Ladco Company Limited

Manitoba Housing and Renewal Corporation

Waverley West



Plan Winnipeg Amendment - Transportation Review

Submitted December 2003 by:

NDLEA™

WAVERLEY WEST TRANSPORTATION REVIEW

Prepared For

Ladco Company Limited

Manitoba Housing and Renewal Corporation

Submitted By

ND LEA

December 2003

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EXECUTIVE OVERVIEW

The purpose of this report is to provide a broad-based 'macro' level transportation review of the proposed development within the Waverley West area of Southwest Winnipeg. As has been thoroughly detailed in the *Waverley West Plan Winnipeg Amendment – Housing and Population Report*, there is an imminent need for additional "Neighbourhood Policy Area" lands for future development – regardless of location within the city. Lands of Waverley West provides a means of addressing a significant component of this need. Through identifying potential impacts well in advance of development, the City of Winnipeg will be capable of proactively monitoring and planning for future transportation needs.

With making any long-term forward projection, it is difficult to determine what exactly the future may hold and this is the case regarding mobility patterns and trends. This report provides a series of models and calculations to determine what the potential future transportation related impacts *may* be and is based on past historic patterns. As this is the case, the scenarios and projections within the report should be considered to be conservative probabilities.

Over the build-out timeframe of Waverley West, there are bound to be societal changes, demographic shifts, and transportation alternatives that could reduce the reliance and dependence on the automobile including:

- The future construction of the Southwest Transit Corridor (SWTC) may encourage more people to utilize transit;
- The incorporation of smart growth principles into the developments such as walkability, mixed use development, and transit friendly design could reduce reliance on the automobile;
- Future employment trends may provide more options for people to work from home or with flexible-hours;
- Employment opportunities within Waverley West may reduce total external trips.

All of these factors could reduce the peak hour traffic flows and substantially reduce the "conservative" projections presented in this report.

As touched upon above, there are many factors that influence trip generation and may well contribute to the reduction in the traffic projections detailed here. It is imperative that long-range transportation planning and decision making be flexible and adaptable to changing situations.

KEY QUESTIONS ADDRESSED IN THIS REPORT

How much new traffic will development in Waverley West generate?

This report has estimated that upon full build-out, and after accounting for transit modal splits and internal trips, Waverley West would generate between 2,490 to 3,815 vehicle trips exiting the area during the peak morning hour – with between 1,310 and 1,950 trips entering the area. During the peak afternoon hour, between 3,415 and 5,155 trips would enter Waverley West, and 2,650 to 3,940 would exit. The range in forecasts is due to alternative development densities.

Using City of Winnipeg capacity standards, this would represent between two to three outbound lanes, and three to four inbound lanes.

Where will this traffic go, and how will it get there?

This report assumes that external trips during peak hours will be destined primarily to the major employment areas of the City, including the downtown area, the University of Manitoba, other areas of south Winnipeg, and areas just north of the Assiniboine River. The assumed trip distribution for development related trips is as follows:

- To/from the east on Bishop Grandin Boulevard - 38 percent
- To/from the north on Kenaston Boulevard - 22 percent
- To/from the north on Waverley Street - 19 percent
- To/from the east on Bison Drive - 12 percent
- To/from the south on Waverley/Kenaston/PTH 100 - 9 percent

Will there be any neighbourhood transportation impacts?

Development in Waverley West is not expected to have significant detrimental affect on the surrounding neighbourhoods. With regards to the east-west arterial transportation network, only Bishop Grandin has been identified as potentially experiencing limited capacity issues. This is not expected to have any impacts on the surrounding neighbourhoods, as there are few east-to-west route alternatives to Bishop Grandin.

As further detailed in this report, any potential neighbourhood impacts would be generally related to the north-south arterial network including Kenaston, Waverley and Pembina Highway. Given the long-range nature of the traffic forecasts, it is not fully known what – if any – impact would occur in the surrounding areas. For reference purposes however, at full build-out, Waverley West development would contribute an additional 12 vehicles per minute on Kenaston Boulevard during the peak morning hour, and an additional 10 vehicles per minute on Waverley. The probable extent of spill over into surrounding neighbourhoods is difficult to forecast, but is expected to be limited in nature. The overall impacts related to Waverley West will be most pronounced near the development area, and would decrease with distance away from the area.

What impacts will Waverley West have on the arterial street network?

This report identifies a number of recommended lane additions to the arterial street network in southwest Winnipeg. Additions to portions of Kenaston Boulevard, Bishop Grandin Boulevard and Waverley Street have been identified. The development of Waverley West alone however is ***not the only*** contributing factor towards the need for future improvements to these arterial roadways. Increased background traffic – increases in general trip-making (the number of trips that people take each day) by the existing City of Winnipeg and capital region population, as well as other new developments in the region – will contribute more to long-term traffic growth in the region, than the specific developments of Waverley West.

What role will public transit play in Waverley West development?

Public transit is expected to benefit from development in Waverley West. Winnipeg Transit has expressed an interest in the development framework and the incorporation of transit related principles into planning for the area including walkability, mixed-use, higher residential densities, concentrated employment centers and a linkage to the proposed SWTC.

The detailed planning framework for Waverley West development will be prepared through the development of an Area Structure Plan and the Subdivision and Rezoning process. Generally, the proposed plans for future development in Waverley West would be consistent with many of the principles identified by Winnipeg Transit. Neighbourhood and community development are proposed to be concentrated on central focal nodes providing opportunity to incorporate well placed transit centers. Design details can be incorporated to promote and encourage additional transit use. A linkage to the proposed SWTC has been proposed by Winnipeg Transit through a diamond lane along Bison Drive and would keep travel times to downtown to within 35 minutes.

How will Waverley West be different from other developments?

As mentioned previously, a more detailed planning framework for development in Waverley West will be prepared through the Area Structure Plan and the Subdivision and Rezoning process. Preliminary planning for Waverley West indicates that the area may eventually consist of up to six distinct neighbourhoods, each centralized on a focal point and, when all combined, will focus onto two central nodes along the future extension of Kenaston Boulevard.

Waverley West development is to incorporate many "Smart Growth" principles that could make alternative transportation (transit, pedestrian, bicycle, etc.) more attractive, and therefore potentially reduce the overall impacts projected by this report. These principles included among others:

- providing a variety of housing alternatives;
- planning provisions for higher than standard development densities;
- improved walkability through pedestrian linkages and corridors;
- incorporation of transit opportunities;

- incorporating mixed use commercial/employment focal points.

The *Housing and Population Report* prepared for the Plan Winnipeg amendment application provides additional detail on the future development within Waverley West.

How may future mobility trends effect the projections in this report, and what alternative measures exist to alleviate traffic concerns?

This report has been prepared using a cautious and conservative approach to projecting trip-making and future trends based on past historical mobility trends, which have placed emphasis on private automobile trips. Should these trends level out (as seems to be evident today), and should mobility trends shift away from reliance on the automobile, the conservative projections of this report may be somewhat exaggerated (i.e., the demand on the road system would be less than projected here).

It is evident that North American cities have become heavily reliant upon automobile use, as can be seen on many city streets today. Demographic and population trends, improved economic situations, an increasing number of drivers, an increase in the number of vehicles per household, and general societal trends have all contributed to the historical increases in private vehicle trips over the past several decades. Many of these trends seem to be stabilizing which would tend to indicate that future traffic growth rates are bound to stabilize as well. Should these trends eventually occur, additional traffic generation would be due more to new development and not due to increased trip-making by the existing population. Future mobility trends may also shift away from the reliance on the automobile as well, however this has been a projection that has been envisioned for many years and only time will tell.

Increasing use of public transit is an important contributor to changing mobility trends. The City of Winnipeg is pursuing numerous transit measures (transit centres, diamond lanes, bus pass programs, bus priority signals), and the SWTC, which may make transit a more attractive option for residents in southwest Winnipeg. Development in Waverley West may also be able to encourage more people to utilize public transit. The provision of employment opportunities and local retail/services in Waverley West forms an important part of reducing the total number of external vehicle trips taken. This will also reduce total trip distance as well as reverse the flow of traffic, which combined increases the effective use of the regional arterial street network.

General employment trends may also shift in the future from the traditional 9–5 office work, where employers and employees may opt to more flexible work hours or work-from-home principles. A broad shift would reduce private trips citywide and would also spread the traffic flow out beyond the peak hours.

It is difficult to project what mobility trends and patterns may be in the future, however as this report has taken a conservative approach, we can be reasonably confident that these projections represent the conservative situation.

