

Appendix 7. Comparison of the M2 (existing) and the Proposed Interim Detour

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Comparison of the existing M2 cycle lane and the Transurban Proposed Interim Bicycle Detour

This is Appendix 7 of the Bike North Audit of the M2 Interim Bicycle Detour as proposed by Transurban. This appendix compares the existing and proposed detour routes in order to understand the impact of the changes. This document should be read in conjunction with the other documents.

The proposed Alternate Route used in the comparison is the one that uses Somerset Street North Epping as this was the first one advised and surveyed. Other Transurban options do not differ significantly from this. Bike North route proposals are documented elsewhere.

After comparing the two options of the existing M2 cycle lane and the Transurban Proposed Interim Cycle Detour we find that the Transurban proposal is totally unsuitable as a replacement route for an estimated minimum period of 3 years.

An alternate Interim Cycle Detour must be provided to meet the needs of cyclists.

Summary table of audit findings.

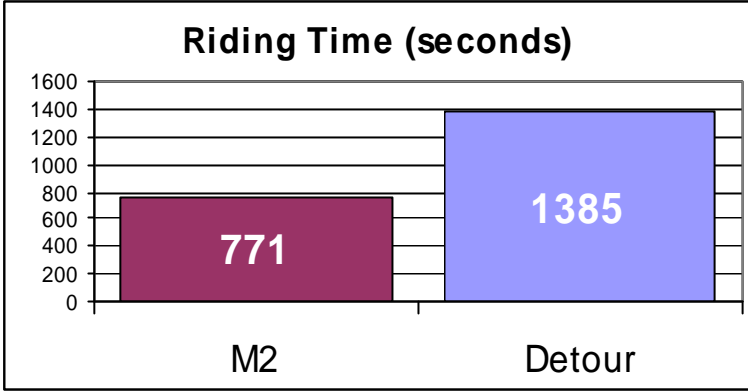
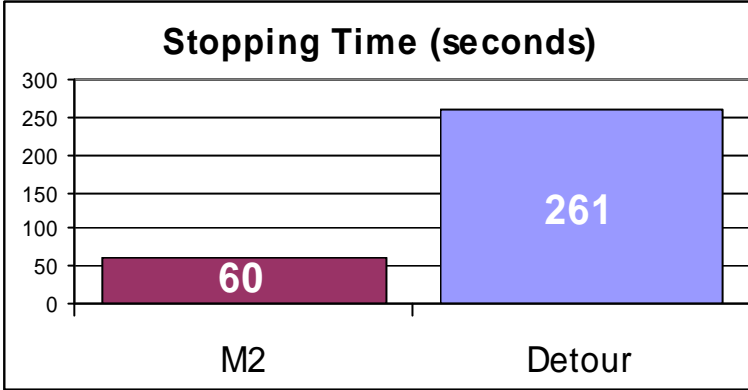
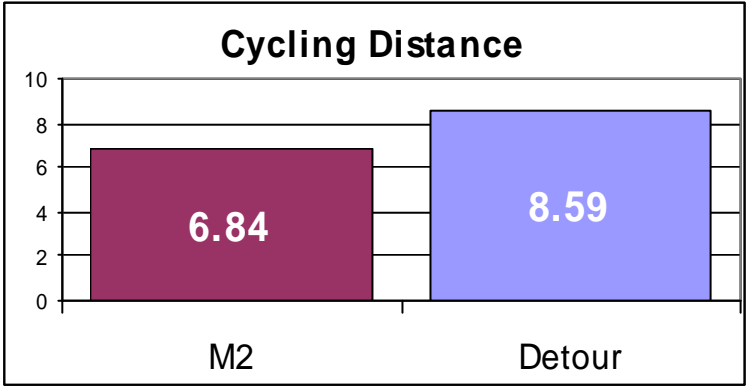
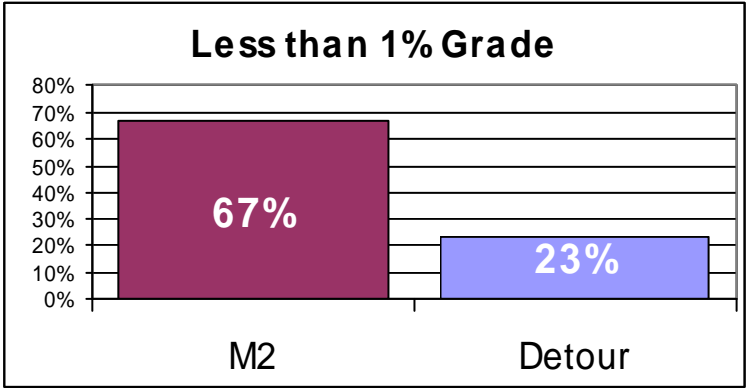
Parameter	M2 Cycle Lane	Transurban Proposed Interim Cycle Detour
Cyclist Safety	High level of safety with separate zone, good surface and good sight lines.	Insufficient safety consideration due to lack of traffic separation, steep grades and dangerous infrastructure. The safety of human lives may be at risk for any cyclist using this route.
Promoting cycling	The route encourages cycling of every type	This route is unlikely to be used by regional cyclists. Either cyclists will use Epping Road or cease to cycle.
Distance	Shorter and more direct	Longer by 1.75km or 25% of the existing route.
Cycling time	Quick and convenient	Takes at least twice the time. For weaker riders the differential is likely to be much higher.
Delay (stopped) time	Once on the M2 there is no stopping	A cyclist will be stopped by intersections or hazards several times in each kilometre. Some traffic light delays are long.
Effort needed	Constant low levels of effort required	High effort required in bursts on steep hills which puts the route beyond comfortable reach for many riders.
Gradients	Excellent gradients with a maximum of 3.5%	Steep up and down gradients, over the maximum recommended for cycle paths, create safety hazards.
Climbing required	Minimal climbing	More than 3 times the altitude climbed with repeated loss of elevation that must be re-gained.
Meets guidelines for local route	Yes, although extra local connections are needed.	No. Some sections on older cycle paths are now non-complying and must be upgraded.
Meets guidelines for regional route	Yes	No, and will not be able to comply due to extra distance, stoppages and gradients.
Meets cyclists needs	Meets the needs of every type of cyclists.	Some sections meet no needs. Other sections only meet the needs of locals travelling short distances
Regional Cycle Route Guidelines	This route meets criteria except choice of 2 routes and lighting.	No, this route does not and cannot meet regional guidelines.
Local Cycle Route Guidelines	This route meets criteria except choice of 2 routes and lighting.	No, this route does not meet local cycle route guidelines.
Outcome for cycling	Cycling is increasing along this corridor.	Cycling in this corridor will be severely retarded if this route is the option chosen.

