Before the Environment Court
Wellington
ENV-2014-WLG-00033

In the matter of:
Proposed Road Stopping under the Local Government Act 1974
by Wellington City Council
of unformed legal road in Forres Street, Seatoun

Brief of Evidence of Paula Warren
for Living Streets Aotearoa
11 December 2014

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1. My name is Paula Gay Warren.

2. I have a degree in ecology, but am a policy analyst by profession. I have been working for the Department of Conservation for the last 26 years. In that role I have extensive experience in policy analysis, the development and reform of legislation, and statutory decision-making.

3. Living Streets Aotearoa is a national organisation formed to improve the walking environment and encourage increased walking for transport and leisure. The organisation is an incorporated society, which supports the work of transport agencies, local government and other organisations that will improve walking. I am one of a number of members who are active in the Wellington region.

4. As a result of that voluntary work, I have had extensive experience in the assessment of pedestrian issues. I have had formal training in the NZTA pedestrian planning and design guidelines, have participated in street audits, and have attended a number of national and international conferences on walking. I am a member of the Urban Design Forum, the Wellington City Council Environmental Reference Group and the Capacity Stormwater Advisory Group. I have previously been the walking/cycling/public transport representative on the Regional Transport Committee, and the passenger transport representative on the LTNZ Passenger Transport Advisory Group.

5. I have given ecology, planning and policy expert evidence (particularly focused on public transport and pedestrian issues) to four recent Boards of Inquiry related to proposed Roads of National Significance in Wellington, on behalf of community organisations.

Code of Conduct

6. I have read the Code of Conduct for Expert Witnesses in the Environment Court Practice Note. I agree to comply with the Code of Conduct. I have confined my evidence to matters that are within my area of expertise. I have not omitted to consider material facts known to me that might alter or detract from the opinions that I express.

Mediation

7. I participated in the mediation process, representing Living Streets Aotearoa. In my evidence I have taken into account the information made available within that process.

Scope of evidence

8. My evidence will consider:

    a. the importance of walkability

    b. the contribution shortcuts make to walkability in Wellington

    c. the potential value of a shortcut along upper Forres Street

    d. whether that potential justifies retention of at least part of the paper road.

Importance of walking and walkable cities for public health

9. Physical inactivity is a significant risk factor for a range of diseases, including cardiovascular disease, diabetes, some cancers, and dementia[1]. A recent Australian Heart Foundation report states that physical inactivity causes 1 out of 10 Australian deaths.[2]

10. The NZ Ministry of Health has promulgated the New Zealand Physical Activity Guidelines, which outline the minimum levels of physical activity required to gain health benefits and ways to incorporate incidental physical activity into everyday life. [3]

[1] For example a 2014 study (Kirk Erickson, cited in paper by Carmel Boyce and Miles Tight at Walk 21) found that a daily 20 minute walk can reduce the risk of dementia by 40%.

[2] Does Density Matter? The role of density in creating walkable neighbourhoods. National Heart Foundation of Australia. 2014. http://www.heartfoundation.org.au/SiteCollectionDocuments/Heart_Foundation_%20Does_density_matter_FINAL2014.pdf

[3] http://www.health.govt.nz/our-work/preventative-health-wellness/physical-activity

11. A number of the papers presented to Walk 21 2014 in Sydney used similar minimum levels of activity – 30 minutes per day at least 5 days a week for adults, and 60 minutes for children. Two studies presented to the conference (one from Australia and one from the UK) found that a large proportion of adults were not achieving those minimum levels of activity. A common theme of many papers at Walk 21 was that making walking a part of regular activities (i.e. regular transport journeys or regular recreation activities) is a highly effective way to increase daily physical activity for much of the population.

12. Research and health programmes presented to Walk 21 identified two broad approaches for increasing walking: programmes to change behaviour, and changes to infrastructure to make cities more walkable. Both were found to be potentially effective options, depending on the target group and implementation, and behaviour changes can be impeded by poor infrastructure.

13. Behaviour programmes studied included formation of walking groups and advice on exercise provided by doctors. Infrastructure changes included landuse changes to reduce travel distances for daily activities (to make walking and cycling feasible options for those trips), improved walking infrastructure to make walking more attractive as a travel or recreational option, and increased access to public transport (because walking is normally part of a public transport trip).