STEPS IN THE DEVELOPMENT PROCESS

The amendment to Plan Winnipeg 2020 Vision is the first step in the development process. The level of detail (internal transportation routes, servicing plans, subdivision detail, etc.) will increase as the process advances through additional steps. An Area Structure Plan will be developed to address the regional and local needs of this area. Prior to Council's approval, the Area Structure Plan will be subject to public review and public hearing processes. The final step in the approval process involves the filing of specific subdivision and rezoning applications by individual landowners.

Step 1 – Plan Winnipeg Amendment (2003 – 2004)

- Deals with broad policy issues.

Step 2 – Adoption of Area Structure Plan (2004)

- Outlines development criteria and establishes land use and transportation concepts.

Step 3 – Subdivision and Rezoning Applications (starting 2004)

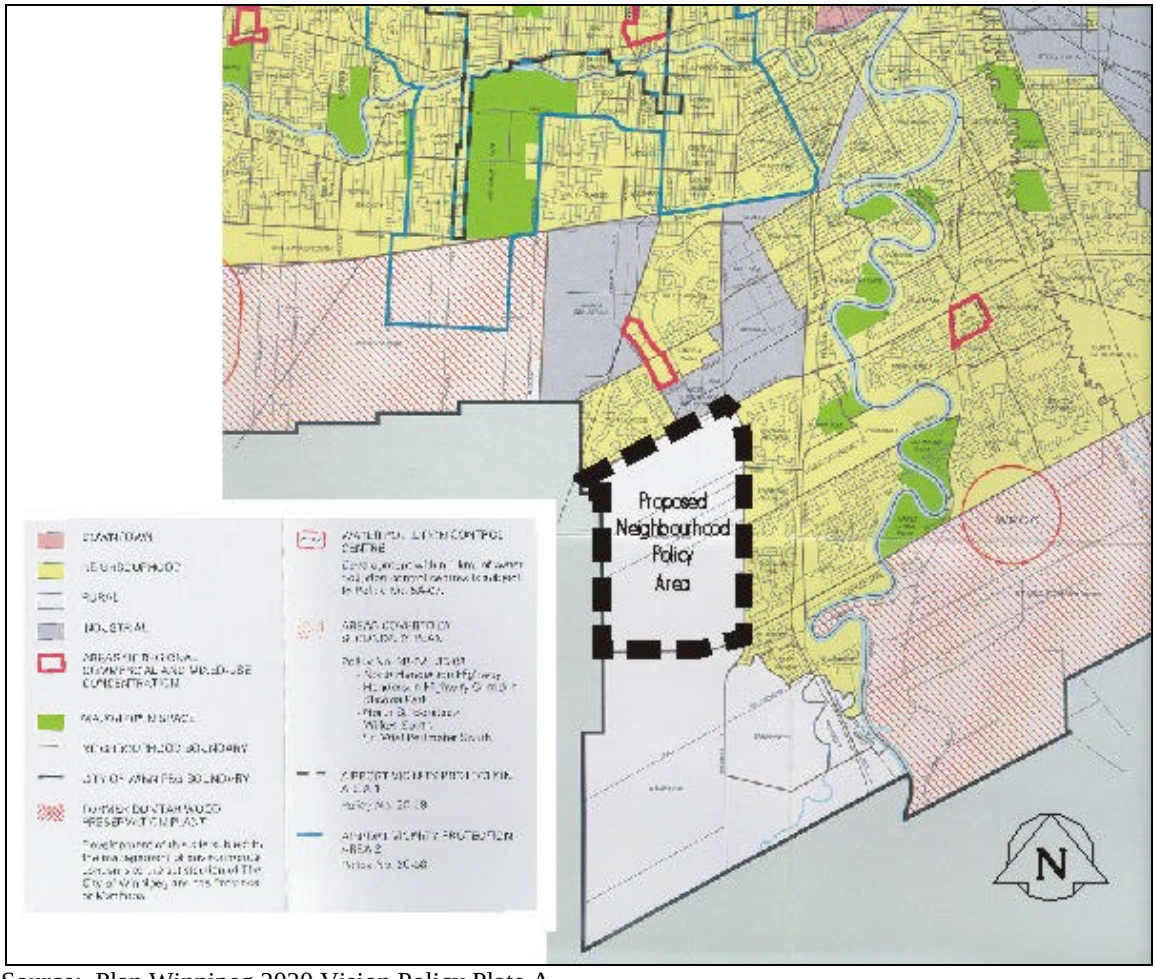
- Deals with individual landowner's application for street and lot layouts and specific zoning designations for each parcel of land.

1.0 INTRODUCTION

The purpose of this report is to summarize the findings of a broad-based transportation review of the proposed development of the Waverley West lands. Existing traffic statistics will be examined and future traffic volumes will be estimated. The implications of the new development on Winnipeg Transit and goods movement will also be considered. Some preliminary cost estimates of potential roadway modifications and transit servicing costs are also provided.

The location of the proposed Waverley West development is illustrated in Figure 1. The development is bounded by the extension of Bishop Grandin Boulevard to the north, the Perimeter Highway to the south, Waverley Street to the east, and the extension of Brady Road to the west.

Figure 1: Proposed Waverley West Development



Source: Plan Winnipeg 2020 Vision Policy Plate A

2.0 MOBILITY TRENDS

The number of automobile trips generated by a development is directly influenced by the make up of a development, the transit mode split, and opportunities for walking or cycling. Vehicular traffic growth is made up of general increases in trip making due to more trips per person and due to new developments that generate a demand for travel. The number of new vehicle trips (outside of development-related traffic generation) is influenced by many factors, including population increases, household size, number of licensed drivers, the number of available vehicles to those drivers, economic activity (e.g., employment rate, disposable income), etc.

Future traffic is generally forecast based on historical data or a combination of historical trends and anticipated development. In the case of future trips, it is influenced by demographic and economic trends; the rate of increase in new trips may change as the reason for additional trips (over and above population growth levels) changes. Examples include:

- As household size decreases, more households are created, generating additional traffic. The number of persons per household in Winnipeg has steadily declined in the post-war years, from over 3.5 persons per household to less than 2.45 persons per household; however, the rate of decrease is projected to eventually stabilize at approximately 2.3 persons per household.

- As the number of licensed drivers increases, the number of people who make vehicle trips increases. The percentage of the population with a drivers licence has also increased in the post-war years, but appears to be stabilizing at just over 0.6 drivers per person.

- As the number of passenger vehicles increases, the opportunities for additional licensed drivers to make trips increases. Automobile ownership increased rapidly in the post-war years, but appears to be stabilizing at just over 0.5 vehicles per person and slightly over 0.8 vehicles per licensed driver.

- As employment levels increase, the number of people who must travel increases and family income grows, leading to a greater ability to travel, resulting in additional vehicle trips.

Trip generation for this review is based on established data; however, the values may be on the conservative side as the various trends identified above contribute to a reduction in the incremental growth in traffic. The proposed nature of the development would make the use of alternative modes more attractive, which may also reduce the number of vehicle trips compared to those forecast in this report.

3.0 EXISTING NETWORK

3.1 Road Layout

Southwest Winnipeg is served by a number of major roadways, including Kenaston Boulevard, Waverley Street, and Pembina Highway running in the north-south direction, and Roblin Boulevard, Grant Avenue, McGillivray Boulevard, Bishop Grandin Boulevard, the Perimeter Highway, and Bison Drive running in the east-west direction. These roads carry the majority of traffic moving between southwest Winnipeg and the rest of the City.

3.2 Traffic Volumes

3.2.1 Existing Traffic

The most recent traffic volume information was obtained from the City of Winnipeg Public Works Department. Tube counts by direction on road links as well as turning movement counts at intersections were obtained for major roadways located in southwest Winnipeg. Existing a.m. peak hour traffic, p.m. peak hour traffic and average daily traffic (ADT) are illustrated in Figures 2 through 4.

