

**TRANSPORTATION COMMITTEE**

*HIS WORSHIP, THE MAYOR  
AND COUNCILLORS*

**SUBJECT: TRANSPORTATION REVIEW OF BURNABY HEIGHTS / CAPITOL  
HILL NEIGHBOURHOOD**

**RECOMMENDATIONS:**

1. THAT Council authorize the public consultation process described in Section 5.0 of this report, based on the proposals identified in Section 4.2 of this report.
2. THAT Council distribute this report to those that have corresponded with the City on this matter.

**REPORT**

The Transportation Committee, at its meeting held on 2010 January 13, received and adopted the *attached* report providing a review of traffic issues raised by residents in the Burnaby Heights / Capitol Hill neighbourhood.

Arising from discussion, the Committee **AMENDED** the report to include in Section 4.2 – Proposed Actions, a new point 7 “Invite the public to offer other traffic calming measures, including diversions and barriers, to reduce Regional Trips and traffic speed in the neighbourhood”.

Respectfully submitted,

Councillor N. Volkow  
Chair

Councillor S. Dhaliwal  
Vice Chair

Councillor R. Chang  
Member

Copied to:	City Manager Director Planning & Building Director Engineering Director Finance Director Parks, Recr. & Cult. Services OIC, RCMP Fire Chief
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Meeting 2010 Jan 13

## COMMITTEE REPORT

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**TO:** CHAIR AND MEMBERS  
TRANSPORTATION COMMITTEE

**DATE:** 2010 January 14

**FROM:** DIRECTOR PLANNING AND BUILDING

**FILE:** 37500 - 01  
*Reference: Burnaby Heights*

**SUBJECT:** **TRANSPORTATION REVIEW OF BURNABY HEIGHTS / CAPITOL HILL NEIGHBOURHOOD**

**PURPOSE:** To review traffic issues raised by residents in the Burnaby Heights / Capitol Hill neighbourhood.

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### RECOMMENDATIONS:

1. **THAT** Council be requested to authorize the public consultation process described in Section 5.0 of this report, based on the proposals identified in Section 4.2 of this report.
2. **THAT** Council be requested to distribute this report to those that have corresponded with the City on this matter.

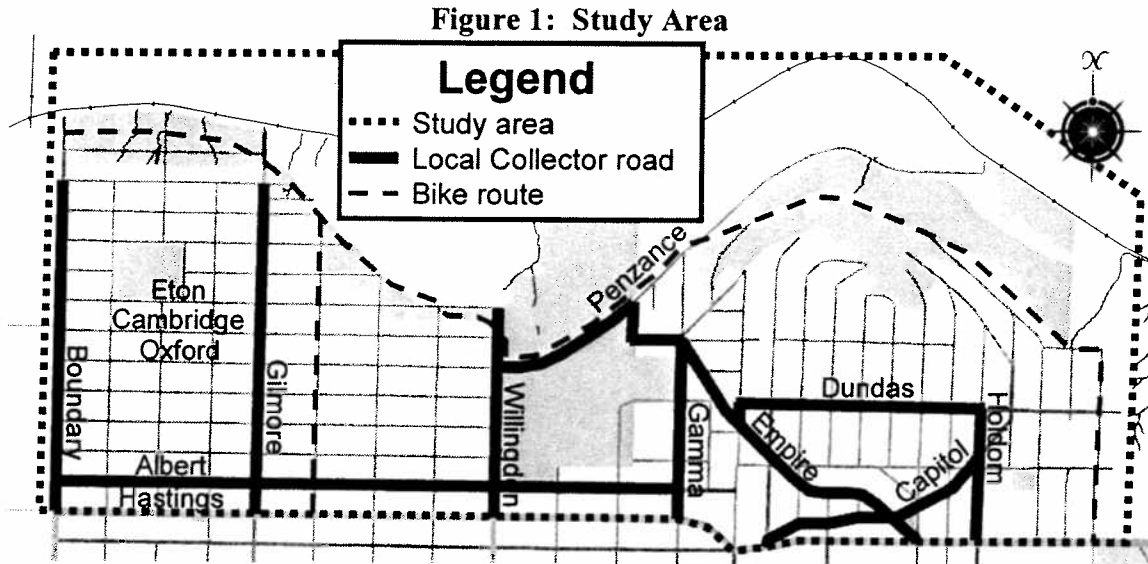
## REPORT

### 1.0 INTRODUCTION

On 2009 February 16, in response to delegations and correspondence from several residents, Council authorized staff to initiate a process to review transportation issues in the Burnaby Heights / Capitol Hill (BHCH) neighbourhood (see *Figure 1*). Council approved a phased review process, authorizing staff to collect data on traffic patterns in the neighbourhood and to undertake an initial assessment of issues. Following completion of this work, staff were to report back to Council with proposals for any follow-up actions, as appropriate. This report presents the results of that data collection / assessment process, and the resultant recommendations.

### 2.0 BURNABY HEIGHTS / CAPITOL HILL NEIGHBOURHOOD

This neighbourhood, as shown in *Figure 1*, is generally bounded by Boundary Road, Hastings Street, Fell Avenue and Burrard Inlet. Most roads in the neighbourhood are classified as Local Residential roads, with several Local Collector roads, as shown. The latter are expected to serve a larger role in moving traffic within the neighbourhood. The highest-classification road in the area is Hastings Street, which is a Primary Arterial.



There is extensive transit service on Hastings Street. Within the neighbourhood, transit service is provided by two community shuttle routes that connect to the longer-distance routes on Hastings Street. Designated cycling routes consist of the east-west Trans-Canada Trail (primarily on park land across the north side of the neighbourhood) and the north-south Sea-to-River Bikeway (on Carleton Avenue). Various local streets are completed to both finished and interim standards.

Development in the area is primarily single-family residential (mostly with R5 zoning) with parks, elementary schools, and community amenities. There are higher residential densities (e.g., RM3 or RM6 zoning) near Hastings Street, such as along parts of Albert Street, Capitol Drive, and Holdom Avenue. Hastings Street itself has both commercial and mixed use commercial / residential developments.

The neighbourhood occupies the northwest corner of the City. With Burrard Inlet to the north, there is no opportunity for north-south Regional Trips. However, Regional Trips are able to move through the neighbourhood in an east-west direction. Some drivers may be doing so to avoid traffic on Hastings Street. Others may be headed to/from the Skeena Tunnel (accessed from Cambridge Street in Vancouver) to access Highway 1 or continue into Vancouver.

This report uses the following terms:

- **Local Trips** begin or end within the neighbourhood. This includes trips with non-residential origins or destinations, such as recreational or commercial.
- **Regional Trips** pass through the neighbourhood without having an origin or destination within the neighbourhood.

### 3.0 REVIEW OF LOCAL TRAFFIC PATTERNS

#### 3.1 General Issues

Concerns regarding local traffic issues in the neighbourhood have been the subject of several previous reviews. An overview is provided in *Appendix A*. These concerns were primarily related to the intrusion of Regional Trips into the neighbourhood. This issue has been evident in the neighbourhood for at least 30 years. It is worth noting that the neighbourhood has twice (1982 and 1999) rejected traffic diversion plans that would have blocked Regional Trips, given that the use of this approach would also interfere with Local Trips. Thus, in 2003, a non-diversionary strategy was implemented that has since seen the narrowing of local roads in six blocks of Oxford Street and three blocks of Eton Street.

Concerns leading to initiation of the current review, as raised by various residents, were primarily related to high traffic volumes and/or speeds on some roads and the volume of Regional Trips cutting through the neighbourhood rather than staying on Hastings Street. Submissions were also received that expressed differing views as to what should be done. Some favoured a diversionary approach that would make it physically impossible to cut through the neighbourhood. Others placed a higher value on maintaining circulation and access for neighbourhood residents.

