



23 October, 2008

## **Review of the Auckland Waitemata Harbour Cyclist and Pedestrian Access Study**

The Study's report appears to be reasonably comprehensive and well laid out. However there are a number of items requiring clarification:

1. Representation of the cost estimates
2. Errors in the pedestrian demand forecast
3. Failure to recognise key benefits
4. Over-reliance on a subjective ranking methodology
5. Ignores the effect and opportunity presented by the current strengthening project
6. Underplays the GPS targets
7. Incomplete BCR Calculations
8. Failure to adequately reference
9. Errors in advice relating to the Northern Connection
10. Timeliness and lack of consultation

Each of these areas is explained in the following sections.

### **1. Representation of the cost estimates**

The Study's cost estimates include a 30% contingency and 15% funding risk. This greatly inflates the final cost estimates, which have been quoted in the media as \$24 to \$43 million (depending upon which option is chosen).

The report shows that the base cost for the project excluding allocation for contingency and funding risks, ranges between \$13 and \$24.5 million (page 44). This is significantly less than the \$24 to \$43 million reported in the media, we consider that the costs have been misrepresented where they are being quoted without reference to the contingency and funding risk that has been included.

Furthermore, the NZTA advises that if the walkway and cycleway is provided as part of the current strengthening project, then cost savings on the base cost of \$13 to \$24.5 million will be achieved.

### **2. Errors in the pedestrian demand forecast**

The pedestrian demand forecast by the Study (of just 280 pedestrians/day) has been reviewed by Dr Graeme Lindsay of the University of Auckland's School of Population Health.

Dr Lindsay has determined errors of omission and estimates that are unduly pessimistic, leading him to conclude that the pedestrian demand forecast may be understated by a factor of 10 or more.

A copy of Dr Lindsay's review is attached.

He recommends a review of the pedestrian demand estimates and that a range of demand estimates be developed to reflect the underlying assumptions that need to be made with a project of this nature.

Further, the study gives no indication of future pedestrian and cycling demand despite this being a requirement of the scoping document (item 2.2 (a)).

### **3. Failure to recognise key benefits, these include:**

#### **a. Upgrading of the Bridge's existing outer barrier which does not meet today's crash safety standards**

The existing outer barrier on the Harbour Bridge does not meet today's safety standards. The new crash barrier as part of the walk/cycle way would meet these standards, hence a major component of the walk/cycle way's cost provides a significant safety benefit for all bridge users.



#### **b. The economic life of the clip-ons will be extended**

A significant part of the walk/cycle way cost is for the strengthening of the clip-ons. This includes additional strengthening of deck troughs due to the realignment of the wheel tracking. The existing wheel tracks were strengthened over 10 years ago, that strengthening will have less loading on it. The overall effect of the walk/cycleway is to enhance the clip-ons strength and extend the economic life of the clip-ons.

#### **c. The economic benefits from the additional tourism activity**

The walk/cycle way will encourage more tourists to spend extra time in Auckland, providing a significant gain to the local economy. The potential tourist interest is highlighted in the support from Te Araroa Path (length of NZ walkway) and Fullers Ferries have advised that they see significant potential in a tourist walk over the bridge then return by ferry from Northcote wharf.

In addition, 78% of Aucklanders surveyed believe that the walk/cycle way would be a top 10 visitor activity. See the Y&R Viewfinder survey results here: <http://caa.org.nz/AHB/Support/MarketResearch.pdf>

d. **A cornerstone project for the future**

The walk/cycle way on the Auckland Harbour Bridge not only addresses the most glaring gap in the region's walking and cycling network, it also sends a powerful message that after years of neglect, our transport authorities are now serious about improving walking and cycling in Auckland. The importance of such cornerstone projects is referred to in section 11.7 of the LTSA's Cycle Network and Route Planning Guide which recommends *"Priority is given to flagship projects"*.

The walkway and cycleway has strong support from Aucklanders; 76% in favour compared to 12% against. See Y&R Viewfinder survey results here: <http://caa.org.nz/AHB/Support/MarketResearch.pdf>

**4. Over-reliance on a subjective ranking methodology to choose the preferred option**

The option evaluation in attachment A2 is sensitive to the subjective and limited nature of the scoring system. There appear to be some errors in the awarding of points in the evaluation matrix. For example, option 3 (a 2.5m walk/cycle way with no widening of the clip-on's) is given a score of "no change" for structural constructability or environmental impacts. The scoring reveals a contradiction regarding the benefit of providing a 2.5m path and a 3.0m path, in Evaluation Matrix the lesser facility so scores less under "Cycle Demand" yet in the demand forecasting section it is not suggested that a wider facility will create greater usage.