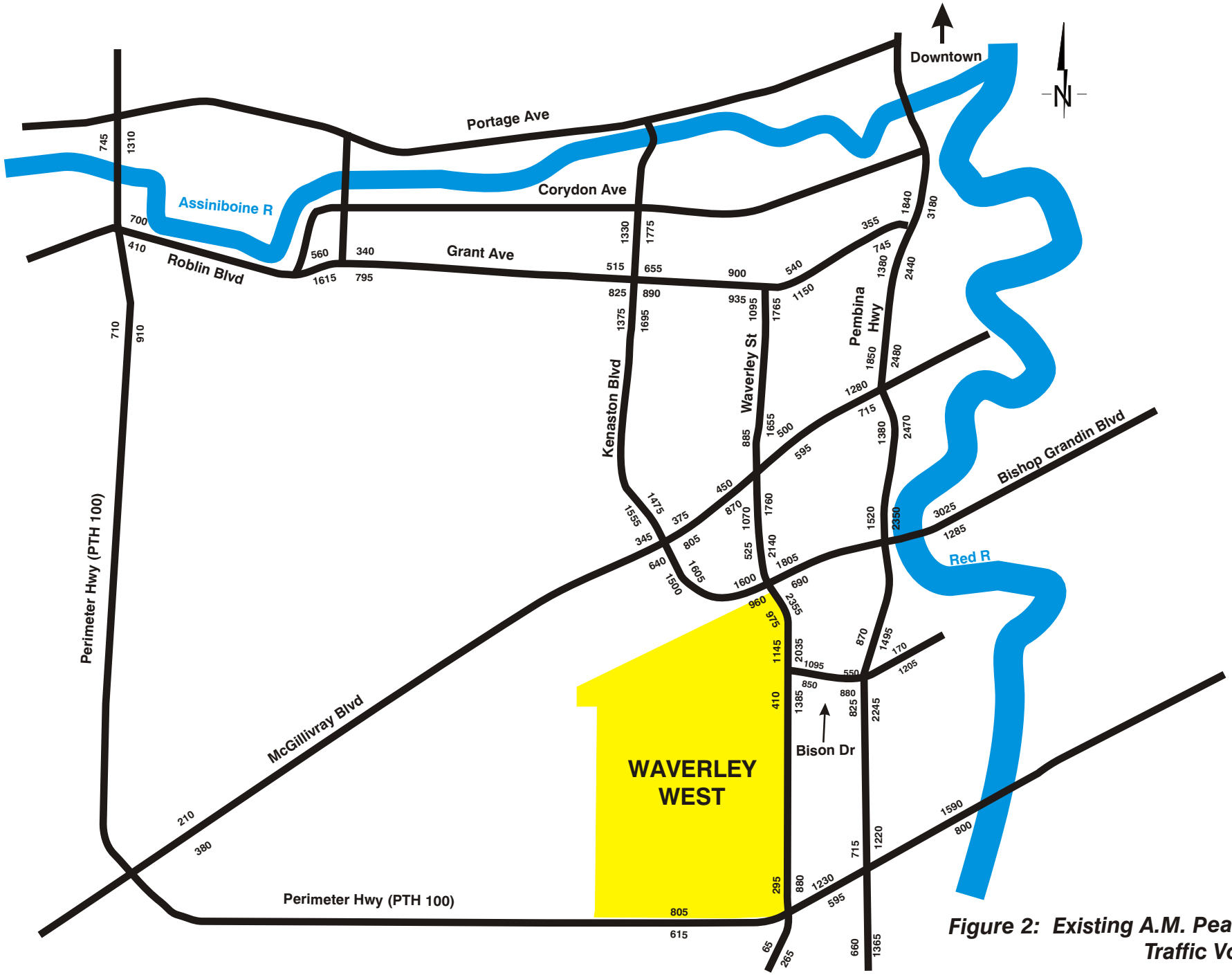


Figure 2: Existing A.M. Peak Hour Traffic Volumes

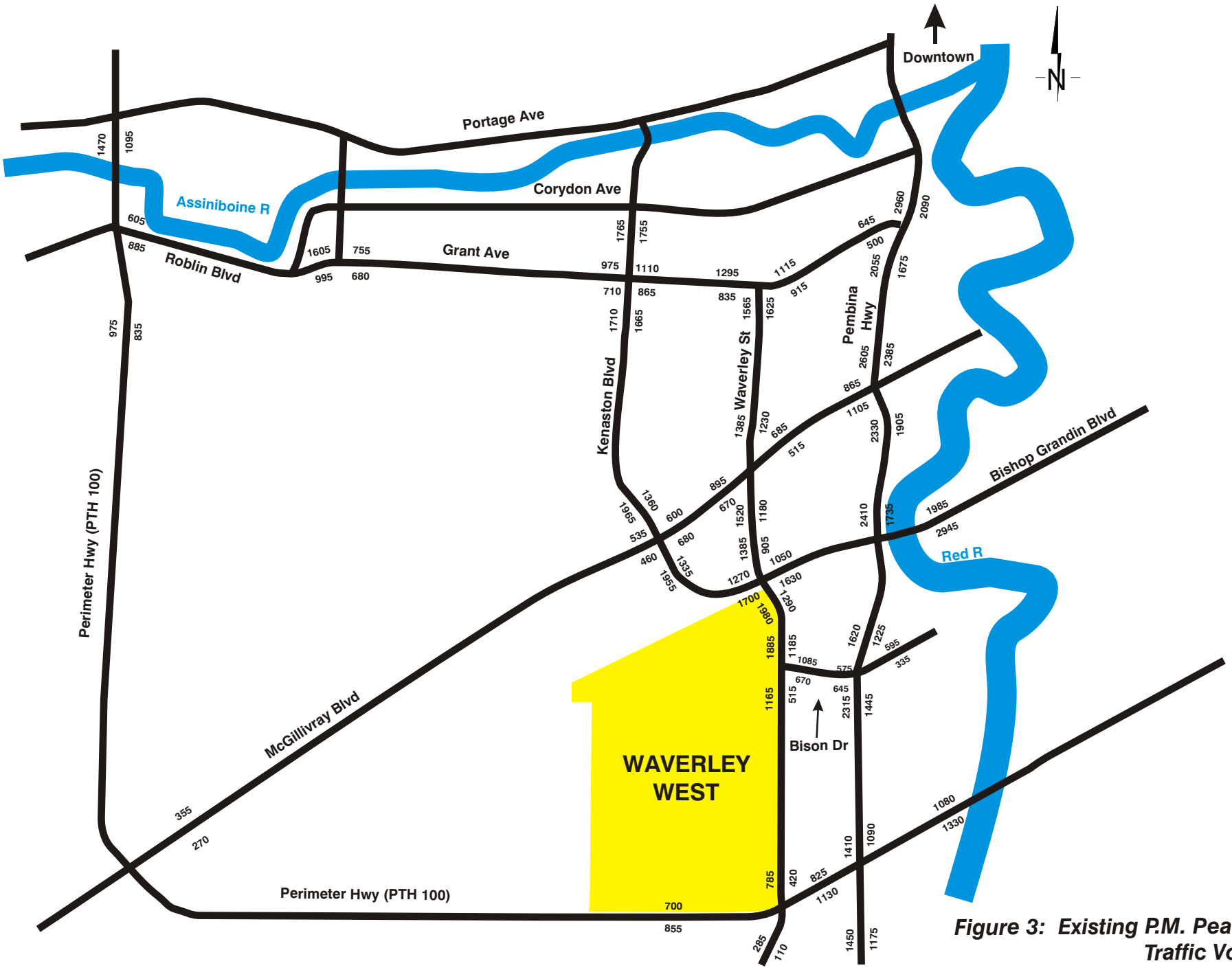


Figure 3: Existing P.M. Peak Hour Traffic Volumes

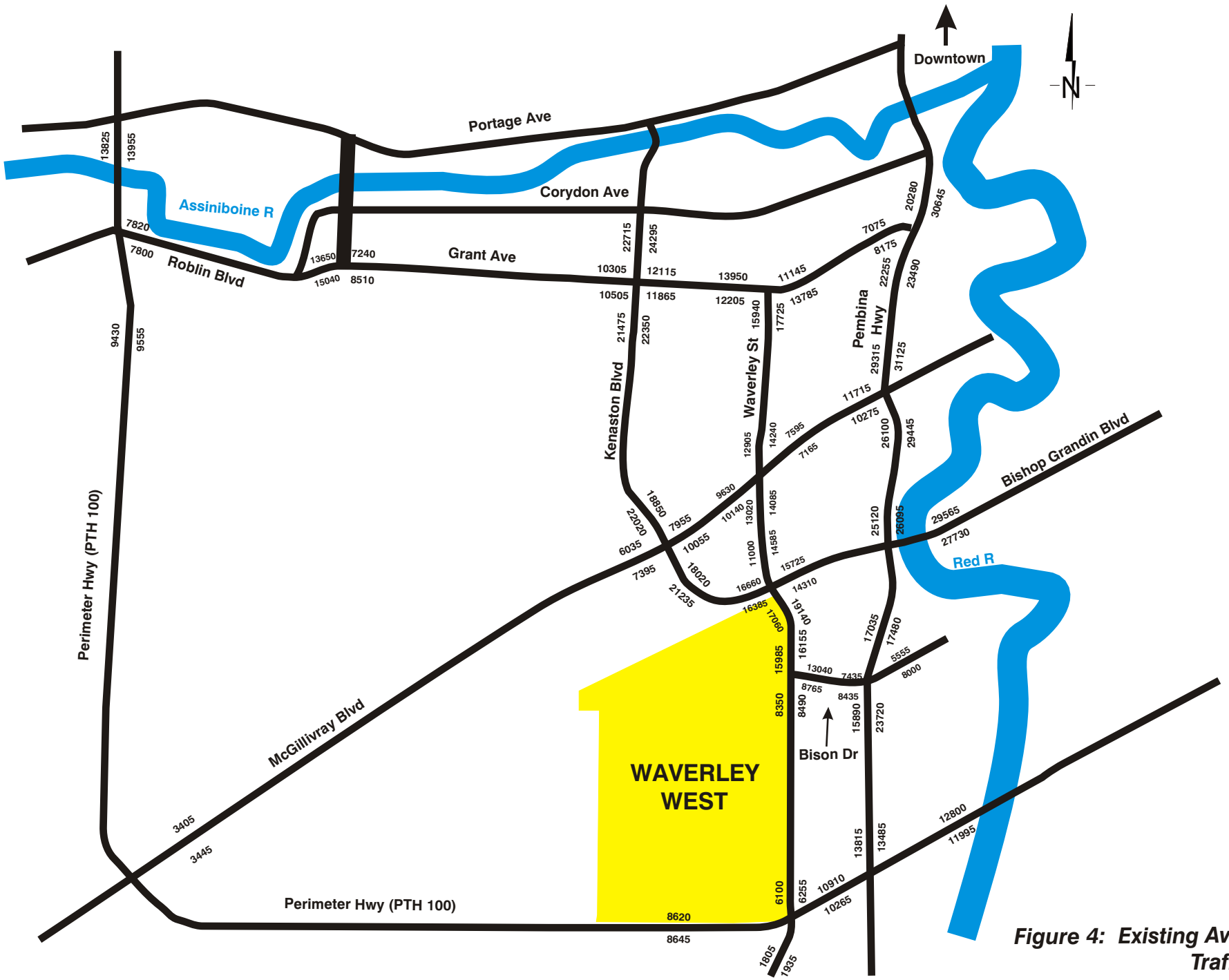


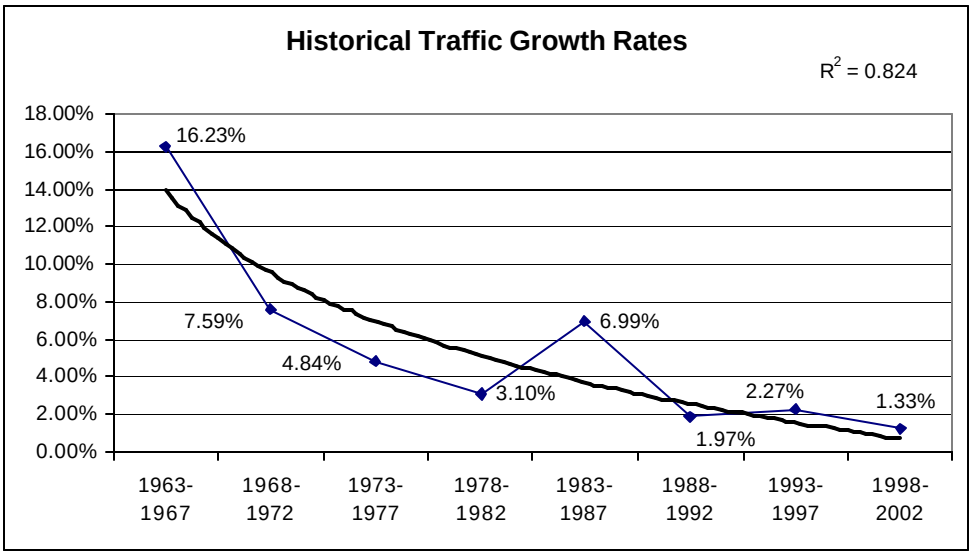
Figure 4: Existing Average Daily Traffic Volumes

3.2.2 Forecasted Traffic

Future background traffic volumes were estimated for the horizon year of 2028, based on the expectation that the Waverley West development will be completely built-out within the next 25 years.

In order to develop an annual growth rate for use in this analysis, historical growth rates for southwest Winnipeg were examined for the past 40 years. Average traffic volumes on four bridges (South Perimeter, Fort Garry, St. Vital, and St. James) were compared in five-year intervals in order to estimate an appropriate annual growth rate. The following graph illustrates historical traffic growth rates for southwest Winnipeg.

Figure 5:



As shown in the above graph, traffic growth rates appear to level off in the past 10 to 15 years, at approximately 1.33 to 2.25 percent per year. With agreement by the Public Works Department, an annual growth rate of 1.5 percent was assumed for this study. A sensitivity analysis comparing the 1.5 percent per year rate with 1.25 and 1.75 percent was also conducted. The results of the sensitivity analysis are included in Appendix A.

Year 2028 a.m. and p.m. peak hour traffic based on 1.5 percent annual growth are illustrated in Figures 6 and 7, respectively.

Screen line diagrams for existing and 2028 traffic volumes are illustrated in Figure 8. Screen lines are indicated in red. Total traffic volumes crossing the screen line along several links are totalled and indicated on either side of each screen line.