#### 3.2 Primary Traffic Pattern

To assess current concerns, traffic volume and speed measurements were taken at locations throughout the neighbourhood. Data were collected in the fall of 2008 and fall of 2009. Daily traffic volumes are presented in *Appendix B*. Of note is evidence of higher volumes on two routes through parts of the neighbourhood as illustrated on page 5 in *Figure 2* and described below:

- **Southern Route** follows Albert Street from Boundary Road to Gamma Avenue. This route had the higher volumes of the two.
- **Northern Route** generally follows Oxford Street (or, to a lesser extent, Eton Street), Penzance Drive, Beta Avenue, Cambridge Street, Empire Drive, and Pandora Street. The route extends from Boundary Road to Holdom Avenue.

Both of these routes carry a mix of Local and Regional Trips.

Appendix B also presents volumes for the morning and afternoon peak hours, which again illustrate the attractiveness of the Southern and Northern Routes. A pattern is evident, with higher westbound trips during the morning peak hour and higher eastbound trips in the afternoon. This reflects the general flow of peak volumes through Burnaby, with the major regional employment centre located to our west and a significant population base to the east.

### **3.3 Traffic Volumes**

The *Burnaby Transportation Plan* indicates that volumes of up to 3,000 vehicles per day can be expected on Local Residential roads, and up to 5,000 vehicles per day on Local Collector roads. Based on this, most roads in the neighbourhood are operating within the expected range in terms of traffic volume. Notable exceptions are:

- The southern parts of Boundary Road and Willingdon Avenue have volumes in excess of 5,000 trips per day. This likely reflects that these are the most desirable (direct / easily accessed) routes into the neighbourhood, given the provision of left-turn bays on Hastings Street at these locations.

In the longer term, as land becomes available, a left-turn bay is planned on Hastings Street at Gilmore Avenue, which is also a Local Collector road. This will help to ease demand on the Boundary Road and Willingdon Avenue intersections with Hastings Street.

Other modifications that might distribute these turning volumes onto north-south Local Residential roads connecting to Hastings Street are not supported, so as to maintain appropriate lower volumes on the Local Residential roads. In addition, increased left turns from Hastings Street at Local Residential roads without left-turn bays would block an eastbound through lane, thus decreasing the through capacity of Hastings Street and increasing the number of Regional Trips short-cutting through the neighbourhood.

Based on the above discussion, this report does not propose any measures for reducing the volume of traffic on Boundary Road or Willingdon Avenue.

- Parts of Albert Street and the southern block of Gamma Avenue have daily volumes above 5,000. These are believed to be a mix of Local and Regional Trips. Like Boundary Road and Willingdon Avenue, Gamma Avenue attracts traffic because it is one of the few locations with full signals and left-turn bays. Albert Street and Gamma Avenue are explored in more detail subsequently in this report.

### **3.4 Origins and Destinations (Estimate of Regional Trips)**

The data collection methodology consisted of traffic counts taken at key locations throughout the neighbourhood. This approach does not trace individual trips through the neighbourhood to give a definitive statement of where the trips originated and terminated. It does, however, provide the basis for a reasonable estimate of origin / destination patterns. A more comprehensive origin / destination survey, if conducted, would provide greater precision but would likely not add significantly to the understanding of the issues or the suitable solutions.

In general terms, the methodology for estimating travel patterns consisted of comparing the volume of traffic on roads that were believed to have some Regional Trips (e.g., Oxford Street) with those that are believed to have only very short Local Trips serving one or two blocks (e.g.,

Triumph Street). The difference in volume between the two roads consists of longer Local Trips (e.g., from Boundary Road to Capitol Hill) plus Regional Trips. By repeating this process at multiple points across the neighbourhood, it was possible to develop estimates that separated the longer Local Trips from the Regional Trips.

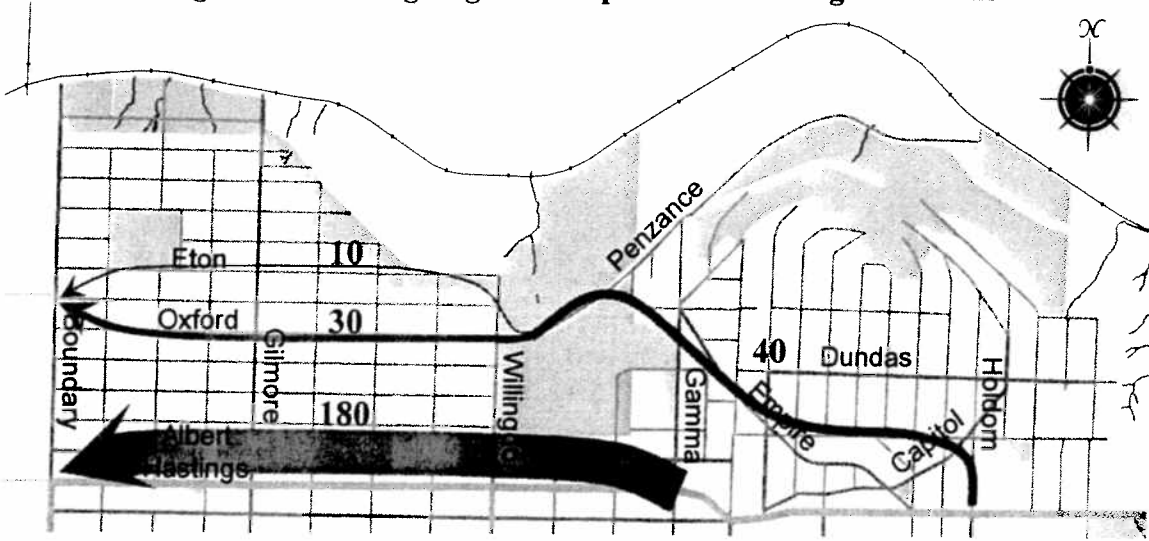
The effects of differing land uses (primarily commercial and higher-density residential development near Hastings Street) and commuter traffic to/from Chevron's Burnaby Refinery at the north end of Willingdon Avenue were also taken into account.

The results of this origin and destination review are shown in **Figures 2 and 3**, which indicate that Regional Trips are estimated at:

- Westbound in the morning peak hour: 40 on the Northern Route and 180 on the Southern Route.
- Eastbound in the afternoon peak hour: 140 on the Northern Route and 170 on the Southern Route.

At both times of day and on both Routes, there was no evidence of significant Regional Trips in the reverse (off-peak) direction.

**Figure 2: Existing Regional Trips in the Morning Peak Hour**

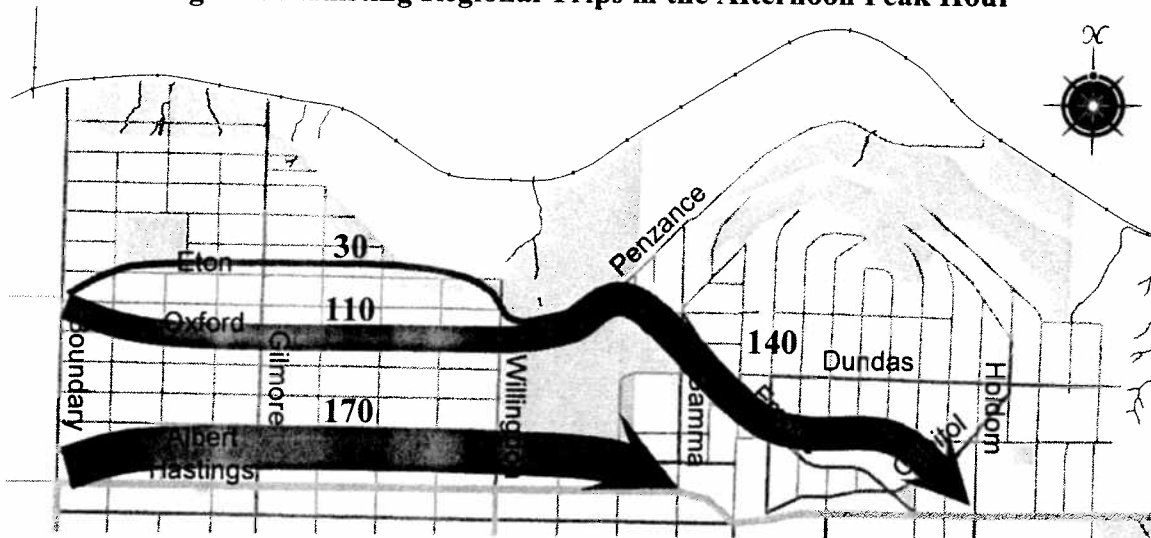


The presence of Regional Trips within the neighbourhood was one of the primary issues raised by residents. These results give an indication of the number of such trips that occur.

