

## 2. BEALEY/CARLTON MILL/HARPER/PARK INTERSECTION

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The purpose of this report is to advise the Council of the status of investigation work on possible improvements to the Bealey/Carlton Mill/Harper/Park intersection, and to seek its decision on the preferred next-step for the project.

### BACKGROUND

The Bealey/Carlton Mill/Harper/Park intersection is a key junction of major arterial routes in the north-west corner of the central city. There are approximately 47,000 vehicle movements through the intersection on an average working day.

The existing size and operation of the intersection forms a significant bottleneck to vehicle flow. The extended queues on Harper Avenue in the morning and afternoon peaks attest to the intersection delays. The intersection also caters very poorly for cycle movement over the Carlton Mill bridge, and has absolutely minimum width footpaths over the bridge. Pedestrian crossing facilities are only provided on three of the intersection's four legs.

The problems in the paragraph above have prompted the City Streets Unit to look at the bridge and intersection to see if it is possible to address the concerns. The remainder of this report more clearly identifies the issues so far noted and advises on the constraints and problems that improving the intersection will throw up.

This is an introductory report to the issues surrounding the Bealey/Carlton Mill/Harper/Park intersection, and is submitted with the intention of initiating a process to resolve the intersection issues.

### INTERSECTION PROBLEMS

The following section identifies the issues of traffic capacity and collisions, pedestrian and cycle issues, and public transport.

- **Traffic Capacity**

The intersection currently handles approximately 47,000 vehicles per day. This is projected to increase by about 1.2% per year. Intersection observations show queues, at peak times, can reach between 300m to over 1km on Harper Ave, Park Terrace, and Carlton Mill Road. This can result in vehicle delays typically ranging from 1 minute to 5 minutes, with an average delay per vehicle (for the full intersection) of over 2 minutes.

- **Vehicle Collisions**

Given the number of vehicles at this intersection, there are less than expected collisions. This is likely to be due to the restriction on a number of turning movements at the intersection. However, there are, on average 3 vehicle collisions per year. The predominant pattern appears to be the vehicles entering Bealey Avenue from the shallow angle slip-lane from Carlton Mill Road - a collision type that is able to be addressed.

- **Pedestrian Issues**

There are signalised pedestrian crossings of Park Terrace, Harper Avenue and Carlton Mill Road, but no signalised crossing of Bealey Avenue. Observations and measurements show that almost as many pedestrians cross Bealey Avenue about 40m east of the intersection, as cross each other leg, dodging traffic as they do so. Pedestrians also cross (uncontrolled) between North and Little Hagley Parks immediately west of the Carlton Mill bridge. The pathways on the Carlton Mill bridge are an absolute minimum design width, and are partially obstructed by traffic signal poles at the intersection. Occasionally, cyclists expect to use the bridge pathways.

- **Cyclist Issues**

There are no on-road cycle approaches to this intersection, but it has close to 200 cyclists per day using it. A number of these cyclists choose to use the bridge pathway as the traffic lanes on the bridge are of absolutely minimum width and both bridge approaches represent "squeeze points" for cyclists and vehicles together. Additionally, east-bound Bealey Ave cyclists are placed at risk by the very shallow approach angle at which Carlton Mill Road vehicles enter Bealey Avenue.

- **Public Transport**

In total, five bus routes use the intersection, and carry over 1500 people per day. As patronage increases, it is likely that bus numbers will as well. Currently all buses are affected by vehicle delays. Increasing delays and travel times variability are noted as major barriers to increasing public transport patronage.

#### **INVESTIGATIONS TO ADDRESSING THE ISSUES SO FAR**

The City Streets Unit has undertaken a range of investigations into treatments that may resolve some of the issues noted above. In very brief terms, the following options have all been considered:

- Pedestrian/Cycle Bridge option: develop two small bridges, one either side of the Carlton Mill Bridge to accommodate cycle and pedestrian movements. This would allow path removal on the bridge, but is unlikely to offer traffic capacity improvement.
- Pedestrian/Cycle Clip-on option: provide a wide path clip onto the Carlton Mill bridge to address cycle/pedestrian issues only.
- Intersection layout improvements option: minor lane configuration changes to partially address the Carlton-Mill-to-Bealey collision problem and provide a signalised pedestrian crossing on Bealey Avenue. Minor pedestrian improvements but no capacity improvements.
- Structural changes to bridge options: two options to widen the Carlton Mill bridge have been investigated:
  - Widen the bridge to the legal road-boundary limit: provides improved cycle and pedestrian facilities, and increases bridge capacity, but with very limited ability to accommodate future growth;
  - Widen the bridge to the maximum desired capacity: provides a bridge practically doubled in width, meeting projected vehicle growth and optimises pedestrian and cycle treatments. This option would occupy land currently within Hagley Park boundaries.

In the process of considering the options a number of complicating factors have been encountered that impact on the options.

#### **MAJOR FACTORS INFLUENCING FUTURE DECISIONS**

Significant factors that will influence the decisions relating to this project have been identified. They relate specifically to making changes to the Carlton Mill Bridge, and to the rules determining Hagley Park land uses.

- **Hagley Park**

Hagley Park is governed and managed under its own Act of Parliament. The Act specifically prohibits the taking of any land in Hagley Park for road, street, motorway or bridge.