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Details of parameters of the two routes

The data in the following table was compiled using a bicycle mounted GPS.

Parameter	Comparison of M2 Cycle Lane with Transurban Detour						
<p>1. Riding Time</p> <p>Increased riding time reflects the slower average speed of the detour. This effect on a new road would be completely unacceptable.</p>	<p style="text-align: center;">Riding Time (seconds)</p>  <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <th>Route</th> <th>Riding Time (seconds)</th> </tr> <tr> <td>M2</td> <td>771</td> </tr> <tr> <td>Detour</td> <td>1385</td> </tr> </table>	Route	Riding Time (seconds)	M2	771	Detour	1385
Route	Riding Time (seconds)						
M2	771						
Detour	1385						
<p>2. Stopping Time</p> <p>Increased stopping time means wasted time and severely reduces the usefulness of the route for commuting. It completely removes the training effect for sports cyclists.</p>	<p style="text-align: center;">Stopping Time (seconds)</p>  <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <th>Route</th> <th>Stopping Time (seconds)</th> </tr> <tr> <td>M2</td> <td>60</td> </tr> <tr> <td>Detour</td> <td>261</td> </tr> </table>	Route	Stopping Time (seconds)	M2	60	Detour	261
Route	Stopping Time (seconds)						
M2	60						
Detour	261						
<p>3. Cycling Distance</p> <p>From Delhi Rd to Beecroft Rd is 25% longer using the Detour a penalty that would be considered unreasonable when planning any car route. The difference is multiplied when the effort is all human powered and the fact that this route is so much harder.</p>	<p style="text-align: center;">Cycling Distance</p>  <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <th>Route</th> <th>Cycling Distance</th> </tr> <tr> <td>M2</td> <td>6.84</td> </tr> <tr> <td>Detour</td> <td>8.59</td> </tr> </table>	Route	Cycling Distance	M2	6.84	Detour	8.59
Route	Cycling Distance						
M2	6.84						
Detour	8.59						
<p>4. Flat Sections</p> <p>Two thirds of the M2 is effectively flat but these sections are much rarer on the detour. Half of the balance of the route can be approximated as uphill and the other downhill. This is reinforced by reference to the route profile below.</p>	<p style="text-align: center;">Less than 1% Grade</p>  <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <th>Route</th> <th>Less than 1% Grade</th> </tr> <tr> <td>M2</td> <td>67%</td> </tr> <tr> <td>Detour</td> <td>23%</td> </tr> </table>	Route	Less than 1% Grade	M2	67%	Detour	23%
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<p>5. Average Uphill Gradient</p> <p>Not only does the Detour route have more climbing, but the climbing is steeper on average. Not just a little steeper but 300% steeper. The relationship is not linear so the effort required is more than 300% greater. This entire route would be rated as difficult.</p>	<table border="1"> <caption>Average Uphill Gradient</caption> <thead> <tr> <th>Route</th> <th>Gradient (%)</th> </tr> </thead> <tbody> <tr> <td>M2</td> <td>1.8%</td> </tr> <tr> <td>Detour</td> <td>5.4%</td> </tr> </tbody> </table>	Route	Gradient (%)	M2	1.8%	Detour	5.4%
Route	Gradient (%)						
M2	1.8%						
Detour	5.4%						
<p>6. Maximum Uphill Gradient</p> <p>This determines the minimum power needed to ride the route. Many cyclists would not even be able to cycle an 11% grade, certainly not cyclists who are lacking in fitness. Austroads indicates that a 10% uphill gradient should only last 10 metres! (p.73)</p>	<table border="1"> <caption>Maximum Uphill Gradient</caption> <thead> <tr> <th>Route</th> <th>Gradient (%)</th> </tr> </thead> <tbody> <tr> <td>M2</td> <td>3.5%</td> </tr> <tr> <td>Detour</td> <td>11.2%</td> </tr> </tbody> </table>	Route	Gradient (%)	M2	3.5%	Detour	11.2%
Route	Gradient (%)						
M2	3.5%						
Detour	11.2%						
<p>7. Metres Climbed</p> <p>The amount of metres climbed is the result of the hilly terrain. Given that both routes end up in the same place, this demonstrates a pointless loss and then regaining of 129m of altitude compared to the M2. This is a huge waste of a lot of climbing effort powered by humans not an accelerator pedal!</p>	<table border="1"> <caption>Metres Climbed</caption> <thead> <tr> <th>Route</th> <th>Metres Climbed</th> </tr> </thead> <tbody> <tr> <td>M2</td> <td>55</td> </tr> <tr> <td>Detour</td> <td>184</td> </tr> </tbody> </table>	Route	Metres Climbed	M2	55	Detour	184
Route	Metres Climbed						
M2	55						
Detour	184						
<p>8. Route Profile</p> <p>The overlaid route profiles summarise the items above. The blue line is the detour route compared to the pink M2 cycle lane.</p>	<p>The graph shows elevation in meters on the y-axis (ranging from 20 to 120) and distance on the x-axis (ranging from 0.0 to 9.0). The pink line represents the M2 cycle lane, and the blue line represents the detour route. The detour route shows significantly higher elevation changes, particularly a large peak near the 8.0 distance mark.</p>						