**3.5 Options to Address Regional Trips**

Possible approaches considered to reduce the number of Regional Trips through the neighbourhood are as follows.

**Figure 3: Existing Regional Trips in the Afternoon Peak Hour**



### 3.5.1 Diversionary Methods (Barriers)

Some residents have suggested that the BHCH road network should be modified to make it physically impossible for Regional Trips to get through. In principle, there are many ways in which this could be done. As already noted, some were proposed (and rejected) as part of earlier processes in 1982 and 1999. Several examples of diversionary methods are presented in *Appendix C*. They all share several common problems:

1. **Lack of support:** Area residents have twice rejected traffic diversionary plans. The volume of Regional Trips today is about the same as it was when a diversionary plan was rejected in 1999, and lower than when a diversionary plan was rejected in 1982. Lacking any change in the underlying circumstances, it is very likely that residents would again reject a diversionary plan due to the constraints that it would impose on local access.
2. **Reduced accessibility:** The BHCH neighbourhood would become less accessible for all vehicles, including Local Trips and emergency vehicles.
3. **Impacts to the south:** If a diversionary plan was approved by the residents and implemented, it would likely have the effect of shifting more Regional Trips to the parallel Local Residential roads on the south side of Hastings Street.
4. **Longer trips:** By forcing Local Trips (which comprise the bulk of the traffic in the neighbourhood) onto more circuitous routings, this approach would generally result in longer trip times and distances, with attendant increases in vehicle emissions and accident risks.

Based on the above, staff would not propose to pursue the use of diversionary methods.

### **3.5.2 Turn Prohibitions**

In principle, peak-period turn prohibitions could be implemented to restrict neighbourhood access or egress. The challenge is that, to be effective, such prohibitions would need to be applied at virtually every access point.

For example, in the morning peak period, a right turn prohibition from westbound Hastings Street to northbound Holdom Avenue would restrict access to the Northern Route. However, there are several intersections before and after Holdom where drivers could turn instead. These would also require right-turn prohibitions. To be effective, the prohibitions would need to be applied at all intersections along Hastings Street, leaving no way for residents or employees to get into the neighbourhood. Further, from a more practical perspective, enforcement of right-turn prohibitions is difficult to achieve.

Turn prohibitions are effectively a diversionary method. Thus, in addition to the concerns described above, they are not proposed for the reasons given previously in Section 3.5.1.

### **3.5.3 Road Reconstruction to Finished Standard**

On Local Residential roads, the finished standard (i.e., with curbs and gutters) provides less space for moving vehicles than the interim standard (with gravel shoulders). Reconstruction of an interim-standard road to the finished standard thus restricts capacity and helps to restrain vehicle speeds. Residents can request that their block be reconstructed to the finished standard, on a cost-shared basis under the Local Area Service Program (LASP).

To a fair extent, this approach has already been implemented on the Northern Route via the block-by-block reconstruction of Oxford and Eton Streets to a finished standard.

The eastern half of the Northern Route, and all of the Southern Route, provide less opportunity for this approach to achieve capacity constraints. These routes consist of Local Collector roads where greater road width is required to serve neighbourhood needs. On these roads, there is little difference between the interim and finished standards in terms of the width available for vehicle movement.

On this basis, it is proposed to continue to complete streets to a finished standard via LASP.

### **3.5.4 Corner Bulges**

Corner bulges are localized reductions in the street width at intersections. These limit capacity by making it impossible for two cars to approach the stop bar simultaneously (e.g., one going straight and one turning right). They have the added benefit of increasing the visibility of pedestrians, and may aid with stop sign violation issues raised



by one resident. This approach is most beneficial at locations where turning volumes are higher, and where concrete curbs exist on all legs of the intersection. In addition, consideration must be given to the turning requirements of buses, emergency response vehicles, and other large vehicles.

The capacity-reduction benefits of corner bulges can be obtained on finished-standard Local Collector roads, since the bulges produce a reduction in road width. On interim-standard roads, the paved surface is already narrow, and bulges would not produce any further reduction. Similarly, Local Residential roads are already too narrow for two vehicles to approach the stop bar simultaneously.

On the Northern Route, many of the Local Collector roads are built to an interim standard with gravel shoulders. In addition, many of the intersections are skewed at sharp angles. For these reasons, curb bulges are not recommended on the Northern Route.

On the Southern Route, intersections mostly have concrete curbs and more regular shapes, making corner bulges more feasible. Corner bulges could be installed on Albert Street at locations with higher turning volumes, namely at Gilmore, Willingdon, and Gamma Avenues.

Given the above, staff would propose curb bulges on Albert Street for the three intersections listed above, subject to neighbourhood consultation.

### **3.5.5 Modifications to Hastings Street Operations**

Staff periodically review the timing of traffic signals to maximize the capacity of Hastings Street. For example, on 2009 December 14, Council received a report documenting how additional green time and improved signal progression were recently provided to Hastings Street at all signals. This resulted in a reduction of the prevailing traffic delay: a 53% reduction westbound in the morning and a 76% reduction eastbound in the afternoon.

This helps to reduce Regional Trips through the neighbourhood, in two ways. Firstly, it increases the attractiveness of Hastings Street for Regional Trips. Secondly, it decreases the attractiveness of both the Northern and Southern Routes in the afternoon peak period by reducing the level of service for southbound traffic on Gamma and Holdom Avenues, where the two Routes rejoin Hastings Street.

Staff would propose that periodic adjustment of traffic signal timing on Hastings Street be continued, to minimize east-west delay.

### **3.6 Vehicle Speeds**

Vehicle speed data were collected at most locations where traffic counts were obtained. Results are presented in *Appendix D*. It was found that most drivers are obeying the speed limit at most

locations. Higher speeds were observed on parts of Penzance, Empire, Cambridge, Hythe, McGill, and Gamma. Most of these were still within the range of 45 to 55 km/hr typically observed on City streets.

None of the higher-speed locations are on the Southern Route. Some are on the Northern Route, and some are on other roads that are not used by Regional Trips. This suggests that speeds above 50 km/hr are driven as much by neighbourhood drivers as by Regional Trips.

Options for reducing speeds are discussed below. Aside from enhanced safety, there is the added benefit that speed reductions may help to decrease the volume of Regional Trips in the neighbourhood, by increasing the travel times on the Northern and Southern Routes as compared with Hastings Street.

### 3.6.1 Speed Humps

The most common and effective infrastructure approach to address speeding is the installation of speed humps. Some of the higher-speed locations are on Local Residential roads, for which speed humps are available via LASP.