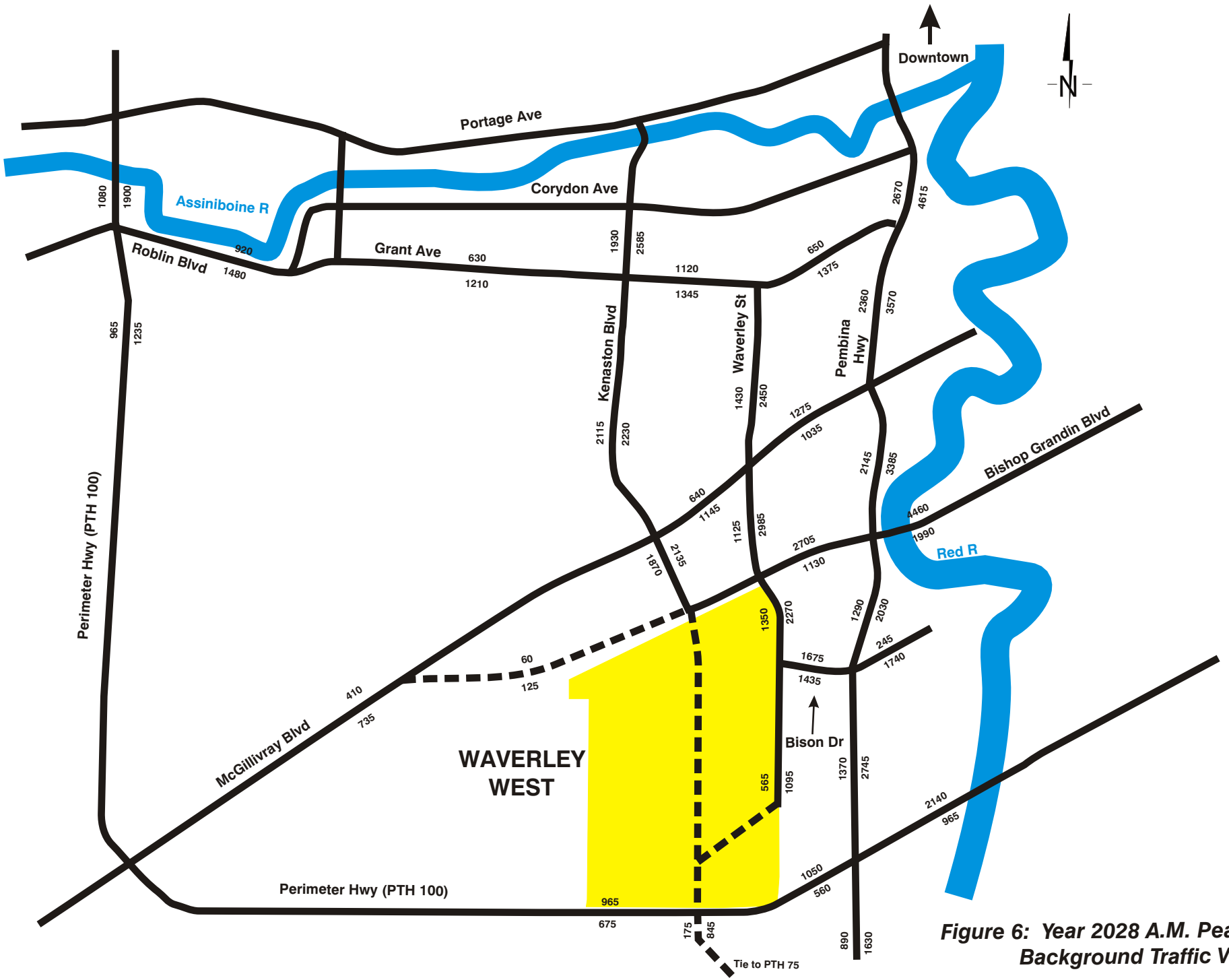


Figure 6: Year 2028 A.M. Peak Hour Background Traffic Volumes

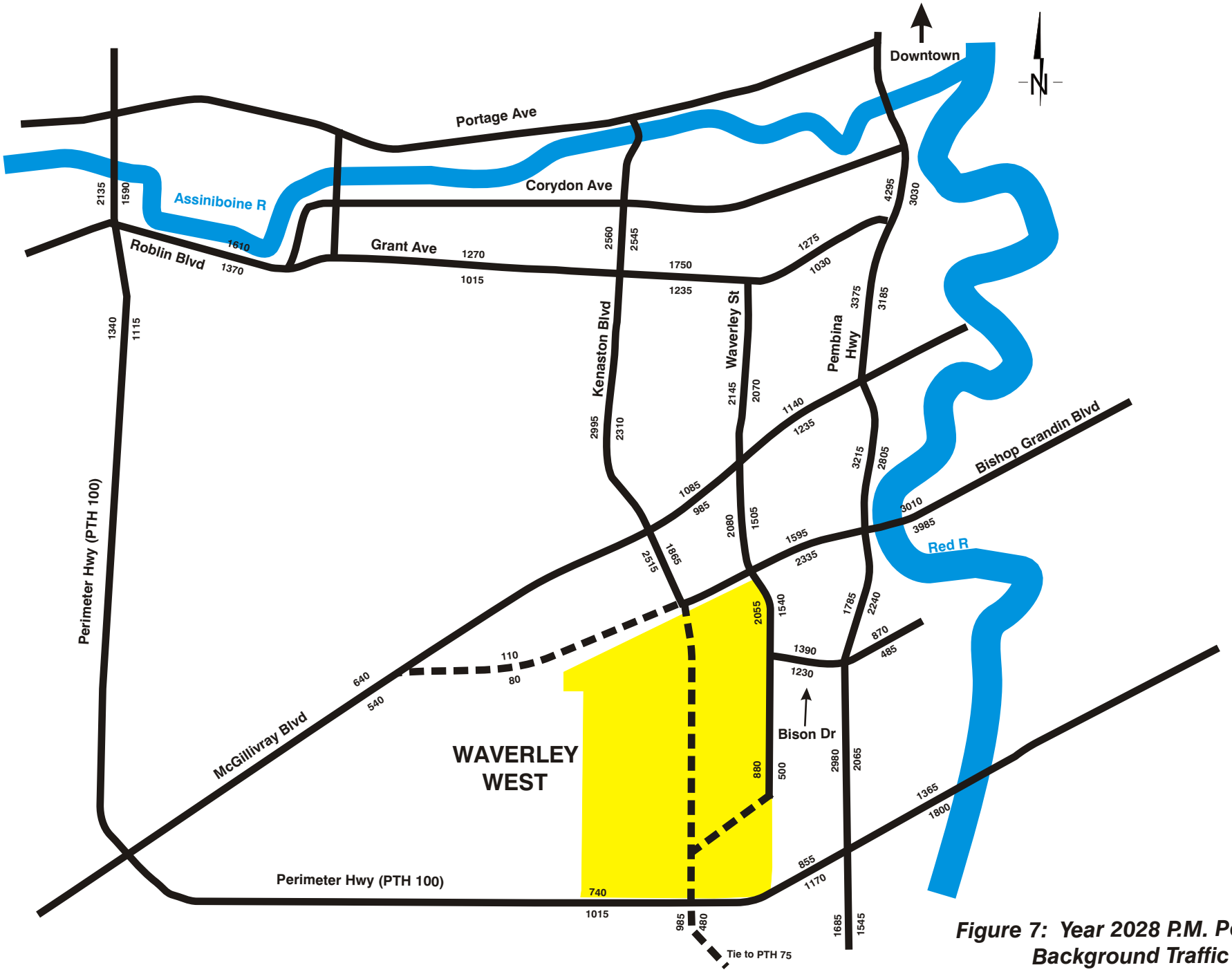
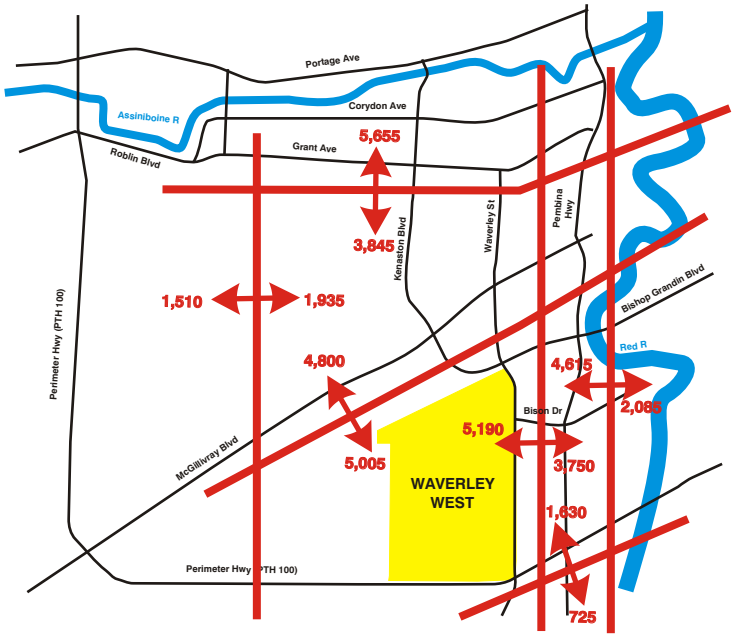
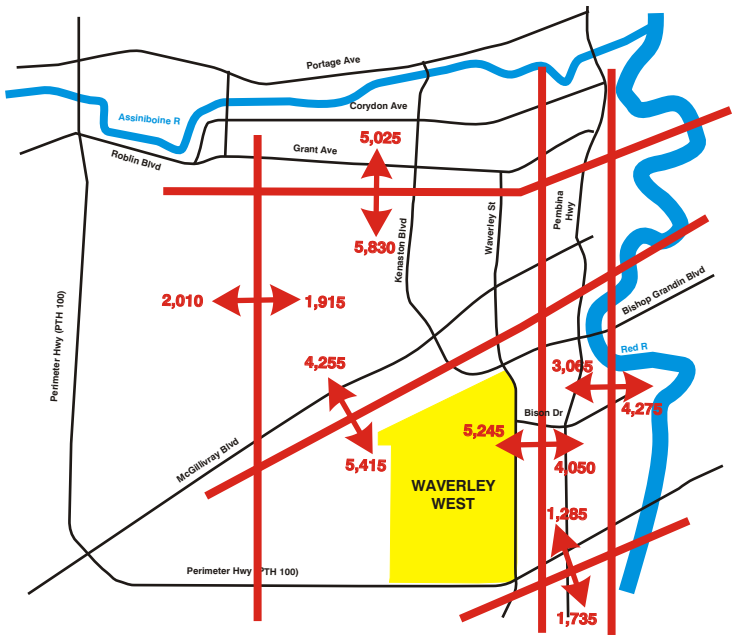