Our review of the scores allocated in the Evaluation Model places option 12 and 15 equal (each with a score of 5.3). However we suggest that option 12 is superior over option 15 for the following reasons:

- the ranking system excludes cost – which is likely to be a significant barrier for the political support necessary for the walk/cycle way to proceed.
- option 15 provides a 3.1m lane for the outermost lane. Given this is a 'de facto' bus lane, the lane width is too narrow. Option 12 provides 3.3m, which Ritchie's Bus Company have advised is adequate for their future, larger buses.
- option 12 can utilise the lower-cost northern connection of 'D2', refer item 9 below for more detail.

**5. Ignores the effect and opportunity presented by the strengthening project**

The clip-ons are currently undergoing a major strengthening project which includes the addition of 700 tonnes of steel and will cost \$45 million. This strengthening will reduce any swaying of the clip-ons, making walk/cycleway safe and comfortable. This point is ignored in 11.2.2.3 and 11.3.2.3 on pages 33 and 34.

***"Structural elements have been incorporated into the current strengthening works to future-proof for walking and cycling facilities on the box girders"***

14 May 2007 letter to Hon Judith Tizard from Rick Van Barnefeld (page 2)

***“The Board deliberately sought the necessary funding to ensure that further structural elements will be incorporated into the current strengthening works to future-proof the clip-on lanes and allow for future walking and cycling options on the box girders.”***

19 May 2008 letter to Christine Rose from Transit Chair, Bryan Jackson

In addition, the current strengthening project provides the skilled work force and project management skills to allow the walk/cycle way to be provided with cost-savings and much less contingency risk than the 30% referred to in item 1 (above).

## **6. Underplays the updated NZTS and GPS targets**

The report refers to the updated NZTS and GPS in section 1.2, but only briefly refers to one of the targets relevant to the walkway and cycleway on the Auckland Harbour Bridge: *Increase walking, cycling and other active modes to 30 percent of total trips in urban areas by 2040.*

However the following objectives and targets should also be referred to as providing walking and cycling access on the Auckland Harbour Bridge contributes to each:

- a. **“People and freight in NZ have access to an affordable, integrated, safe, responsive and sustainable transport system”** (NZTS 2008 Vision)

The report should provide more information how the Auckland Harbour Bridge walkway and cycleway will help achieve the five transport objectives that support the above NZTS vision.

- b. NZTS, GPS (and NZEECS 2007) target: Reduced kilometers traveled by single occupancy vehicles in major urban areas on week days by 10% per capita by 2015
- c. GPS target: Increase the number of walking and cycling trips by 1% per year through to 2015
- d. NZTS target: Halve per capita greenhouse gas emissions from domestic transport by 2040
- e. The Ministry of Transport’s Transport monitoring indicator framework 2008, version 1, which contains the ten indicator sets that relate to the objectives of the NZTS. The number of relevant indicators are too numerous to mention in full here.

## **7. Incomplete BCR Calculations**

The Benefit/Cost Ratio (BCR) calculations fail to identify key benefits. The upgrade of the outer crash barrier and extending the life of the clip-ons (as described in 3a and b above) are excluded from the BCR calculations.

The NZTS, under section 3.2.4: “Increasing the availability and use of public transport, cycling, walking, and other shared and active modes” states:

***“This Strategy seeks a multi-modal approach by aiming to increase public transport, cycling, walking, and other shared and active modes. A***

*shift to these forms of transport can reduce congestion and therefore bring significant economic benefits.”*

However the Study excludes decongestion benefit from the BCR Calculation. A conservative estimate using the NZTA benefit evaluation manual which is based on 500 car drivers deciding to cycle each work day arrives at present value benefit of \$42,534,700 in travel saving and vehicle operating costs. This calculation uses a discount factor of 8%, no growth assumed in the cycling numbers and is based on 30 years.

The BCR Calculation provides a benefit value for the reduction in CO2 emissions of \$0 and excludes the economic benefit from the tourism activity described in 3c above.