The other higher-speed locations are on Local Collector roads, namely:

1. **Empire Drive** has higher speeds at both the observed locations, and probably along much of its length. This is primarily an interim-standard road with gravel shoulders and no sidewalks. There are all-way stop signs at Gamma, Delta, Hythe, and Capitol. However, all-way stop signs do not reduce speeds between intersections.
2. **Penzance Drive** has higher speeds between Willingdon and Beta. The 57 km/hr 85<sup>th</sup> percentile speeds in both directions are much higher than the posted 30 km/hr playground zone. Playground speed restrictions are only in effect from dawn to dusk. While daytime speeds were slightly lower, speeding was prevalent at all times of the day. This section of road only has children present when the Burnaby Central Railway is operating (which was not the case during the observation period) and there is no playground in this area. Under such circumstances, driver compliance is typically poor. As a result of good sightlines and a lack of directly-abutting land uses, Penzance Drive is perceived as a through road that can be driven at higher speeds.
3. **Cambridge Street** has higher speeds westbound from Gamma to Beta, which has a down-grade of 15%. The higher speeds likely arise from the grade. Speeds are limited, to the extent possible, by an all-way stop at one end of the block and a sharp 90-degree bend at the other. The steep grade makes the installation of speed humps inadvisable, as they increase the difficulty of driving in winter conditions.

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It is Council's policy to only install speed humps on Local Collector roads if there is sufficient support from the neighbourhood. The acceptability of speed humps could be determined through a brochure sent to neighbourhood residents and businesses to seek their opinion of this concept. If accepted by the neighbourhood, speed humps on select Local Collector roads would be implemented via LASP, in the same way as is already done for Local Residential roads.

On all streets, there would continue to be certain restrictions on where speed humps could be placed, such as:

- One block of Albert Street, between Carleton and Madison Avenues, would be excluded from this concept because of the regular use of this block by Fire Department vehicles returning to Fire Hall #5.
- Speed humps are not supported on bus routes.
- For safety reasons in winter, speed humps are not supported on roads that have grades steeper than 8%.

It is proposed to continue to install speed humps via LASP on Local Residential roads, and consult with the neighbourhood about the concept of installing speed humps via LASP on select Local Collector roads.

### **3.6.2 Education and Enforcement**

Vehicle speeds can also be mitigated by education (e.g., larger signs that are moved from one school or playground to another) and by police enforcement. The City will continue to apply these methods in the BHCH neighbourhood, subject to prioritization with other locations across Burnaby.

It is proposed that the City continue with education and enforcement efforts in the BHCH neighbourhood.

### **3.6.3 Area-Wide Speed Limit Reduction**

There is another approach that has not been tried yet in Burnaby, but is attracting attention elsewhere. That is to implement an area-wide speed limit reduction on residential roads (with the exception of Arterial and Major Collector roads). In principle, such an approach could be applied to every road (i.e., Local Residential and Local Collector roads) in the BHCH neighbourhood.

While not yet common, this approach is gaining increased acceptance:

- The City of Vancouver has proposed speed limits of 40 km/hr in neighbourhoods and has already established 30 km/hr limits on bikeways.

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- The City of Ottawa has allowed 40 km/hr speed limits by neighbourhood petition since 2003.
- Some boroughs of the City of Montreal have allowed 40 km/hr neighbourhood speed limits since 2005. The number of such boroughs is increasing, and the policy is expected to become city-wide in 2010.
- The City of Portsmouth, United Kingdom, has recently reported on the results of a blanket residential speed limit reduction to 20 miles per hour (32 km/hr). They found that speeds on their fastest roads declined by 7 miles per hour (11 km/hr) and accidents declined by 13%.

Input from BHCH residents would be needed to determine interest and support for the introduction of a neighbourhood-wide speed reduction to 40 km/hr, as a pilot program. If it had the support of the neighbourhood, and the lower speed limit was obeyed by most local residents, it would make it difficult for non-residents to speed in the neighbourhood. A lower limit of 30 km/hr would continue to apply in school and playground zones, and is also proposed for on-street bike routes in the neighbourhood: the Sea-to-River Bikeway (on Carleton Avenue) and the on-street portion of the Trans-Canada Trail (on Fell Avenue).

It is important to note that this proposal does not include any extraordinary level of police enforcement. There would be enforcement at a level comparable to that provided elsewhere in Burnaby. The effectiveness of the concept would thus rely to a significant extent on neighbourhood support.

It should also be emphasized that this proposal would be a pilot program, to determine the effectiveness of such a measure in a Burnaby context. If it was found to be ineffective after a one-year period, the results would be reported to Committee and Council to consider removal of the signs and restoration of the existing 50 km/hr speed limit.

In addition, as part of the annual submission to the Union of BC Municipalities, staff will advance a proposal for Council to renew support for the City of Vancouver's motion (first made in 1999) requesting changes to the *Motor Vehicle Act*, that would make it easier to implement such neighbourhood speed limits right across a municipality. Specifically, the proposed change is to allow a municipality to set the default (unsigned) speed limit for its streets, rather than the current legislation which requires a default of 50 km/hr.

It is proposed to implement a neighbourhood speed limit of 40 km/hr (30 km/hr on bikeways) as a pilot project, subject to neighbourhood consultation.

### **3.7 Future Conditions**

The city and region will continue to grow and evolve in the years ahead. Some of those changes have the potential to affect traffic conditions in the BHCH neighbourhood. Some residents had expressed concern about the potential for increased neighbourhood impacts in the future, and this question was therefore considered in the current review. The findings are presented in *Appendix E*. In summary, it is believed that traffic conditions in the neighbourhood will remain relatively stable. However, an important unknown is the impact of the Port Mann / Highway 1 project. Traffic counts conducted for the current study will form a useful baseline in assessing what neighbourhood impacts, if any, arise from that project.

## **4.0 SUMMARY**

### **4.1 Issues Identified**

The key findings of this report are:

1. Traffic volumes on most neighbourhood roads are within the guidelines of the *Burnaby Transportation Plan*. Exceptions are parts of Boundary Road, Willingdon Avenue, Albert Street, and Gamma Avenue.
2. Two routes through the neighbourhood have volumes which suggest the presence of Regional Trips. The Southern Route is along Albert Street. The Northern Route is via Oxford (and Eton), Penzance, Beta, Cambridge, Empire, and Pandora.
3. Peak-hour Regional Trips on the Northern Route are estimated at 40 westbound in the morning and 140 eastbound in the afternoon.
4. Peak-hour Regional Trips on the Southern Route are estimated at 180 westbound in the morning and 170 eastbound in the afternoon.
5. Most drivers are obeying the speed limit on most roads. There are a few exceptions at various locations around the neighbourhood.
6. Numerous external factors will have an effect on the future number of Regional Trips on neighbourhood roads. However, those effects are likely to be small. The one exception may be the Port Mann / Highway 1 project, the effects of which are difficult to assess at this time.

### **4.2 Proposed Actions**

It is recommended that the City undertake public consultation in the BHCH neighbourhood, regarding the following proposals:

1. Continued periodic review of the signal timings along Hastings Street to minimize east-west delays.

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2. Continued education and enforcement of speed limits in the BHCH neighbourhood.
3. Continued support for finishing of roads to a final standard and the installation of speed humps on Local Residential roads, both via LASP.
4. The introduction of speed humps, via LASP, on select Local Collector roads in the BHCH neighbourhood.
5. Installation of corner bulges to reduce the width of Albert Street at Gilmore, Willingdon, and Gamma Avenues.
6. The implementation of an area-wide speed limit of 40 km/hr in the BHCH neighbourhood as a pilot project, with 30 km/hr for school zones, playground zones, and on-street bike routes.
7. In addition to the above, the Transportation Committee, at its meeting of 2010 January 13, invited the public to offer other traffic calming measures, including diversions and barriers, to reduce Regional Trips and traffic speed in the neighbourhood.