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Usability comparison

Parameter	M2 cycle lane	Transurban Proposed Detour
Meets the needs of sports riders and athletes	Yes	No
Meets the needs of long distance commuters	Yes	No
Meets the needs of weaker riders with low fitness or power	Yes	No
Can be ridden with minimal effort if needed	Yes	No
High and constant exertion option for athletes	Yes	No

Comparison of the routes against regional guidelines design principles

Parameter	M2 Cycle Lane (current)	Transurban Proposed Detour
No breaks in route	Yes	Yes *
Smooth riding surface	Yes	No
Minimal quality changes	Yes	No
Regional route signage	Yes	Yes *
Choice of at least two routes	No (only route)	No
50 km/hr design speed	Yes	No
Delay time maximum of 15 seconds per km	Yes	No
One stop per 2 km (average)	Yes	No
Detour factor maximum 20%	Yes	No
Steep climbs minimised	Yes	No
Minimum risk of accidents on routes	Yes	No
Minimum risk of conflict with car traffic	Yes	No
Minimum risk of unsafe infrastructure	Yes	No
Well lit and open appearance	No (not lit)	No

* Items comply if Transurban constructs new path sections and upgrades facilities to meet guidelines.

(Reference RTA NSW Bicycle Guidelines. Table 3.1 page 11.)

Comparison of the routes against local guideline design principles

Parameter	M2 Cycle Lane (current)	Transurban Proposed Detour
Connect to Regional Route	Yes	Yes *
Smooth riding surface	Yes	No
Minimal quality changes	Yes	No
Local route signage	Yes	Yes *
Choice of at least two routes	No (only route)	No
30 km/hr design speed	Yes	No
Delay time maximum of 20 seconds per km	Yes	No
One stop per 1km (average)	Yes	No
Detour factor maximum 30%	Yes	Yes
Steep climbs minimised	Yes	No
Minimum risk of accidents on routes	Yes	No
Minimum risk of conflict with car traffic	Yes	No
Minimum risk of unsafe infrastructure	Yes	No
Well lit and open appearance	No (not lit)	No

* Items comply if Transurban constructs new path sections and upgrades facilities to meet guidelines.

(Reference RTA NSW Bicycle Guidelines, Table 3.1 page 11.)