The benefits should be reviewed as there are a number of issues identified in the application of the walking and cycling benefits from the Economic Evaluation Manual which has resulted in an underestimation of the economic benefits of walking and cycling. These issues are outlined in Appendix 2 by Dr Graeme Lindsay.

## **8. Failure to adequately reference a number of key documents**

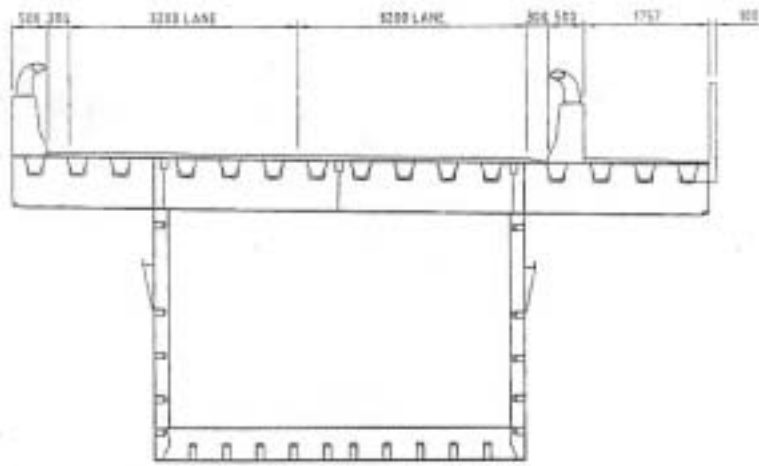
The study fails to recognise a number of key documents whose objectives and initiatives strongly support the implementation of the Auckland Harbour Bridge walkway and cycleway:

- Impacts of fuel price changes on NZ transport
- Getting there – on foot, by cycle
- NZ Energy Strategy to 2050
- Urban Design Protocol (2005)
- The Healthy Eating – Healthy Action (HEHA) Strategy: this is the Government’s multi-faceted, integrated response to improving nutrition, increasing physical activity and achieving healthy weight for all New Zealanders ([www.moh.govt.nz/healthyeatinghealthyaction](http://www.moh.govt.nz/healthyeatinghealthyaction))
- New Zealand Health Strategy. Increasing the level of physical activity and reducing obesity are two of the thirteen health priority areas identified in the New Zealand Health Strategy. ([www.moh.govt.nz/nzhs.html](http://www.moh.govt.nz/nzhs.html))

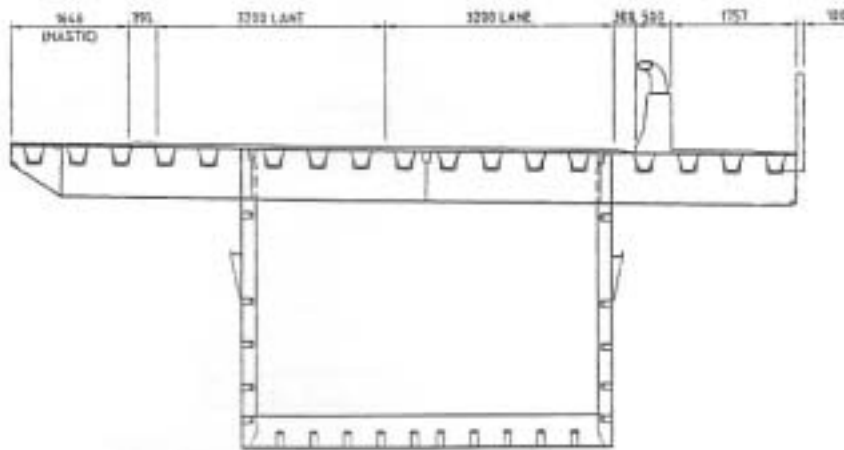
## **9. Errors in advice relating to the Northern Connection**

The Study incorrectly states that the most-cost effective northern connection, “D2” (at an estimated cost of \$2.32 million) provides a walkway and cycleway of only 1.75m, consequently option D2 is dismissed.