14. The importance of infrastructure has been identified in much recent research. For example an Australian design guide states that:

> *Various reviews have examined the relationship between neighbourhood walkability (including urban sprawl) and various measures of weight status (such as the Body Mass Index). These show that people living in urban sprawl are more likely to have a higher body weight (Robertson-Wilson et al., Papas et al. 2007, Black & Macinko 2008, Booth et al. 2005).*[4]

4 Healthy Spaces & Places: A national guide to designing places for healthy living http://www.healthyplaces.org.au/userfiles/file/Miscellaneous/HSP%20Design%20principles.pdf

The economic effects of walkability

15. More walkable neighbourhoods can increase rates of physical activity for residents and visitors, which in turn would have health benefits for individuals who otherwise might have low levels of physical activity, and therefore economic benefits. For example an NZTA commissioned study[5] found that the economic benefits arising from improved health were between $2.37 and $5.01 per kilometre of skateboarding, walking and roller skating, depending on mode and scenario. Health researchers have also found negative health effects of car use (from sitting, stress and exposure to emissions), so changes that cause modal shift from car to walking will have higher benefits than simply increasing the overall amount of walking.

16. International studies have also found that walkable neighbourhoods have higher market value. For example a 2009 US study, by Joseph Cortright, presented in the report "Walking the Walk: How Walkability Raises Housing Values in U.S. Cities", found that in 13 of the 15 markets, higher levels of walkability, as measured by Walk Score, were directly linked to higher home values. The study found that in the typical metropolitan area, a one-point increase in Walk Score was associated with an increase in value ranging from $US700 to $US3,000 depending on the market.[6]

17. 94 TioTio Road has a Walk Score of 25 (out of 100), while 33 Ferry Street (next to Forres Street) has a Walk Score of 40, showing the potential variation in walkability that can result from minor differences in location and infrastructure (acknowledging that the accuracy of those figures is dependent on the quality of the base data used in the model).

Measuring walkability

18. There are measures for walkability available for use in assessing neighbourhoods and cities. The Walk Score system cited above is one that uses available GIS data layers to allow individuals to choose a more walkable location when buying property. There are also systems for assessing the walking environment in a particular location, including street audit systems used by Living Streets Aotearoa and transport agencies in NZ.

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[5] Valuing the health benefits of active transport modes. J. A. Genter, S. Donovan, B. Petrenas (McCormick Rankin Cagney, Auckland) and H. Badland (Centre for Physical Activity and Nutrition Research, Auckland University of Technology). 2008. NZ Transport Agency Research Report 359 http://www.nzta.govt.nz/resources/research/reports/359/docs/359.pdf

[6] http://documents.scribd.com.s3.amazonaws.com/docs/bnp4mimm81hufdk.pdf

Contribution of shortcuts to walkability in Wellington

Distances

19. Walkability is affected by a number of factors, one of which is the distances between destinations. The Wellington City Council Walking Policy states that:

    A map showing pedestrian walking distances from the edge of the central area shows that at a distance of 25 minutes walk is the point at which residents feel comfortable in walking. It is considered that there is limited scope to increase commuter walking trips beyond 25 minutes from the edge of the central area.[7]

20. Active transport experts recommend a grid design for cities to minimise distances between locations within a neighbourhood (e.g. between a residence and public transport stop, residence and school). Many parts of Wellington do not have that efficient street layout because of the hilly topography, even if there is a grid layout on paper.

21. The map of the Township of Seatoun provided in the evidence of Mr Johnstone shows a typical grid layout, and in the flat parts of Seatoun that is what was built. But even in the hillier areas, the cadastral map indicates that the original street design (beyond the boundaries of the map in Mr Johnstone's evidence) is far closer to a grid system than the modern formed road system.

22. Tio Tio Road provides a classic example of the effects on walking distances of not having a complete grid. Measuring on a GIS system shows that the walk from number 93 TioTio Road to the school in Forres Street, via the formed road system, is around 500m. If the whole of Forres Street was formed, the distance would be around 300m. So an additional 55m of formed road would reduce journey distance by around 200m.