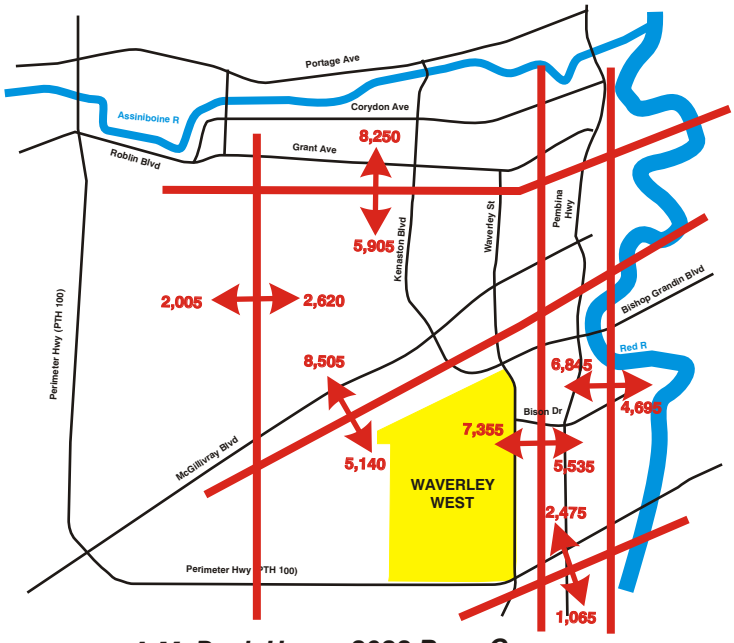
Figure 7: Year 2028 P.M. Peak Hour Background Traffic Volumes



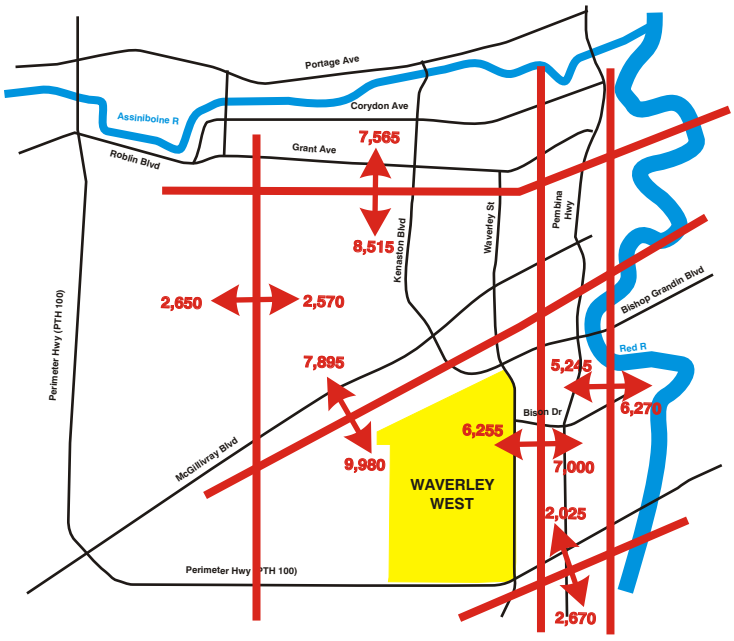
A.M. Peak Hour - Existing



P.M. Peak Hour - Existing



A.M. Peak Hour - 2028 Base Case



P.M. Peak Hour - 2028 Base Case

Figure 8: Existing & 2028 Screen Line Diagrams

3.3 Capacity and Lane Requirements

The existing number of lanes for roadways within southwest Winnipeg was obtained from the City of Winnipeg's transportation planning model. The City's model focuses on arterials and regional streets within the City of Winnipeg. For example, in the southwest corner of the City, the model includes Grant Avenue, Wilkes Avenue, McGillivray Boulevard, Kenaston Boulevard, Waverley Street, Pembina Highway, Bishop Grandin Boulevard, and the Perimeter Highway.

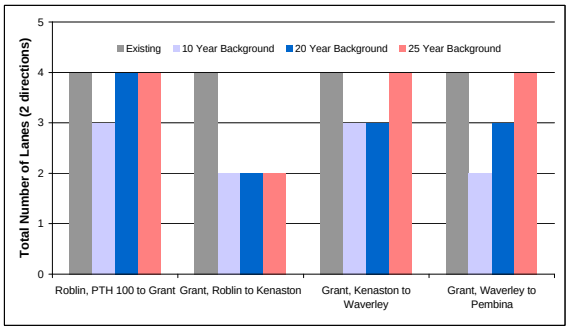
Lane requirements were analyzed by direction using a capacity of 1,275 vehicles per hour per lane. The City's Public Works Department typically uses a capacity guideline of 900 to 1,250 vehicles per hour per lane to achieve a desired level of service of C to D. For peak hour operations in the future, it was assumed that level of service D would be acceptable. A check using Highway Capacity Software for undivided and divided arterials indicate that lane capacity could be increased to up to 1,275 vehicles per hour per lane while still maintaining level of service D. Therefore, a guideline of 1,275 vehicles per hour per lane was assumed in this analysis.

Using this guideline, lane requirements on the external street network were calculated for background traffic at the 10, 20, and 25-year mark (i.e., this assumes 1.5 percent annual growth with no additional development in the area). Both the a.m. and p.m. peak hours were examined and the highest lane requirement of the two was used. Figure 9 includes a graph for each roadway in the study area and illustrates lane requirements for the time intervals mentioned.

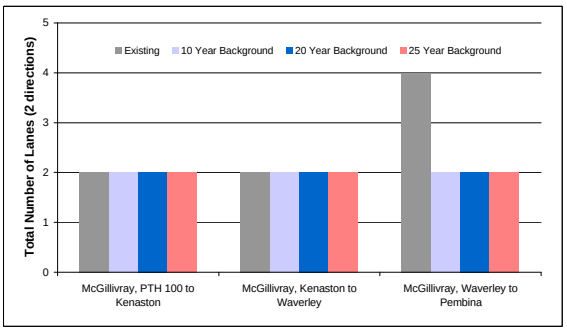
It should be noted that this analysis is based on through lane requirements. Actual lane needs can vary at intersections, as multiple movements must be accommodated. When lane requirements in both directions specify an odd number of lanes, it indicates that an additional lane is needed in one direction only due to an imbalance in directional traffic flow.

Figure 9: Forecast Lane Requirements (Background Traffic Only; Without Waverley West Development)

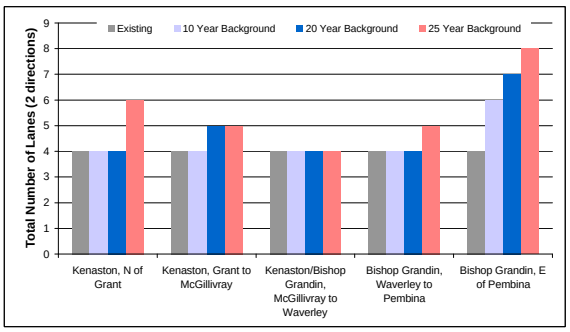
Roblin Boulevard / Grant Avenue



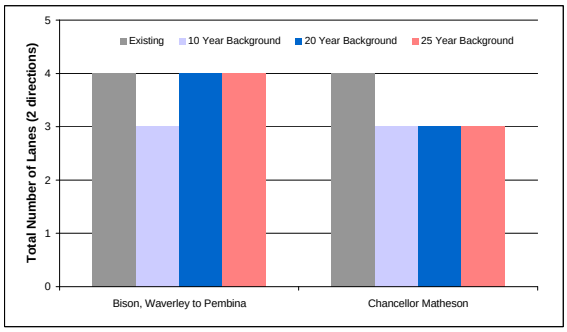
McGillivray Boulevard



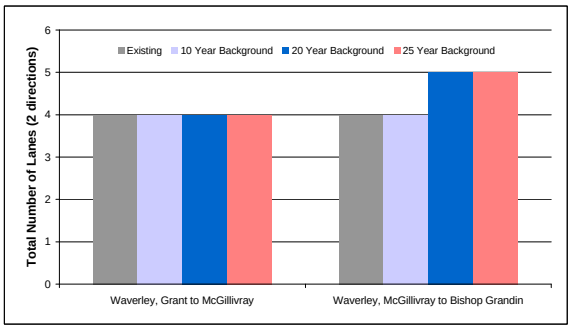
Kenaston Boulevard / Bishop Grandin Boulevard



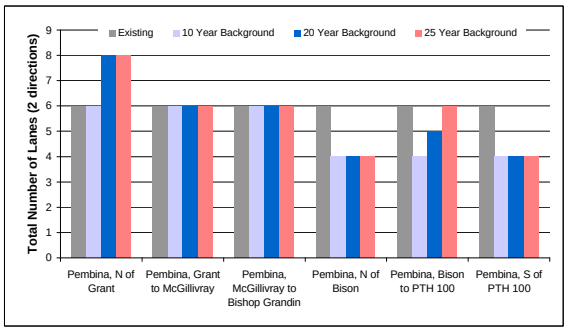
Bison Drive / Chancellor Matheson Road



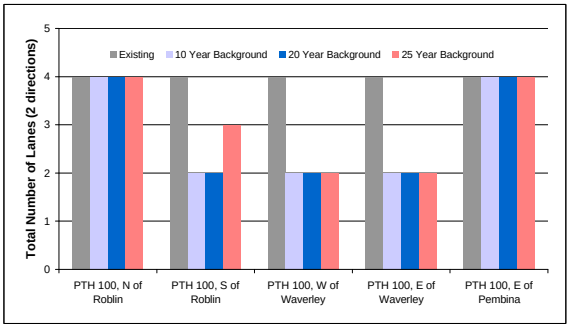
Waverley Street



Pembina Highway



Perimeter Highway (PTH 100)



3.4 Impact on Arterials

Roblin Boulevard/Grant Avenue

Roblin Boulevard and Grant Avenue were examined from PTH 100 to Pembina Highway. Throughout this stretch there are two lanes in each direction. With the estimated increases in background traffic within the next 25 years, traffic volumes are expected to be accommodated with the existing lane supply.