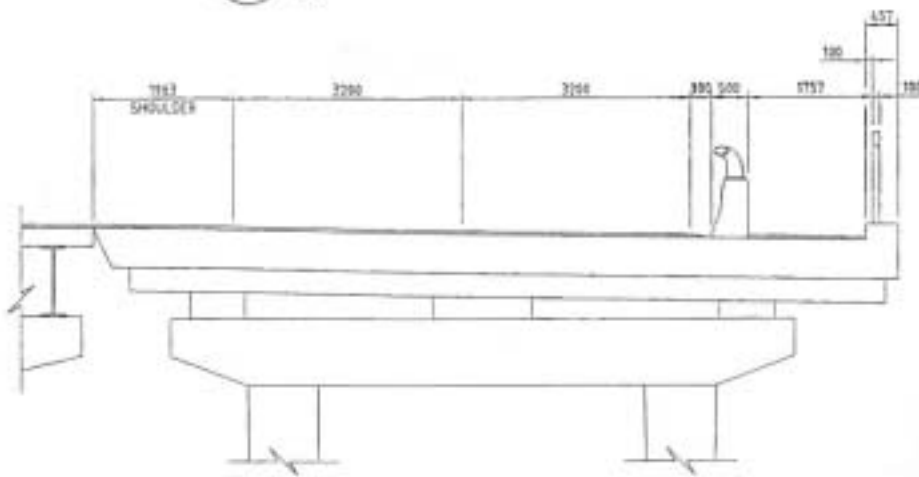
However in 8.2.8 of the Appendices, the Study has referred to the wrong cross section on the clip-ons. See the next page for drawing SK42, which show the 3 different cross-sections of the clip-on lanes (the overarch, extension & approach viaduct). The extract from Beca incorrectly refers to drawing 1. It is the drawings 2 and 3 of SK42 which are the relevant diagrams when considering the access over the northern approach cross section. Drawings 2 and 3 shows it is possible to reduce the inner shoulder and realign the traffic lanes to enable a 2.5+ m walk/cycle way for the Northern connection from Sulphur Beach to the Bridge.



1 PROPOSED OVERARCH CROSS SECTION  
- 1:50



2 PROPOSED EXTENSION BRIDGE CROSS SECTION  
- 1:100



3 PROPOSED APPROACH VIADUCT CROSS SECTION  
- 1:50

## **10. Timeliness and lack of consultation**

The original scoping document required the Study to be completed by June 30, 2008 however the final report was not completed until early October. This has meant the five IE partners have consulted with their respective boards/committees using draft reports which have not had the benefit of wider consultation from key stakeholders.

The IE needs to ensure the project is well managed to ensure the decision making process is based on sound information and proper process.

## **Conclusion**

We ask that the IE considers the matter described above with a view to ensuring that the final report is as accurate and well-founded

## ATTACHMENT 1

### School of Population Health

22 October 2008

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Dear Bevan,

***Comments on the Waitemata Harbour Crossing Pedestrian Demand: Qualitative Analysis report dated 4 Sep 2008***

Thank you for the opportunity to comment on the above report.

These are my personal views and do not necessarily represent the views of the wider University of Auckland.

I have summarised the key points in this covering note. Any inquiries can be directed to:

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## Key points

1. A major concern I have with the WHC pedestrian demand analysis (PDA) report is that it presents just one figure of 280 pedestrians per day.

Presenting a solitary number can be quite misleading as it implies unwarranted accuracy which I believe you cannot have in this situation. There are many uncertainties and assumptions that need to be made when predicting possible demand. As a result, a range of possible values should be provided along with the underlying assumptions.

2. Comments on the “Tourism Trips: Tourists using a Pedestrian Facility” section

This section may have significantly underestimated the possible tourist demand by only presenting one figure rather than a range.

The report estimated that an average number of tourist trips is anticipated to be in the order of 30 pedestrians per day i.e. one coach load a day. However, the report also states that this is a conservative figure and could be significantly higher if promoted as a tourist attraction.

*“The figure provided is a conservative average. This figure could be significantly higher if the pedestrian facility is promoted as a “tourist attraction”, and marketed as such with specific facilities provided (i.e. tourist information, coach parking etc).”*

The report would benefit from the addition of an upper range for the tourist bus visits to reflect uncertainty and promotion as a tourist attraction. One possible approach would be to adopt the 10 coach/day Mt Eden scenario as an upper range. This would mean that approximately 300 tourists might use the walkway daily.

In addition, demand from non-coach tourists should be factored in, particularly if it was part of an integrated waterfront walkway.