If implemented, it is believed that the above measures will have a positive effect in terms of reducing the volume of Regional Trips and the speed of traffic in the neighbourhood.

#### **4.3 Financial Considerations**

It is estimated that the proposed corner bulges would cost in the order of \$150,000, and that the neighbourhood-wide speed limit reduction would cost in the order of \$20,000. Funds for this project have not been identified in the *2010 Provisional Financial Plan*, but could be advanced for consideration in a future *Annual Capital Plan*, subject to the outcome of the public consultation process regarding the proposals presented in this report.

Reconstruction of streets to final standards and construction of speed humps would be accommodated under existing LASP funding.

#### **5.0 NEXT STEPS**

As noted above, this report recommends a public consultation program on the various proposals that have been identified. It is proposed that the public consultation program consist of:

1. Mail-out brochure to all residents and businesses in the neighbourhood, describing the proposals and the reasons for them.
2. Public open house in the neighbourhood to allow for a dialogue between City staff and the neighbourhood.
3. A survey on the proposals under consideration. This would be included with the mail-out brochure, available at the open house, and also available on the City's web site.

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4. Report back through the Transportation Committee to Council with results of the process and recommendations for those measures that are to be implemented.

## **6.0 CONCLUSION**

This report has reviewed traffic data collected in the BHCH neighbourhood, and found evidence of Regional Trips cutting across the neighbourhood. Traffic speeds in the neighbourhood are generally within expected limits, with some localized exceptions.

It is recommended that Council be requested to authorize a public consultation process as described in this report, and distribute copies of this report to those that have corresponded with the City on this matter.



B. Luksun, Director  
PLANNING AND BUILDING

SR:jc

Copied to: City Manager  
Director Engineering  
Director Finance  
Director Parks, Recreation and Cultural Services  
OIC – RCMP  
Fire Chief  
City Clerk

## APPENDIX A: HISTORY OF TRAFFIC CALMING IN THE NEIGHBOURHOOD

In the early 1980s, the volume of Regional Trips in the neighbourhood was much higher than today. The sum of daily (Local plus Regional) traffic on Eton and Oxford Streets was between 7,500 and 8,000 vehicles. Most of the east-west streets in the neighbourhood connected directly with Highway 1 at Cassiar Street, and the Cambridge Street Overpass was a major commuting route across the highway.

Key events since then include:

- **Traffic Diversion Plans:** In 1982, three traffic diversion plans were proposed in the area and reviewed through a formal consultation process.
  - *One-way Streets* on the western-most and eastern-most blocks of the neighbourhood. This plan was favoured by 8% of respondents.
  - *Diagonal Diverters* to create a zigzag pattern through the neighbourhood. Oxford Street and Gilmore Avenue were to be interrupted and a two-block diversion was to be created in the middle of the neighbourhood. This concept was favoured by 14% of respondents.
  - *Barricades on Boundary* to close the centre median on Boundary Road at all intersections except Albert and Edinburgh Streets. This proposal was favoured by 14% of respondents.

In contrast, retaining the status quo was supported by 64% of respondents. As a result, none of the three options were implemented. However, left-turn lanes were added on Hastings Street to reduce traffic congestion.

- **Cambridge Diagonal Diverter:** In 1987, a diagonal diverter was installed on Cambridge Street at Esmond Avenue to prevent traffic from Vancouver (via the Cambridge Overpass) from continuing along Cambridge in Burnaby.
- **Cassiar Connector:** The 1991 tunnelling of this section of Highway 1 severed the highway links to the local street network. The Cambridge Overpass was also removed at this time, leaving the Skeena Tunnel as a less-direct route into Vancouver. The sum of daily traffic volumes on Oxford and Eton Streets declined by almost 50%, into the 4,000-vehicle range. Those volumes have remained relatively constant since then.
- **Left Turn Restrictions:** In 1993, the City of Vancouver prohibited left turns during peak periods from eastbound McGill Street leading towards the Skeena Tunnel. This made it more difficult for peak-period traffic from Vancouver to access the BHCH area.
- **Alternating Stop Signs:** A pattern of alternating stop signs was implemented in the Capitol Hill (1994) and Burnaby Heights (1996/7) areas to improve traffic safety.
- **Two options for Burnaby Heights:** In 1999, a comprehensive process was initiated to address the concerns of the residents of Eton and Oxford Street regarding traffic speeds



and the volume of Regional Trips. At an Open House in the area, residents of Burnaby Heights, Vancouver Heights and Capitol Hill were presented with two options:

- *Traffic calming* with traffic circles and street narrowings. This plan received 62% support in Burnaby Heights.
- *Traffic diversion* with street closures and traffic diverters along Boundary Road. This plan received 43% support in Burnaby Heights, and less support from residents of Capitol Hill and Vancouver Heights.
- **Burnaby Heights Traffic Calming Plan:** In 2002, as part of a public process, staff proceeded with development of a non-diversionary traffic calming plan for Burnaby Heights. The Burnaby Heights Traffic Calming Plan was approved by the neighbourhood in 2002 and by Council in 2003. The Plan included measures to install stop signs and street narrowings on Eton and Oxford streets, traffic signal coordination on Hastings Street, and improved local transit service.
- **Local Street Designations:** In 2003, Council reduced the classification of both Oxford and Eton Streets, from Local Collector to Local Residential Street. Since then, residents have made use of the Local Area Service Program to reduce the width of some blocks (six on Oxford and three on Eton) from 11 metres to 8.5 metres. The reduced width forces one-way alternating traffic patterns, if parked cars are present on both sides. Other features that have been implemented are speed humps on one block of Oxford Street (from Rosser to Willingdon), a raised crosswalk across Eton Street at Rosser Avenue, and traffic circles in the Carleton Avenue intersections of both Oxford and Eton Streets. The circles were constructed as part of the Sea-to-River Bikeway.