McGillivray Boulevard

McGillivray Boulevard was examined from PTH 100 to Pembina Highway. Currently, McGillivray is a two-lane undivided roadway from PTH 100 to Waverley and a four-lane divided roadway from Waverley to Pembina. The existing lane configuration on McGillivray appears to be adequate to accommodate background traffic volumes for the next 25 years along the entire stretch examined.

Kenaston Boulevard

Kenaston Boulevard was examined from north of Grant Avenue to Waverley Street. The existing roadway consists of two lanes in each direction. North of Grant, background traffic volumes are expected to be accommodated with the existing lane supply for approximately the next 20 years, however, traffic volumes at the 25-year mark trigger a need for widening Kenaston to six lanes.

From Grant to McGillivray, a fifth lane is triggered at the 20-year point and maintained through the 25-year interval.

Along the Kenaston/Bishop Grandin link from McGillivray to Waverley, the existing lane configuration appears to be adequate to accommodate background traffic volumes for the next 25 years.

Bishop Grandin Boulevard

Bishop Grandin Boulevard was examined from Waverley Street to east of Pembina Highway. There are currently two lanes in each direction on Bishop Grandin. Between Waverley and Pembina, the existing supply is expected to be adequate to accommodate background traffic volumes up to the 25-year point, after which the need for a fifth lane is triggered.

East of Pembina Highway, demand increases further. At each interval examined, lane requirements increase: to six lanes at the 10-year point; seven lanes at the 20-year point; and eight lanes at the 25-year point. However, due to the need for an expanded river

crossing, it is unlikely that capacity improvements will be implemented for many years to come.

Bison Drive/Chancellor Matheson Road

Bison Drive extends from Waverley to Pembina and currently consists of two lanes in each direction. Demand on Bison Drive based on background traffic growth is not expected to exceed the existing supply within the next 25 years.

Chancellor Matheson Road provides a connection to the University of Manitoba from Pembina Highway. The roadway currently has two lanes in each direction. Future lane requirements are not expected to exceed the existing lane supply over the next 25 years.

Waverley Street

Waverley Street was examined from Grant to Bishop Grandin. Waverley consists of two lanes in each direction along the length of this section. From Grant to McGillivray, lane requirements over the next 25 years are not expected to exceed the existing supply.

From McGillivray to Bishop Grandin, lane requirements increase to five lanes at the 20-year point and remain steady at the 25-year point as well.

Pembina Highway

Pembina Highway was examined from north of Grant Avenue to south of PTH 100. Pembina presently has three lanes in each direction. The greatest demand occurs north of Grant Avenue, with four lanes required in each direction to meet the 20 and 25-year traffic volumes. However, due to limitations on right-of-way acquisition at this location, any capacity improvements are considered to be infeasible.

From Grant to south of PTH 100, future lane requirements are not expected to exceed the existing supply over the next 25 years.

PTH 100 (Perimeter Highway)

PTH 100 (Perimeter Highway) was examined from north of Roblin Boulevard to east of Pembina Highway. PTH 100 is a four-lane divided roadway along the entire length of this section. Future lane requirements on this stretch remain within the existing supply for the next 25 years.

4.0 WAVERLEY WEST DEVELOPMENT

4.1 Proposed Development

The proposed Waverley West Development is located in the area bounded by Bishop Grandin Boulevard (and the proposed extension west) to the north, Waverley Street to the east, the South Perimeter Highway to the south, and Brady Road to the west. The area encompasses 3,075 gross acres of land. Approximately 2,000 net acres (65 percent of the total area) will be available for development, including a variety of residential, commercial and business uses.

Some of the background land use information has been taken from a report entitled *Waverley West Plan Winnipeg Amendment Housing and Population*, prepared by ND LEA and submitted in September 2003. A copy of the Executive Summary from this report is enclosed in Appendix B.

The proponents of Waverley West are examining alternative development patterns and land use mix compared to many of the previous, more traditional, suburban developments in Winnipeg. This includes having a greater range of housing choices and providing significant areas for commercial development, which will provide local employment opportunities, and generate two-way travel, improving the efficiency of the road and transit system.

Alternative development concepts were also investigated through a design charette organized by the University of Manitoba School of Architecture, involving representatives from various levels of government, the private sector, and other interested parties. The summary report from this process is expected in late 2003.

4.2 Street Layout

Meetings were held with the major landowners, City of Winnipeg Public Works Department (PWD) and Manitoba Transportation and Government Services (MTGS) to discuss potential long-term arterial roadway requirements within and around the proposed development. These discussions focussed on conceptual roadway demands without identifying specific alignments or configurations, which will be further explored through the subsequent Area Structure Plan process.

MTGS has indicated that a series of interchanges are planned for the south Perimeter Highway, including at either Waverley Street or Kenaston Boulevard (but not both due to spacing issues) to bypass St. Norbert, at PR 330, one connection between PTH 3 and PR 330, and at PTH 3.

It is anticipated that there will be one north-south arterial through the development, assumed at this time to be an extension of Kenaston Boulevard. The extension is

anticipated to proceed south of the Perimeter, eventually tying in to PTH 75 south of St. Norbert. This would have the benefit of relieving traffic on Pembina Highway and providing a more direct route between PTH 75 and the airport area, as well as other employment areas that can be accessed off Route 90. MTGS see this as an important linkage in the Province's economic route system.

Given the plan to extend Kenaston Boulevard, the intersection of Waverley Street and PTH 100 (Perimeter Highway) would need to be closed, with Waverley tying into the new Kenaston Boulevard alignment. This would also allow for another east-west connection to Pembina Highway, perhaps via Kirkbridge Drive.

Bishop Grandin/Kenaston currently forms a continuous route. It is anticipated that Bishop Grandin Boulevard would be extended westerly to form the northern limit of the development. It is anticipated that it would continue westerly to connect to PTH 3 and provide a direct link to the Perimeter Highway. McGillivray Boulevard would then divert southward to tee into this new connection, perhaps immediately west of Brady Road. This offers the advantage of removing some traffic from McGillivray Boulevard and freeing capacity at the intersections to allow for additional north-south traffic.

Bison Drive will likely extend westerly to connect with Cadboro Road through Waverley West, providing a connection to Pembina Highway and the future Southwest Transit Corridor.

4.3 Transit Options and Opportunities

4.3.1 Land Use and Transit

Transit ridership is influenced by many factors, including the amount and type of service provided, the type of land use, and development patterns that must be served by transit. Transit's competitiveness is enhanced by features such as higher density development, high-speed transit corridors, and concentrated employment centres.

Traditional suburban residential developments in Winnipeg typically provide a challenge for transit due to the relatively low densities (high percentage of single family homes) and minimal concentrations of employment opportunities. Employment centres are often limited to commercial centres (often at the periphery of the subdivision) and educational/recreational centres. Single-family homes are typically predominant, although bungalow condo units have been included in many recent subdivisions. Limited duplex and low-rise rental units are also sometimes included.

