0.1 to +0.2	+0.4 to +0.5	Was dry now wet																
	-0.2 to -0.1	+0.2 to +0.3	Greater than +0.5																	

**2% AEP  
flood velocity change**

**Figure B.59**



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Paper Size A3  
 0 100 200 400  
 Metres  
 Map Projection: Transverse Mercator  
 Horizontal Datum: GDA 1994  
 Grid: GDA 1994 MGA Zone 56



LEGEND

- Project area
- Train station
- Railway

**Change in Flood Velocity (m/s)**

- Greater than -0.5
- 0.5 to -0.4

- 0.4 to -0.3
- 0.3 to -0.2
- 0.2 to -0.1

- 0.1 to +0.1
- +0.1 to +0.2
- +0.2 to +0.3

- +0.3 to +0.4
- +0.4 to +0.5
- Greater than +0.5

- Was wet now dry
- Was dry now wet



Transport for NSW  
 Sydney Metro - Sydenham to Bankstown upgrade  
 Surface Water Assessment

1% AEP  
 flood velocity change

Job Number | 21-25273  
 Revision | A  
 Date | 22 May 2017

Figure B.60

G:\2125273\GIS\Maps\Deliverables\SurfaceWater\SMA.mxd

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Data source: Aerial imagery - sixmaps 2016, General topo - NSW LPI DTDB 2012. Created by:afoddy

# Appendix C – Culverts Summary

**Appendix C: Culvert Summary - comparison of design flows and velocities under existing and post-development conditions**

Culvert No.	Culvert Name in Sydney Trains Chainage (Down Metro chainage)	Existing Culvert Dimensions	100 year ARI existing condition flow (m³/s)	Existing condition velocity (m/s)	100 year ARI Post-development flow (m³/s)	Post-development velocity (m/s)	Existing culvert capacity
1	6.183 (6.810)	Box culvert 3.0m x 1.8m					not determined
2	6.187 (6.830)	Box culvert 1.6m x 1.8m					not determined
3	6.699 (7.320)	Concrete arch culvert 1.4m x 1.8m	2.630	1.440	4.05	2.2	not determined
4	6.990 (7.600)	Circular 1.5m-dia.	3.28	1.8	3.28	1.8	not determined
5	7.665 (8.280)	Box culvert 650mmx576mm (under the ARTC tracks), 2000mmx800mm (under the ST tracks)	0.960	0.600	1.3	2	1 in 2-year ARI (both) (39% AEP)
6	8.093 (8.725)	Brick arch culvert 1.91mx1.98m	Low risk catchment, rail alignment is in fill at this location and more than 3.0m higher than the local road at the culvert location. No additional modelling has been done at concept stage.				not determined
7	9.000 (9.600)	Brick arch culvert 1.84mx1.96m	Low risk catchment, rail alignment is in fill at this location and more than 6.0m higher than the local council area at the culvert location. No additional modelling has been done at concept stage.				1 in 100 year ARI (1% AEP)
8	9.384 (10.000)	Brick arch culvert 1.525mx1.57m	Low risk catchment, rail alignment is in fill at this location and more than 5.0m higher than the local council area at the culvert location. No additional modelling has been done at concept stage.				1 in 100 year ARI (1% AEP)
9	9.617 (10.250)	Box culvert 750mmx800mm	1.270	6	1.270	6	1 in 100 year ARI +10% (1% AEP + 10% climate change)
10	9.883 South (10.500)	Box culvert 1500mmx500mm	1.500	2.500	2.2	2.2	1 in 10 year ARI (10% AEP)
11	11.187 (11.800)	Circular 420mm-dia.	Long drainage culvert*				not determined
12	11.846 (12.480)	Box culvert 1.52m x 1.52m, and four cells of box culverts alongside at 870mm x 590mm each	5.800	1.900	5.71	2.5	less than 1 in 10 year ARI (10% AEP)
13	12.332 (12.950)	Box culvert 1.1mx0.7m	1.760	5.000	1.4	4.8	limited by downstream capacity of less than 1 in 2 year ARI (39% AEP)
14	12.669 (13.325)	Box culvert 1.5mx1.5m	Low risk catchment, rail alignment is in fill at this location and more than 4.0m higher than the local council area at the culvert location. No additional modelling have been done at concept stage.				1 in 2 year ARI (39% AEP)
15	12.815 (13.440)	Brick arch culvert 1.9mx1.7m	Low risk catchment, rail alignment is in fill at this location and more than 4.0m higher than the local council area at the culvert location. No additional modelling have been done at concept stage.				1 in 2 year ARI (39% AEP)
16	13.550 (14.170)	Box culvert 900mm x 900mm	3.100	3.500	3.100	3.500	Less than 1 in 5-year ARI (18% AEP)
17	14.099 (14.725)	Concrete arch culvert 0.9mx0.9m	1.750	4.800	1.750	4.800	Less than 1 in 20-year ARI (5% AEP)
18	14.171 (14.800)	Concrete arch culvert 0.9mx0.9m	2.200	4.600	2.200	4.600	not determined
19	14.725 (15.350)	Brick arch culvert 1.2mx1.2m	Low risk catchment, rail alignment is in fill at this location and more than 6.0m higher than the local road at the culvert location. No additional modelling has been done at concept stage.				Less than 1 in 5-year ARI (18% AEP)
20	14.734 (15.360)	Brick arch culvert 1.2mx1.2m	Low risk catchment, rail alignment is in fill at this location and more than 6.0m higher than the local road at the culvert location. No additional modelling has been done at concept stage.				Less than 1 in 5-year ARI (18% AEP)