The pedestrian demand report also states that the Sydney Harbour Bridge draws up to 5000 additional trips on public holidays. The report should add in estimates of public holiday use of the Auckland Harbour Bridge crossing. For example, one approach would be to say that there are 11 public holidays. If you dropped 1 day for Christmas day then you are left with 10 days. Using the Sydney Harbour Bridge data as the basis of an upper limit scenario then there would be 10 days x 5,000 additional trips which would equal 50,000 trips annually or an average of about 135 trips per day or 960 per week.

3. Comments on the “Recreational Users of a Pedestrian Facility” section

This section is currently incomplete and should be revised as it seriously underestimates potential pedestrian demand.

The PDA has applied the Y+R survey results as well as some assumptions to the ACC and NSCC populations only. However, from my understanding the Y+R survey was based on 300 people throughout Auckland region. The population surveyed in the Y+R survey should be clarified and if it does indeed represent the entire Auckland region then the pedestrian demand

estimates should be revised to reflect this.

In addition, given the relatively low number of people in the Y+R survey there will be a relatively large margin of error. These margins should form part of developing lower and upper demand estimates

The key concern is that the PDA report has only used data from the Y+R survey for two groups, i.e. the:

- “Occasional – maybe once per year” - 18% of respondents
- “Maybe once or twice – as a novelty” - 29% of respondents.

The report needs to be revised to reflect the estimated demand from the three Y+R groups it currently does not include, i.e:

- “Sometimes – maybe a few times a year” – 31% of respondents
- “Regularly – once a fortnight at least” – 8% of respondents
- “Often – once a week or more often” – 3% of respondents.

The omission of these three groups is serious as it has very significantly underestimated pedestrian demand.

For example, if I used the same methodology used in the PDA report and applied this to the Auckland region population of about 1 million people:

- then 375,000 people “would consider walking over the bridge if a facility was provided”
- If just the “Often – once a week or more often” respondents was looked at then 3% of 375,000 is 11,250 people.
- If these 11,250 people only used the bridge one day per week on average then this would equate to about 1,600 pedestrians per day.
- If these people used the bridge more than one day a week on average then the estimates would be corresponding higher.

Similarly:

- the 8% of respondents who would use it as least fortnightly would add at about 2,100 pedestrians daily at a minimum
- the 31% of respondents who would use it a few times a year (I have assumed 3 times for this calculation) then this would equate to approximately 950 pedestrians daily.

Another important point is that this section of the PDA report states that the numbers could be significantly higher (see below).

*“Because of the significant potential catchment for recreational trips across the Auckland Harbour Bridge these numbers could be significantly higher. In particular, the regional interest anticipated during the construction of a facility the initial demand is likely to far exceed the numbers estimated, especially during weekends and holiday periods.”*

4. Comments on the “Commuter Trips: Joggers using a Pedestrian Facility” section

Regarding the comment that “Population undertaking journey to work from an origin within the ‘jogging’ catchment on the North Shore: 4,000 population;”

The figure of 4,000 eligible people in the North Shore jogging catchment seems low. It would be worthwhile clarifying how this figure was derived.

Also, was there consideration of people contemplating a commuting jog from Auckland City to the North Shore?

5. In conclusion, the pedestrian demand estimates seem likely to have seriously underestimated the potential demand. The estimates should be revisited, revised and then peer reviewed.

Any assumptions should be explicit to enable help interpretation of the estimates.

As previously stated, a range of possible estimates should be provided to reflect the underlying uncertainty and assumptions. A single figure implies unwarranted accuracy and can be misleading.

The Harbour Bridge walk/cycleway decision-making bodies should be basing their decisions on the best available evidence. Unfortunately, in my opinion the pedestrian demand estimates are not currently robust enough to enable an informed decision to be made.

Thank you for the opportunity to comment on the report and look forward to the opportunity to correspond over any points I have raised.

Yours sincerely,

Graeme Lindsay

## Appendix 2

### Comments from Dr Graeme Lindsay, School of Population Health, Auckland University, on the walking and cycling economic evaluation section in the Appendix of the Auckland Waitemata Harbour Cyclist and Pedestrian Access Study Draft Final Report:

These benefits should be reviewed and recalculated as necessary as there a number of issues that have been identified that have likely to resulted in an underestimation of the benefits of walking and cycling. These issues are outlined below:

- a. It appears that the walking and cycling benefit values in the EEM vol 2 were updated by a factor of 1.19 to adjust them to July 2008 values, effective 1 Sep 2008.