23. Many destinations would not be affected by that, but the reason that grid layouts are now strongly favoured by urban designers (a reversal from the trend towards cul-de-sac designs in post-war subdivisions) is that they ensure that all connections are equally efficient. So in the case of Forres Street, lack of that part of the grid means that while trips to the bus stop from number 93 TioTio Road would not be affected, trips to Worser Bay beach and ferry services would be strongly affected.

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[7] http://wellington.govt.nz/~/media/your-council/plans-policies-and-bylaws/plans-and-policies/a-to-z/walking/files/2008-walking-policy.pdf, page 16

24. Experience suggests that reductions in connector length do not have to be large to make a difference to choices. For example in central Wellington, the shortcut part of Dixon Street provides a shorter route than the alternative road route between Dixon Street and the Terrace (around 140m versus 250m when measured on GIS). Despite the shortcut being extremely steep and involving steps rather than a path, my observations of the area suggest that it is has similar or higher pedestrian numbers than the slightly longer route, and is a strongly favoured route (particularly in the downhill direction) for university students walking to or from the Kelburn campus.

25. That even small reductions in distance affect choice is suggested by the behaviour of cyclists around another Wellington shortcut. This connects Clendon Terrace and Wesley Road. It is about 100m long. Despite the fact that there is a short set of stairs at one end, the road option is only about 200m longer (a negligible extra distance for a downhill cycling journey), use of the walkway is illegal for cyclists, and there is a high risk of negative interactions with pedestrians along a narrow route, there are nevertheless a number of cyclists who regularly ride down the walkway in the mornings.

Attractiveness

26. A second factor affecting walkability is the nature of the walking infrastructure and experience. Attractiveness of walking routes is affected by matters such as exposure to traffic, lighting, nature of the walking surface, amenity values, and perceptions of safety. Those factors may also influence the choice between a longer route and a shortcut. For example some shortcuts in Wellington will be more attractive to some users than the alternative road route because they have higher amenity values (e.g. because they are not exposed to traffic and have native vegetation, or because they provide improved views), while others will be less attractive to some users because they are perceived as unsafe (e.g. the shortcut between Millward Street and Riddiford Street in Wellington is perceived to be unsafe by some potential users I have spoken to, because it is narrow and the properties on both sides have high fences).

27. In some cases the existence of shortcuts and other high amenity routes (e.g. separated walking paths and paths through parks) can make the difference between a walking journey being avoided (e.g. by using a car or not doing the trip) or taken. This will be particularly the case for discretionary walking activities, such as social recreational walks in a neighbourhood. Those walks can often be important from a health and social cohesion perspective.

28. Choices of route (and therefore the value provided by a shortcut) may change depending on circumstances. A user may prefer a steep shortcut with steps for a commuting walk, but choose the longer route if wheeling a buggy or luggage. A user may choose the steps for downhill trips, and the longer route for uphill trip. People walking or running for fitness are often observed choosing the steepest routes.

29. The choice may also depend on the individual. Some people with disabilities find stairs particularly difficult, while others find stairs safer than steep inclines.

Network effects

30. Shortcuts also increase the overall walking infrastructure capacity, for two reasons. Firstly, they increase the overall amount of walking infrastructure in a neighbourhood, reducing the risk of crowding. For example if the road route that normally has sufficient capacity is being used by a school group, a shortcut will allow other pedestrians to bypass them. Secondly, shortcuts provide alternative routes when the street option is unavailable or unattractive (e.g. because of road works, slips, perceived safety issues).

31. Redundancy in networks is important for their overall functioning and resilience. In transport networks, the addition of each new connector increases the value of the overall network by increasing the range of routes that can be chosen, and by allowing a break in the network to be bypassed. So a small additional piece of pedestrian infrastructure can have a very large effect on the value of the overall pedestrian network if it:

    a. Creates connections that do not already exist (e.g. a bridge across a river that connects two separated pedestrian networks);

    b. Makes connections that shorten travel distance far shorter (shortcuts); or

    c. Creates alternative connections so that loss of existing connections does not materially reduce the overall utility of the network.