After reviewing the Hansard records for the formulation of this Act, the Office Solicitor has concluded that the CCC cannot legally either widen the Carlton Mill bridge footprint onto Hagley Park land, nor create separate pedestrian/cycle bridges, nor add a bridge clip-on that terminates on Hagley Park land.

The only option available for work that puts a bridge footprint into Hagley Park is to initiate a legislative process that will change the Park's governing Act.

- **Carlton Mill Bridge**

Carlton Mill Bridge is not registered as a heritage structure, however the Council's heritage team say that they consider the bridge, in particular its balustrades, to be historically significant. If any work occurs on bridge widening, they would like to see the balustrades retained or re-created. Technically it is possible to slice off the bridge sides, and replace them on a widened carriageway.

However, the existing balustrades do not meet the requirements for bridges under the Building Act. Therefore, any action that moves or removes them will require replacement with Building Act-compliant balustrades, which could have a significant visual impact on the bridge and therefore compromise the historically-significant status.

#### **FURTHER OPTION INVESTIGATION**

Due to the matter of the Act governing Hagley Park, the City Streets Unit has not investigated the improvement options based on the separate pedestrian/cycle bridges or bridge clip-on any further. Both of these options could be further considered if the Hagley Park issues are resolved.

The City Streets Unit has thus far undertaken a more detailed investigation on the other options:

- **Option 1:** Involves no bridge work. It provides a pedestrian crossing of Bealey Avenue and safety improvements to the Carlton Mill/Bealey turn. This option offers no capacity improvements, and no safety/accessibility improvements for pedestrians or cyclists over the bridge.

This option does avoid any concerns over bridge historical significance and Hagley Park land matters.

- **Option 2:** Involves widening the bridge to the maximum legal land use limit. It provides intersection alignment and capacity improvements, and a widened cycle/pedestrian facility on each side of the bridge. However, bridge congestion problems will resume in the future as traffic grows.

This option compromises the bridge historical significance issue, but avoids the Hagley Park land use matter.

- **Option 3:** Involves widening the bridge to the ideal traffic capacity, cycle and pedestrian width, and includes general intersection realignment and safety issues. The bridge would handle expected 25 year traffic growth.

This option compromises the bridge historical significance issue and will require an Act of Parliament change to allow the bridge footprint to expand into Hagley Park land. The bridge footprint and Harper Avenue widening would occupy 552m<sup>2</sup> of Hagley Park.

The City Streets Unit is now at a point where it needs to expand the issues and treatment options into a wider forum and to seek political guidance on options to pursue.

#### **POSSIBLE PROGRESS AND DECISION MAKING REQUIREMENTS FROM THIS POINT**

The Council has two primary decision-making pathways along which it can proceed further:

##### **Either:**

The Council determines what level of traffic/cycle/pedestrian capacity it requires from the intersection. Subsequent to that decision, all necessary actions to obtain legislative approval (including Hagley Park land use), resource consents etc, will be worked through.

Advantages: Bridge and road geometry will provide desired capacity level  
Best practice cycle and pedestrian treatments can be created.

Disadvantages: Bridge engineering changes required.  
Bridge will occupy some of existing Hagley Park land.

##### **Or:**

The Council determines that it does not wish to impact on Hagley Park land, and it then develops an optimal bridge treatment and intersection configuration to use available road corridor land only.

Advantages: Bridge will not occupy any Hagley Park land

Disadvantages: Traffic/cycle/pedestrian capacity will be compromised, and will face re-growth of congestion in short time frame.

It would appear, at this stage of analysis, that all options that involve widening the bridge will generate a benefit/cost ratio of above 4 (ensuring Transfund subsidy). Costs range from approximately \$870,000 to almost \$2.3M depending on the options and features considered.

The City Streets Unit recommends that the first decision made concerns the desired/required capacity level of the intersection. This will allow the Council to determine the level of road capacity it chooses to supply. After that, the necessary legislative-change process is followed to allow an expanded bridge footprint. Should the legislative change process fail, the "fall-back" position (bridge expansion within road corridor boundaries) would be followed.

- Recommendation:**
1. That the Council acknowledge that the city has a safety and capacity problem at the key intersection of Bealey Avenue/Carlton Mill Road/Harper Avenue in respect of:
    - (a) Safety for vehicles, cyclists and pedestrians.
    - (b) The need to provide an effective public transport solution to encourage its use.
    - (c) Long term traffic capacity requirements consistent with the capacity provided by the four-lane major arterial roads and the bridge connects (Bealey Avenue, Harper Avenue, Park Terrace).
  2. That the Council explore a range of possibilities for the improvements to the intersection, one of which could be the taking of up to 550m<sup>2</sup> of Hagley Park for bridge widening.
  3. That an appropriate consultation programme be developed for approval.
  4. That this report and recommendation be referred to the next meeting of the Parks, Gardens and Waterways Committee.

As per recommendation 4 above, this matter was subsequently considered at the meeting of the Parks, Gardens and Waterways Committee held on 10 April 2002. The resolution of that Committee (which is contained in its report to Council within the current agenda) was:

*"That the report on the Bealey/Carlton Mill/Harper/Park Terrace intersection be referred to the Parks, and Waterways Unit for a report on the implications of the proposal to take part of Hagley Park for bridge widening and intersection improvement."*