21	15.558 (16.180)	Concrete arch culvert 1.4mx1.4m	Low risk catchment, rail alignment is in fill at this location and more than 6.0m higher than the local road at the culvert location. No additional modelling has been done at concept stage.				Less than 1 in 5-year ARI (18% AEP)
22	15.579 (16.200)	Concrete arch culvert 1.2mx1.2m	Low risk catchment, rail alignment is in fill at this location and more than 6.0m higher than the local road at the culvert location. No additional modelling has been done at concept stage.				Less than 1 in 5-year ARI (18% AEP)
23	15.595 (16.215)	Concrete arch culvert 1.2mx1.2m	Low risk catchment, rail alignment is in fill at this location and more than 6.0m higher than the local road at the culvert location. No additional modelling has been done at concept stage.				Less than 1 in 5-year ARI (18% AEP)
24	15.973 (16.600)	Pipe culvert 0.9m diameter	1.900	5.300	1.900	5.300	Less than 1 in 5-year ARI (18% AEP)
25	16.310 (16.925)	Pipe culvert 0.9m diameter	1.700	4.800	1.700	4.800	Less than 1 in 50-year ARI (2% AEP)
26	16.361 (16.980)	Pipe culvert 0.75m diameter	1.400	3.200	1.400	3.200	Less than 1 in 20-year ARI (5% AEP)
27	16.722 (17.350)	Pipe culvert 0.9m diameter	1.500	3.500	1.6	3.7	1 in 100 year + 10% ARI (1% AEP + 10% climate change)
28	17.139 (17.750)	Concrete arch culvert 0.9mx0.9m	3.450	5.400	3.450	5.400	1 in 100 year + 10% ARI (1% AEP + 10% climate change)
29	17.333 (17.950)	Concrete arch culvert 0.9mx0.9m	2.030	1.400	2.030	1.400	1 in 100 year + 10% ARI (1% AEP + 10% climate change)
30	17.607 (18.240)	Concrete arch culvert 0.9mx0.9m	1.130	2.000	1.130	2.000	1 in 100 year + 10% ARI (1% AEP + 10% climate change)
31	17.941 East (18.550)	Concrete arch culvert 1.2mx1.2m	Low risk catchment, rail alignment is in fill at this location and more than 2.5m higher than the local council area at the culvert location. No additional modelling has been done at concept stage.				less than 1 in 20 year ARI (5% AEP)
32	17.941 West (18.550)	Concrete arch culvert 1.2mx1.2m	Same culvert as above				less than 1 in 20 year ARI (5% AEP)
33	18.375 (19.000)	Box culvert 1000mmx950mm	Low risk catchment, rail alignment is in fill at this location and more than 2.5m higher than the local council area at the culvert location. No additional modelling has been done at concept stage.				less than 1 in 20 year ARI (5% AEP)
34	18.458 East U (19.070)	Twin box culverts (Sydney Water Culverts)	Low risk catchment, rail alignment is in fill at this location and more than 2.5m higher than the local council area at the culvert location. No additional modelling has been done at concept stage.				not determined
35	18.458 East D (19.070)						not determined
36	19.147 East (Beyond Metro chainage)	Two box culverts at 0.6m x 0.5m each	Low risk catchment, rail alignment is in fill at this location and more than 4.0 m higher than the local council area at the culvert location. No additional modelling has been done at concept stage.				not determined

Notes: The culvert locations are shown in Figures 3-9 to 3-14 in the main body of the report

\* the location of this longitudinal culvert (No. 11) is not shown



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SYDENHAM TO BANKSTOWN

**ENVIRONMENTAL IMPACT STATEMENT**

> Technical Paper 8 – Hydrology, flooding and water quality assessment