Appendix 2

»Traffic on the waterfront route in Wellington«

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1. Purpose

The purpose of the paper is to assess possible ways of both integrating the city centre and the waterfront across the Waterfront Route and managing the traffic to the city centre.

In this paper proposals for both reducing traffic and capacity on the Waterfront Route are described. This is based on the existing traffic conditions and future plans for development of the city and the road network.

2. Existing situation

Currently the Waterfront Route is a six-lane major arterial road feeding the city centre and through traffic in Wellington.

The traffic totals approximately 50,000 cars per day in both directions. The peak-hour traffic is about 5,000 cars per hour.

There are a number of crossings along the central part of the Waterfront Route, giving access to the city centre as well as the harbour. Furthermore, there are many car parks on the Waterfront.

In the study "Wellington Waterfront Lane Removal, Assessments of Effects" of 2003 it is stated, that "the majority of trips on the waterfront route, especially in the peak periods, are longer distance movements without an origin and destination in the CBD area". The conclusion of this is that the majority of the traffic in the peak periods on the waterfront route does not need to be there. It could be somewhere else, if alternative roads exist.

To handle the existing traffic on the Waterfront Route, six lanes are needed. According to a rule of thumb six lanes will have a capacity of about 45,000 cars per day in both directions, when there are a lot of crossings and access roads. The capacity is especially determined by the number of crossings and by the design of these crossings. Because of differences between capacity and traffic, there will be queues and waiting times in the peak hours.

3. Means to reduce the Waterfront Route as a barrier

These are suggestions for reducing the Waterfront Route as a barrier:

- Burying the road
- Reducing the number of lanes
- Reducing the traffic

Burying the road

Burying the road in a tunnel along the Waterfront combined with a reduction of crossings, and designing the major crossings with ramps. The consequences are that pedestrians and cyclists would have direct access to the waterfront from the city centre.
This solution would be expensive and space demanding and there would be problems giving access to all of the parking lots along the route. Furthermore, there would be great problems building the tunnel, while maintaining traffic flows. Barcelona has used this kind of solution, improving access to the waterfront, building a buried motorway with tunnels, giving direct access to parking lots.

Reducing the number of lanes

Reducing the number of lanes from six to four could be done. The consequences will naturally be reduced traffic capacity in the peak periods, and normally a decrease of the total number of cars per day combined with enlarged peak hour periods. In the worst case this could mean more congestion on the road and increased traffic elsewhere in the two-hour periods of the peak periods.

In Wellington a new Inner City Bypass, intended to serve the CBD, which has been discussed for more than 20 years, is planned to start during the next 12 months. The Inner City Bypass consists of a continuation of the Wellington Motorway, running parallel to the Waterfront Route. There will be a new street linking the motorway and Buckle Street.

This Inner City Bypass provides an opportunity to relieve the Waterfront Route of traffic. It is estimated in "Wellington Waterfront Lane Removal, Assessments of Effects", that the transfer of trips from the Waterfront Route to the Inner-City Bypass will be up to 7% southbound and 5% northbound. The difference between the two directions is due to restrictions in the Terrace Tunnel.

Often the reduction of the total capacity will result in car trips changing to public transport or cycle trips. Another consequence may be that the peak periods will be enlarged, as a result of commuters changing driving times.
Another option is to keep most of the traffic on only four lanes and increase the capacity by reducing the number of intersections and by creating intersections with only left turns.

The solution has often been used all over the world. A number of big traffic roads in Copenhagen have thus been designed to smaller capacity by reducing the number of lanes. For instance, as arterial motorways to Copenhagen have been built, the capacity has been reduced in a number of arterial roads leading to the city centre.

Strandvejen, Hellerup. Denmark.
The capacity has been reduced from 30.000 to 15.000 vehicles /day.

Strandvejen, Hellerup. Denmark.

Vesterbrogade, Copenhagen.
The capacity has been reduced from 30.000 to 15.000 vehicles /day.

Well-known examples of this are the three Danish “brogader”, which originally were four-lane roads, with parking on both sides and narrow pedestrian paths, and no cycle paths. Today these streets have been changed to two-lane roads with broad pedestrian paths and cycle paths. The traffic has been heavily

reduced, and totals about 20,000 vehicles per day. However, there are about the same figure of cyclists on these roads.

The solution can be implemented quickly and it’s a rather cheap solution. It is however recommended.

Reducing traffic

One of the more effective ways to reduce traffic is to introduce road pricing or other form of traffic tolls.

It is a practical long-term measure which will especially be effective, where there is a lot of through-traffic, which will not be affected by parking fees. In places where road pricing has been introduced, e.g. in London, there have been significant reductions in the amount of traffic.

As the traffic analyses have shown that a great part of the traffic on the Waterfront Route is traffic which does not have a purpose in the CBD, road pricing would be an effective means of reducing traffic on the waterfront.

4. Proposed Strategy

We suggest a strategy, in which the number of lanes on the Waterfront Route is reduced in the short term, and road pricing is introduced in the long term.

Short Term

Assuming that the Inner-City Bypass is established, and it will be possible to transfer traffic from the Waterfront Route to the new bypass as far as possible a reorganisation of the Waterfront Route is proposed consisting of the following stages:

- Reduction of the number of lanes from six to four.
- Establishment of a median of about three meters in the centre of the road.
- Reduction of the lanes to 3.00 meters, corresponding to a speed of 40 km per hour.
- Examination of all intersections with regards to importance and amount of traffic in order to close the access roads which are least important.
- Deciding the future number of intersections and the design of the intersections with regard to a hierarchy of types of intersections, for instance possible roundabouts, signalized intersections, ordinary intersections and intersections with only left-turns permitted.
- The creation of turning lanes, particularly for critical right turns where the median may be used.
- Improvement of public transport and facilities for cycling along the waterfront.

The Waterfront Route should be transformed into a beautiful street with attractive pavements, signboards and plantings indication a street, where cars do not drive fast and it is only chosen for CBD traffic.

The consequence of such a reorganisation of the Waterfront Route would be a reduction in traffic in the peak periods, a transfer of traffic to other streets, especially to the new Inner-City Bypass and possibly a reduction in the total traffic, because some car-drivers find it more convenient to go by public transport or to cycle in the future.

Long term

In the long term more drastic measures may be required to prevent further increases in road capacity. Our experience shows that economic means are the most effective.

Appropriate parking fees will reduce traffic to the city centre, but traffic analyses have pointed out, that a great part of the traffic on the Waterfront Route is through traffic which does not stop in the CBD.

Three kinds of tolls on car traffic should be considered as possible means to reduce traffic in the CBD:

- Tolls for driving into a certain area, for instance the central part of Wellington, which should be greater than the CBD.
- Purchase of driving permits in certain areas.