32. In relation to (c) – i.e. redundancy and resilience benefits - if lower TioTio Road became unavailable to pedestrians for some reason (e.g. a Police operation), the distance from the nearest bus stop to number 93 would increase from around 230m to around 800m (via Pinelands Street and the shortcut at the top of that street), while a detour via the unformed part of Forres St would only add about 40m to the trip. The shortcut would, therefore, increase the overall utility of the network in the event of temporary losses of connections (a not unusual circumstance with pedestrian networks).

Would a Forres Street short cut improve the walking network

33. Given this, it is my view that:

    d. The optimal street layout to improve walkability is a grid layout that minimises walking distances.

    e. Addition of a shortcut along the unformed part of Forres Street would make that part of the Wellington walking network more efficient, and provide significantly greater resilience for the network.

    f. Addition of the shortcut would significantly reduce trip length for some trips, including trips to important destinations (e.g. the ferry).

    g. Addition of the shortcut would provide an alternative walking option that had different characteristics, increasing the choice available to walkers.

Feasibility of constructing a shortcut

34. I am not an expert in this matter, but Wellington City's representatives have not suggested that feasibility is an issue.

35. Attached is a photograph of a shortcut in Mount Victoria (between Prince Street and Oriental Parade) that is on similar terrain, and utilises steps to provide a practical walking route. It is a well-used route despite its steepness.

Cost-effectiveness of constructing a shortcut

36. The evidence of Mr Johnstone on behalf of Wellington City Council addresses the issue of affordability to construct a shortcut.

37. My view is that this is not relevant to the decision to be made under the Local Government Act for the following reasons:

    h. Living Streets Aotearoa has not sought construction of a shortcut. They have merely sought retention of the potential to construct a shortcut in future.

    i. Even if few people would benefit from a shortcut, there may in future be individuals prepared to subsidise construction so that they receive the benefit. So numbers of users would not then be a relevant issue.

j. Calculations of cost-benefit done in 2014 will not necessarily predict what might be worth doing in future. For example changes in public transport routes and/or usage, housing density, location of businesses, and the overall level of car use are all likely over the next few decades. There may also be changes caused by factors such as earthquake damage to the land around Forres Street that are far less predictable.

k. Loss of the future opportunity is not necessary to achieve the intended benefits of road stopping. The full width of the paper road is not needed for a pedestrian link, particularly one provided by a set of steep steps up a cliff. In the mediation process, Wellington City Council provided no evidence that it would be infeasible to provide for the future of the hall while retaining the potential to construct a pedestrian route. In mediation Living Streets Aotearoa offered to agree to a partial road stopping. I therefore do not consider that this is a case in which one public benefit needs to be traded off to achieve another public benefit, but rather a situation in which both public benefits can be delivered.

l. The case law that I have viewed has treated potential future use of a road (including for pedestrian access) as grounds for retention of road status, not only existing use.

38. Having said that, I would also argue that a wider range of matters than those included by Mr Johnstone would need to be considered if a full cost-benefit analysis was to be done now, including:

a. The effect that a shortcut might have on modal choice, particularly use of the ferry.

b. The value of resilience in the pedestrian network (this has been a key driver for investment in major roading projects such as Transmission Gully).

c. Health benefits of modal choice effects.

d. Effects of any increased public transport patronage on viability and affordability of public transport services (given that distance to stops is a key factor in determining quality of public transport services).

Summary

39. Walkability is now recognised as important to provide healthy and economically successful cities. High quality pedestrian networks are a key factor affecting walkability.

40. The pedestrian network around Forres Street is not optimal, in terms of travel distances, walking options, and resilience. Addition of a shortcut in upper Forres Street would improve the network, and construction would be feasible.

41. While creating a shortcut in Forres Street may not be affordable in 2014, that does not mean it will not be affordable in future. Case law has established that potential future use is a relevant consideration under the Act.

42. Privatisation of the land would make future construction difficult or infeasible. There is no need to stop the entire road in order to achieve the objectives of the Council. I therefore consider that a portion of the road sufficient for construction of a pedestrian shortcut should remain legal unformed road, to retain the future potential to develop a shortcut.

Paula Gay Warren

11 December 2014