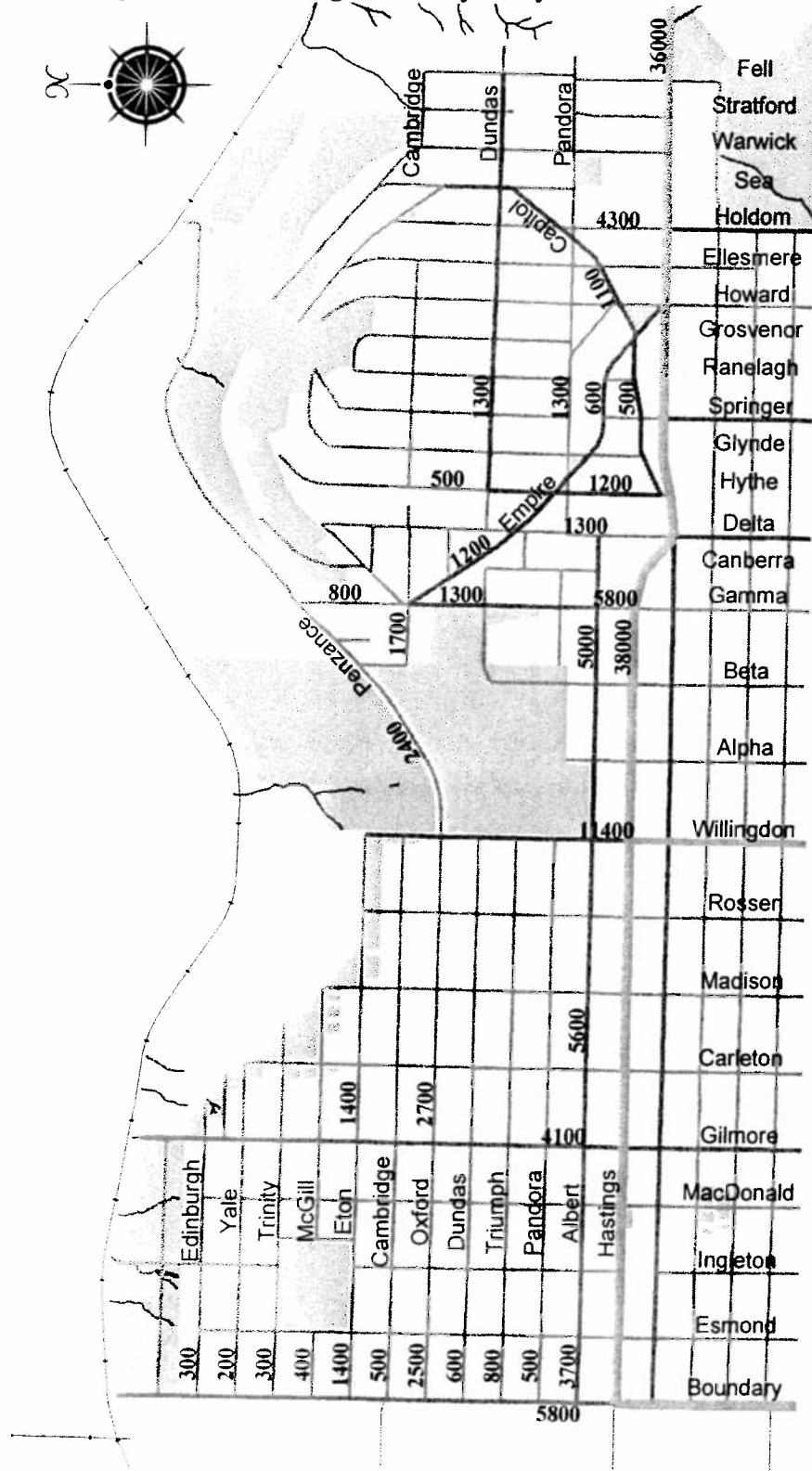
## **APPENDIX B: TRAFFIC VOLUMES**

Traffic counts were conducted in the fall of 2008. Some additional sites were surveyed in the fall of 2009. The fall was chosen because it typically has higher traffic volumes than the summer months. The latter have no elementary or secondary school trips, as well as reduced commuting due to summer vacations. The cycling mode share is also higher in summer.

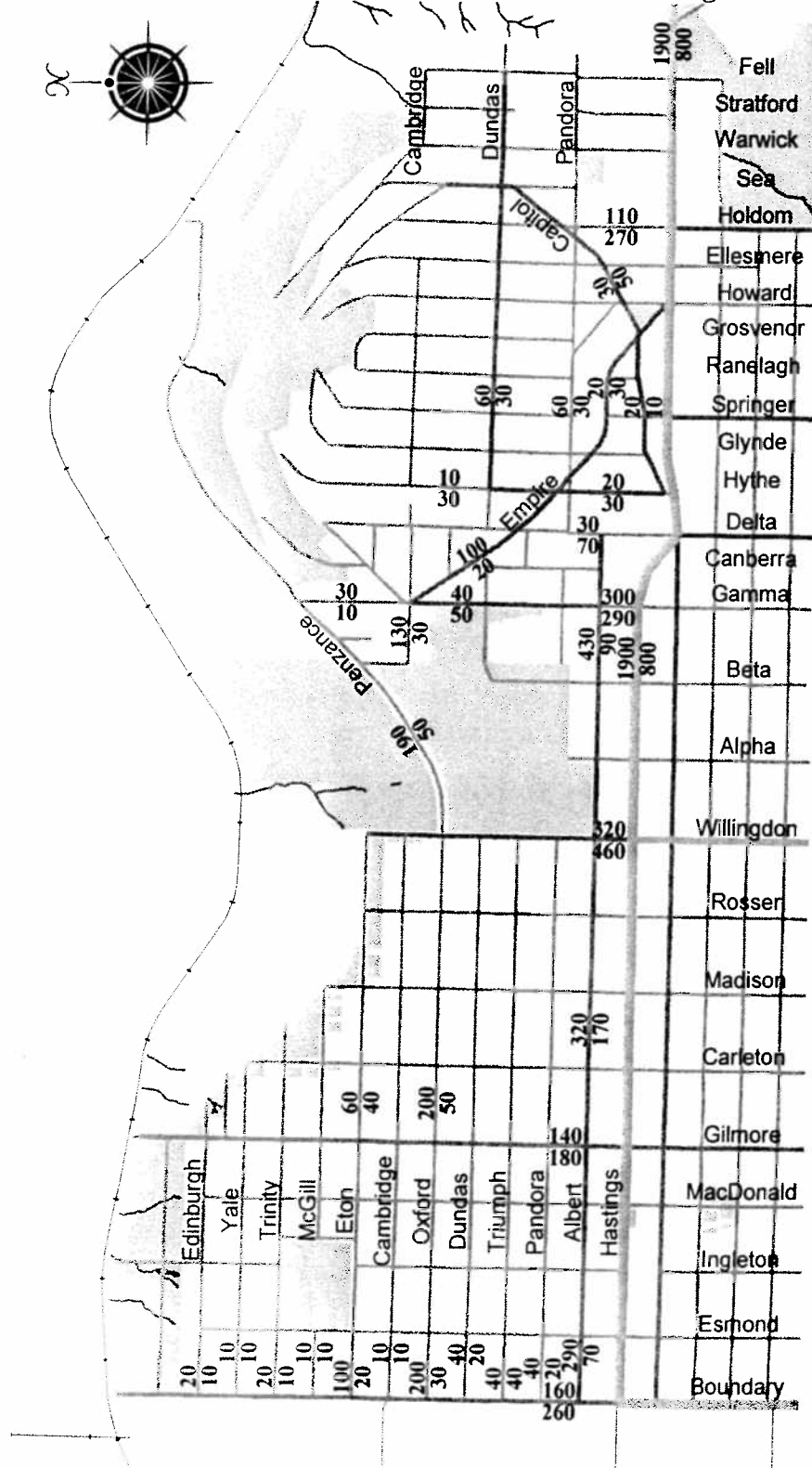
Existing two-way daily traffic volumes are shown in *Figure B1*.

The morning peak hour in the neighbourhood was found to be from 8:00 to 9:00 a.m., with a combination of commuter and school trips. The afternoon peak hour was found to be from 4:00 to 5:00 p.m. Volumes for these two periods are shown in *Figures B2 and B3*, respectively.