Recommendation: the baseline Study benefits should multiplied by 1.19 and any benefit calculations adjusted accordingly.

#### References:

LTSA website ([www.ltsa.govt.nz/funding/manuals.html](http://www.ltsa.govt.nz/funding/manuals.html)) statement “When an economic evaluation has already been completed using the procedures prior to EEM1 amendment 2, use the latest update factors (in appendix A12) to bring the benefits and costs up to July 2008 values before submitting it for funding consideration.”

<http://www.landtransport.govt.nz/funding/manuals.html#eem2> “EEM1 - includes amendment 2, effective 1 September 2008.”

Amendment 2 available at <http://www.landtransport.govt.nz/funding/economic-evaluation-manual/eem1-2.pdf> - Relevant section is “Table A12.2 Benefit update factors”

- b. The walking benefits will need to be reviewed and recalculated as appropriate when the report’s pedestrian demands forecasts are reviewed.
- c. The walking benefits are based on an average New Zealand pedestrian trip of 1 km, which may or may not be realistic.

It would be if the average person travels to the bridge, walks to the midpoint of the bridge and back to the vehicle (approximately 1 km in total). However, if the average pedestrian trip is longer than this then the benefits should be adjusted according.

#### Recommendation:

Estimate the average pedestrian trip distance for trips that have the AHB crossing as part of the trip and recalculate the benefit if the average trip distance differs from the 1 km distance used in this report.

- d. Similarly, the cycling benefits are based on an average New Zealand cycling trip distance of 3km, which is likely to be too low for users of the AHB.

The cycling estimates in the AHB Cycle Demand Estimation Opus report dated 30/7/08 used catchments of 6km north of the bridge and 6 km south. However, there is no mention of the average cycling trip distance.

#### Recommendations:

- i. Opus calculate an estimated average cycling trip distance for cyclists who use the AHB crossing as part of the trip. This should be able to be calculated as Opus have estimated cycle user

numbers per Census area unit within the 6km North and South catchments. Assumptions regarding destination would need to be made and a sensitivity analysis conducted to get a range for the average trip distance.

ii. Following an estimate of the average cycle trip distance for users of the AHB cycleway, the cycling benefits should be adjusted as appropriate.

- e. The cycling benefits have only factored in one cycle trip per day and therefore have underestimated the cycling benefits.

Given that it has been estimated that around 90% of cyclists will make a return trip later in the same day, the kilometres cycled will be therefore be greater per day (1.9x) and corresponding benefits will be higher.

Therefore, the above cycling benefits per day and annually should be multiple by 1.9 (assuming a return factor of 90% per day).

Note: the 90% estimate comes from the WHO (World Health Organization) Cycling mortality savings tool that Dr Graeme Lindsay have been using as part of his research into cycling and health. The WHO recommend that this value be used unless there is local evidence of a different value to use.

(see [www.euro.who.int/eprise/main/WHO/Progs/TRT/policy/20070503\\_1](http://www.euro.who.int/eprise/main/WHO/Progs/TRT/policy/20070503_1) for background on this tool). There does not seem to sufficient local evidence to warrant deviation from this 90% figure at present.

Recommendation: the cycling benefits per day should be multiplied by a factor of 1.9.

- f. It is important to also point out that the walking and cycling benefits in the AWH Cyclist and Pedestrian Access Study report are applied to work days only (250 days a year), which is the approach in the Economic Evaluation Manual vol 2 section 8.3 pg 8-5.

As the AHB walk and cycleway is likely to have significant use on weekends and public holidays (maybe even greater than weekday use), then consideration should be given to increasing the number of days the benefits are applied to.

- g. In summary: The cycling benefits in the report should probably be essentially doubled at a minimum i.e. 1.19 update factor X 1.9 (cycling return factor) = 2.27. This would make say the 2013 annual value \$571,105 instead of \$251,588.

Then if the average cycling trip distance turned out to be say 6km instead of 3 km assumed in this report, then the 2013 value would double to \$1,142,210

Similarly, the pedestrian benefits should be multiplied by the 1.19 update factor at a minimum and then adjusted accordingly if pedestrian demand estimates and average pedestrian trip distance are updated.

In addition, as the values of walking and cycling for inclusion in the EEM are being updated, the benefits for the AHB walk and cycleway should be reviewed once the EEM values are finalised.