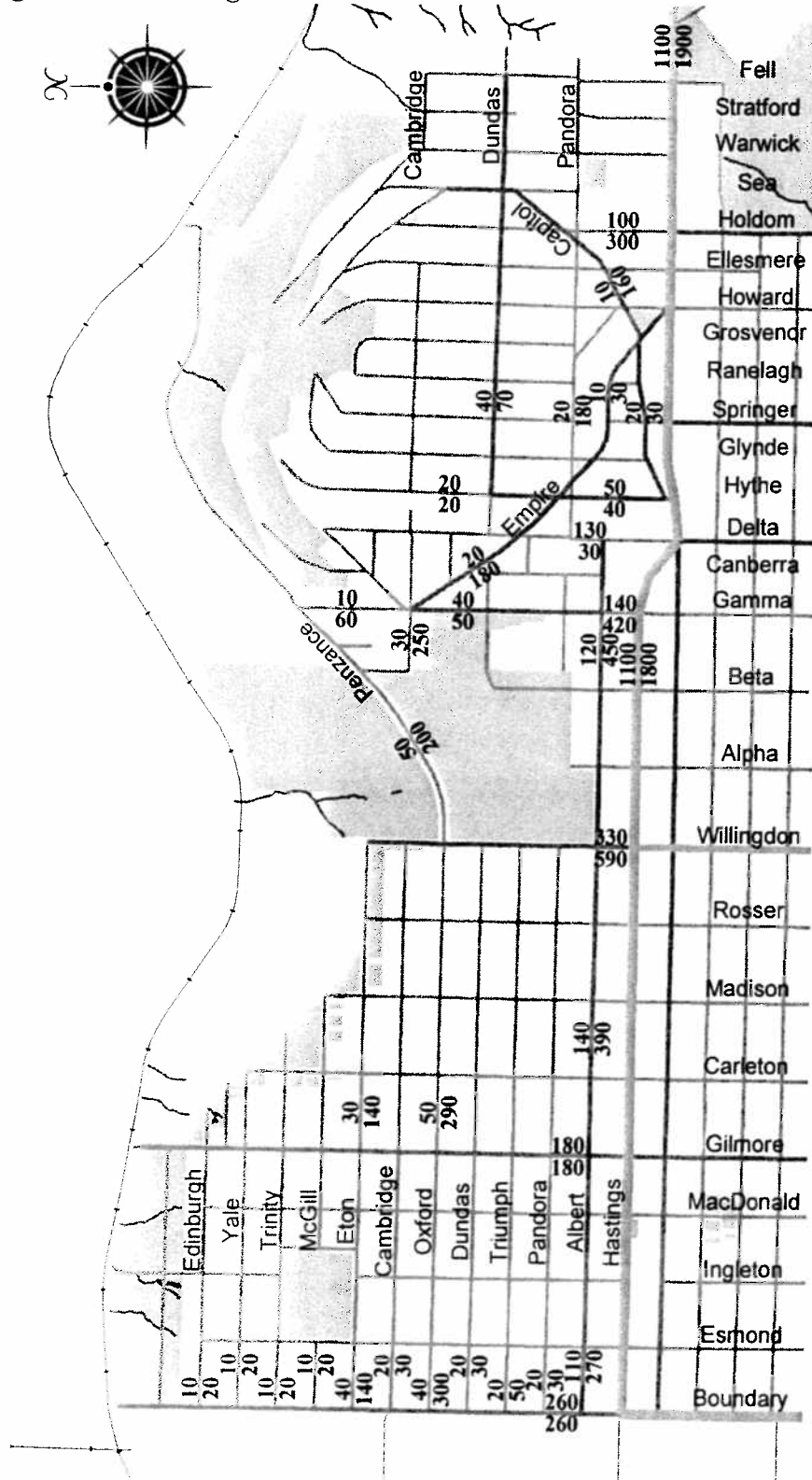
**Figure B1: Existing Two-Way Daily Traffic Volumes**



**Figure B2: Existing Directional Volumes in the Morning Peak Hour**



**Figure B3: Existing Directional Volumes in the Afternoon Peak Hour**



## **APPENDIX C: DIVERSIONARY METHODS (BARRIERS)**

This section provides a discussion of how diversionary methods could theoretically be applied in this area. Three concepts are:

1. The easiest way to implement a diversionary or barrier plan is to apply the barriers where the road network is already sparse, thus avoiding the problem of traffic bypassing the barrier by shifting to a parallel road. For example, barriers at just a few locations would suffice to separate Burnaby Heights from Capitol Hill. This would likely remove Regional Trips from neighbourhood roads east of Willingdon Avenue, but would probably be less effective for roads to the west (since viable through routes would still exist).
2. A second approach (on its own or in conjunction with the first) would be a full barricade of the Boundary Road median, completely severing the northbound and southbound lanes from each other at all intersections north of Hastings Street. The Burnaby half of Boundary Road would be one way northbound.
3. The above would still not be sufficient to disrupt the Southern Route, which has many opportunities to cross back and forth between Albert and Hastings Streets. The only way to get all Regional Trips off the Southern Route is probably with barriers across Albert Street in the vicinity of Boundary Road, Gilmore Avenue, and Willingdon Avenue. This concept would divide the Southern Route into three segments of not more than four blocks each, which would likely be of little interest for Regional Trips. However, a parallel road network exists to the north of Albert Street. As such, a barrier at Gilmore Avenue would also need to be applied to at least the first few streets north of Albert Street, so that Southern Route traffic did not simply shift northward by a block or two.

Clearly, the elimination of Regional Trips by diversionary methods would impact trips made by neighbourhood residents, as discussed in section 3.5.1 of this report.

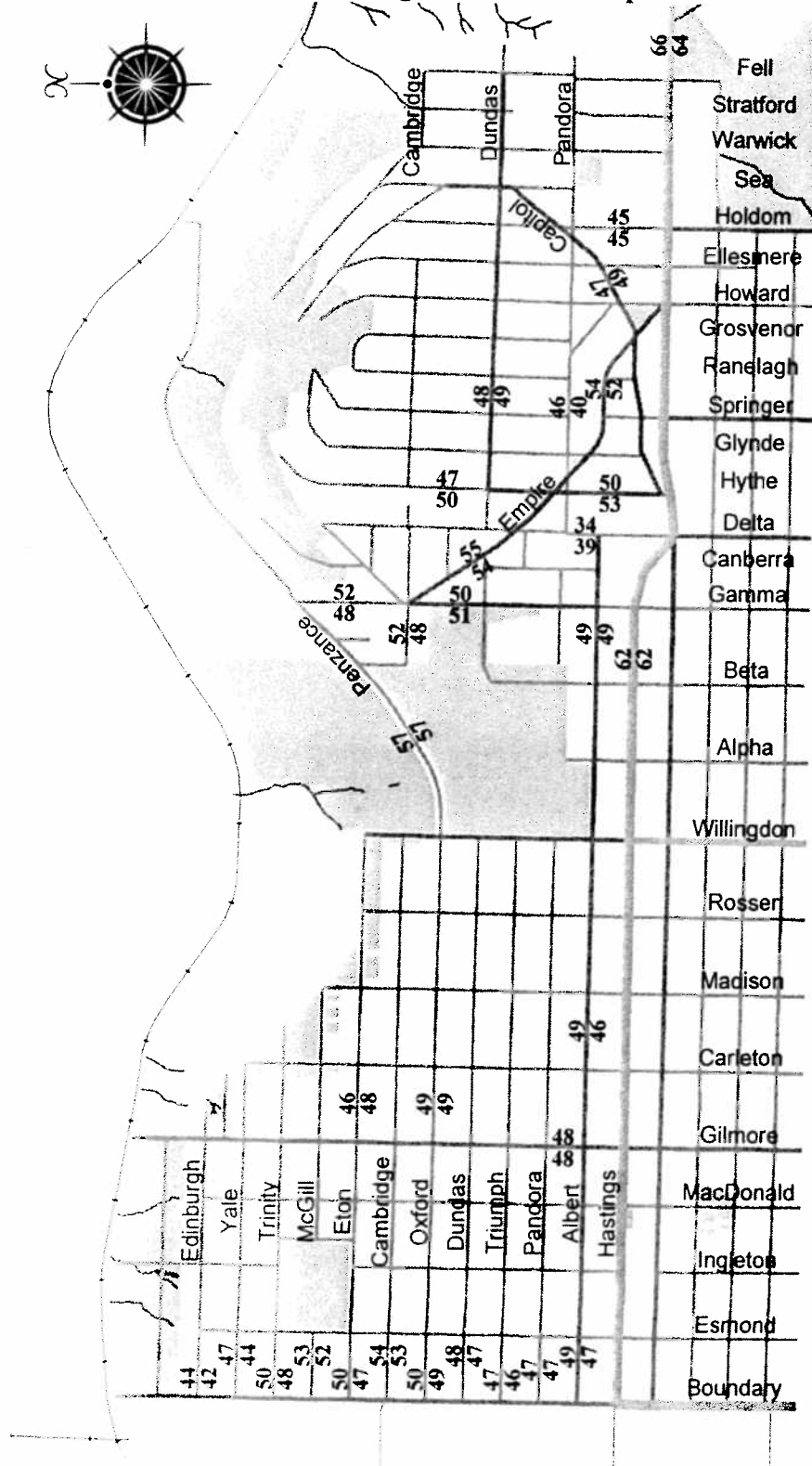
## APPENDIX D: VEHICLE SPEEDS

Vehicle speed data were collected at most locations where traffic counts were obtained. A key statistic derived from the data is the 85<sup>th</sup> percentile speed at each location, which is the speed that the majority of vehicles (85%) travel below. The results are presented in *Figure D1*. It can be seen that most drivers are obeying the speed limit at most locations. Higher 85<sup>th</sup> percentile speeds were noted at:

- Penzance Drive (Willingdon to Beta), 57 km/hr eastbound and 57 km/hr westbound
- Empire Drive (Oxford to Delta), 54 km/hr eastbound and 55 km/hr westbound
- Cambridge Street (Boundary to Esmond), 53 km/hr eastbound and 54 km/hr westbound
- Empire Drive (Springer to Ranelagh), 52 km/hr eastbound and 54 km/hr westbound
- Hythe Avenue (Pandora to Capitol), 53 km/hr southbound
- McGill Street (Boundary to Esmond), 52 km/hr eastbound and 53 km/hr westbound
- Cambridge Street (Beta to Gamma), 52 km/hr westbound
- Gamma Avenue (Penzance to Cambridge), 52 km/hr northbound
- Gamma Avenue (Cambridge to Dundas), 51 km/hr southbound

These results were obtained from traffic counts conducted in the fall months. Four locations were re-counted in the summer. These were in the block east of Boundary Road on Dundas, Eton, and Oxford Streets; and the block east of Gilmore Avenue on Albert Street. For each location, there was virtually no variation by season. The differences between the summer and fall 85<sup>th</sup> percentile speeds at each location were not more than 1.1 km/hr, and were usually much less. Sometimes the summer speeds were higher, and other times it was the fall speeds. The City's BHCH speed data, collected primarily in the fall, is thus also considered to be representative of the summer months.

Figure D1: Existing 85<sup>th</sup> Percentile Speeds





## **APPENDIX E: FUTURE CONDITIONS**

The city and region will continue to grow and evolve in the years ahead. Some of those changes have the potential to affect traffic conditions in the BHCH neighbourhood. These are discussed below.

### **E.1 Development to the East**

It is anticipated that development to the east will continue, creating additional demand for east-west movement. In northern Burnaby, continued development of UniverCity and the longer-term redevelopment of Shell Canada's Shellburn storage facility will provide some increased demand on Hastings Street. Beyond Burnaby, continued growth is expected in the Northeast Sector. What these developments all have in common is that, to a greater or lesser extent, they will increase the demand for east-west travel on Hastings Street. There is a perception that they may also result in more Regional Trips passing through BHCH.

However, the BHCH neighbourhood benefits from two natural choke-points for east-west travel. The first of these is Barnet Road, along the north side of Burnaby Mountain. This is a four-lane road today. Its designation as a Primary Arterial in the *Burnaby Transportation Plan* means that, in theory, it could be widened to six lanes. However, in practice, this is very unlikely. The road runs for almost five kilometres in Burnaby, almost exclusively surrounded by park lands. There is very little development potential in Burnaby's part of this corridor, and thus no incentive to widen the road. In addition, the steep terrain would result in a very expensive project.

The second choke-point is on Hastings Street in the Kensington Avenue area. In this area, Hastings Street has no parallel roads to the north, due to the presence of the Shellburn tank farm. There are also no parallel roads to the immediate south, due to the presence of Kensington Park. The flow of traffic on Hastings Street is thus constrained by the Kensington Avenue intersection, which is already built to its full size. This will constrain the volume of traffic from the east approach to the BHCH neighbourhood.

### **E.2 Evergreen Line**

While there remain some funding uncertainties, the Province is advancing this project, which will extend SkyTrain from Lougheed Town Centre through Port Moody Town Centre to Coquitlam Town Centre. This is expected to reduce east-west auto travel, though the effect on Hastings Street is likely to be small.

### **E.3 Port Mann / Highway 1 Project**

This project may have two effects on the BHCH neighbourhood. Firstly, the increased capacity on the corridor is expected to divert traffic away from parallel corridors such as Lougheed Highway and, to a lesser extent, Hastings Street. Modelling by the Province suggests that peak-hour traffic on Hastings Street may decline by about 100 vehicles in either direction. This in turn should ease the demand for Regional Trips to cut through the neighbourhood.

Secondly, the project will make it easier for cars to *approach* the Ironworkers Memorial Bridge but not easier to *cross* it. As the City noted on 2007 November 13, in a letter submitted under the Environmental Assessment process, “Modelling by the Proponent indicates that northbound peak-hour volumes on the Second Narrows Bridge will be 800 vehicles greater than today. Since this location is already congested today, an additional 800 vehicles will lead to significantly greater congestion and queuing. What will be the impacts on Highway 1, and on the surrounding municipal road network?”

Unfortunately, the Province has not answered the City’s question. As Highway 1 becomes more congested in the bridgehead area, there is a risk that travellers will seek to enter the highway as close as possible to the bridge, which could mean increased reliance on the Hastings Street and McGill Street on-ramps. The Province has not agreed to address neighbourhood traffic issues that arise from their project.

It should be cautioned that impacts at the level of individual roads are very hard to predict. The transportation network is complex and dynamic. The range of options available to drivers is great, and it is therefore not possible to say with assurance what the impacts of the project will be on the neighbourhood.

#### **E.4 Changes to Hastings Street**

From time to time, proposals are advanced for changes to Hastings Street. For example, in 2007, the Heights Merchants Association proposed the elimination of the High-Occupancy Vehicle lane on Hastings Street, with the space to be used for parking. Council decided against this suggestion on 2007 June 18 for a number of reasons, including the effect it would have of encouraging the diversion of traffic to parallel neighbourhood roads.

Another potential change to Hastings Street is the possible upgrading of the #135 bus route (Simon Fraser University to downtown Vancouver) to a “B-Line” standard. City staff are participating in the steering committee for a TransLink study to review how such a service might best be implemented. Ideas under review include the implementation of “Transit Signal Priority” (in which traffic signals give priority response to buses) or extension of the times that the High-Occupancy Vehicle lanes are in operation. Such concepts have the potential to attract more people to transit, thus lowering the demand for auto travel. As a side effect, they also modestly increase the auto-capacity of Hastings Street.

TransLink’s study is still a work in progress but, when available, the results will be reviewed to assess their potential to decrease the use of BHCH roads for Regional Trips. Any proposals for implementation would be advanced for Council’s consideration at that time.

#### **E.5 Densification**

It is expected that densification of the Hastings corridor, with mixed uses on Hastings Street and multi-family residences on Albert Street, will continue at a modest pace. This is expected to

result in a gradual rise in the number of Local Trips on Albert Street, which will have the effect of displacing some of the Regional Trips.

### **E.6 Longer-Term Considerations**

Recent years have seen increased concern about energy scarcity (particularly oil) and climate change. Part of the solution to both problems is to burn less oil, and the single-biggest use of oil is for transportation. Whether due to oil supply issues or government climate change policies, travelling by car will likely be more expensive in the future than it is today. This calls into question many of the “business as usual” assumptions that underlie most traffic projections.

An example of this new thinking is TransLink’s long-term strategy, *Transport 2040*. That document incorporates the goal that, in 2040, “Most trips are by transit, walking and cycling”. To the extent that this goal is realized, a reduction in neighbourhood traffic volumes should result. Residents will also benefit from corresponding reductions to emissions, noise, accidents, and road infrastructure costs.