The proponents of Waverley West have suggested a somewhat different approach to development. Waverley West will likely include two areas of concentrated employment opportunities, one in the northern (Manitoba Housing and Renewal Corporation) portion and one in the southern (Ladco) portion. Residential densities are planned to be greater

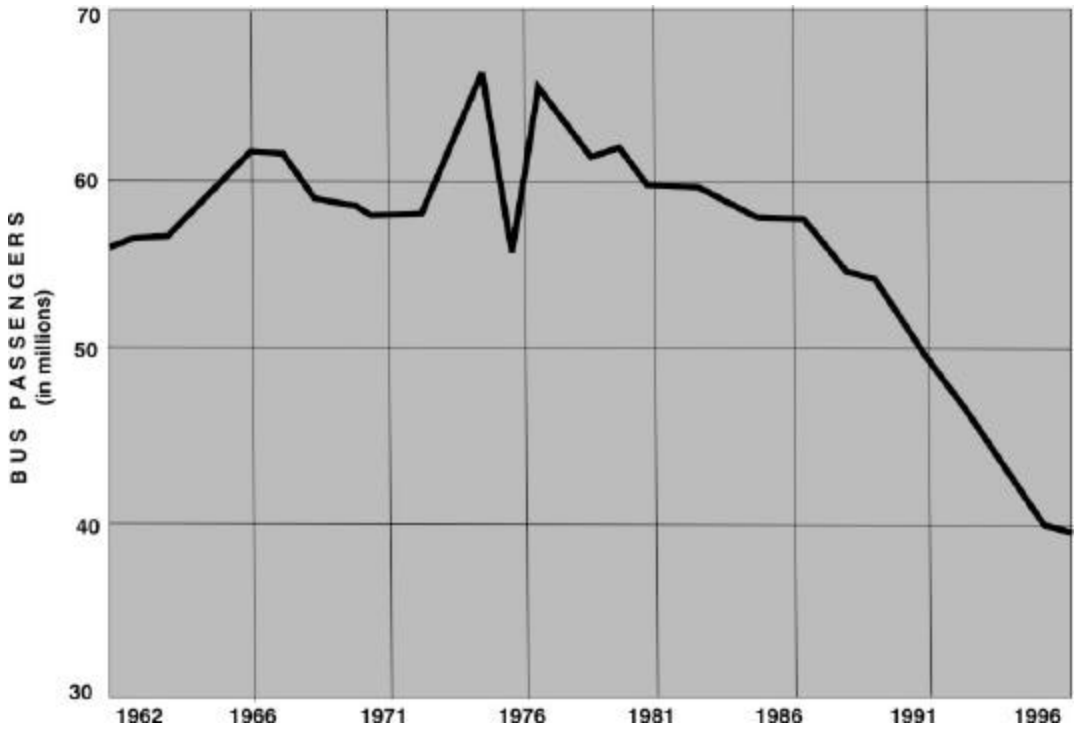
than what has been experienced in other residential developments, with a development split of approximately 60:40 single-family vs. multi-family. Residential development in Waverley West is expected to consist of a mixture of single-family homes, low-density multi-family condominium development, medium density condominium and rental development, and seniors housing. The proposed employment centres increase the likelihood of two-way travel flow in the peak periods.

The *TransPlan 2010 – Moving Towards Solutions (1998)* final report describes historical transit ridership. The report states,

"Predicting future transit ridership is one of the most uncertain planning tasks at this time. The rate of decline in transit ridership appears to have stabilized in the past two years. However, relatively tolerable levels of traffic congestion, reasonable commuting times and inexpensive downtown parking (compared to such cities as Toronto and Vancouver), will encourage people to use their automobile rather than the transit system.

Future improvements in the transit system, on the other hand, may increase ridership." Figure 3.13 of the TransPlan report is reproduced in this report as Figure 10.

Figure 10: Historical Transit Ridership



As shown in the above graph, transit ridership in Winnipeg has declined in the last several decades. However, additional consideration to pedestrian and cycling opportunities in the proposed Waverley West development as well as the proposed Southwest Transit Corridor may contribute to an increase in the use of alternative modes,

as well as provide improved pedestrian connections to transit routes, thereby altering the current trend for transit ridership in Winnipeg.

4.3.2 Winnipeg Transit Perspectives

The consultant met with Winnipeg Transit to discuss transit options for the proposed Waverley West area in July 2003. The primary objectives for the area from Transit's perspective are that the Waverley West development be:

- Walkable;
- Transit-oriented;
- Mixed-use in character; and
- More dense than typical subdivisions in Winnipeg.

Winnipeg Transit expects that four transit routes will be needed to service the subdivision once it is fully built out. One route would run from the Polo Park area to the north, through Waverley West, destined for the University of Manitoba to the east. There would also be a second route running from Waverley West to the University of Manitoba. Two routes would connect Waverley West to the downtown via the Southwest Transit Corridor and a possible diamond lane on Bison Drive. Two transit centres are among the preliminary plans for transit development in the area.

Transit usage within the area is in part dependent on the type of development. For a typical development in Winnipeg, the average transit mode split is 10 to 15 percent in the peak hour. For a transit-friendly development, Winnipeg Transit forecast a mode split of 20 to 30 percent during the peak hour. For this report, a transit mode split ranging from 13 to 25 percent was assumed.

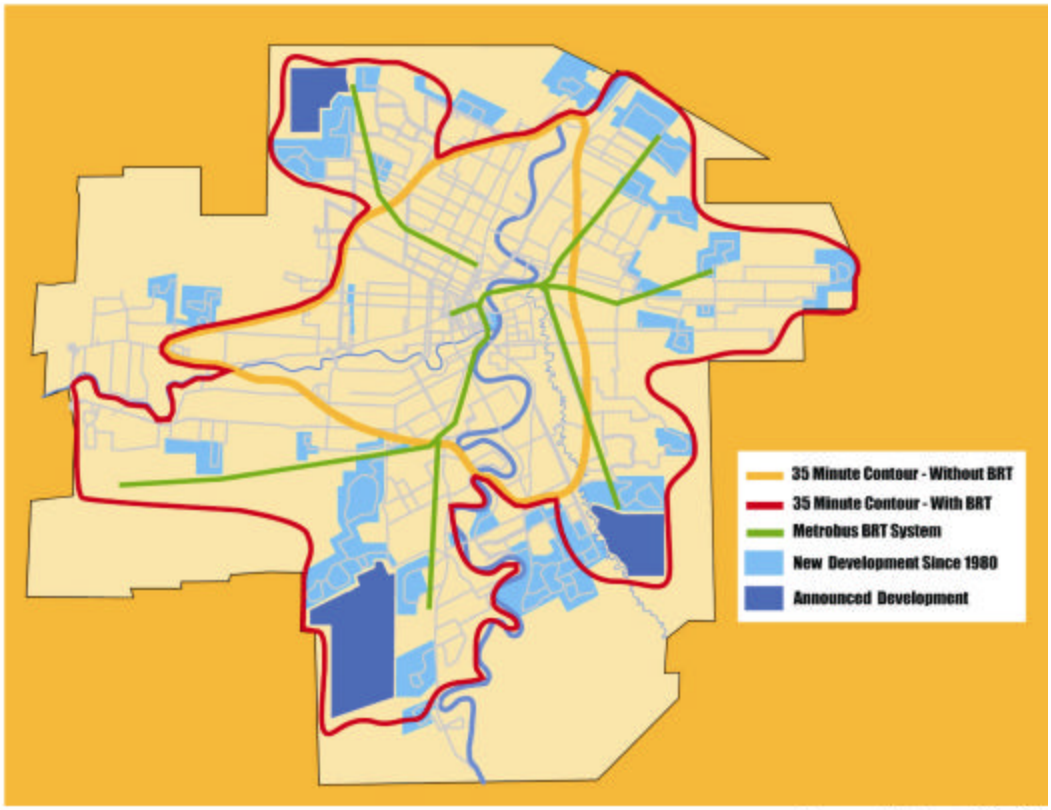
4.3.3 Transit Opportunities

The proposed development land use mix presents an opportunity for Winnipeg Transit to capture a higher percentage of trips to and from the area. The internal employment opportunities, as well as allowances for other modes, may also increase the number of internal subdivision trips, reducing the impact on the existing road system.

Some of the potential for a higher transit mode split is dependant on the completion of the proposed Southwest Transit Corridor (SWTC). This, combined with Transit's plans for additional lanes on Bison Drive that will function as diamond lanes, is forecast to keep transit trip times from the subdivision to the downtown (one of the major destinations for transit trips in the City) to within 35 minutes. This is the trip time that Transit has identified as being critical in order to capture transit choice trips (trip users for which another travel option is available). Figure 11 illustrates the 35-minute transit contour

with and without the Southwest Transit Corridor; the Waverley West lands are within the 35-minute contour.

Figure 11: 35-Minute Contour Map



Source: Winnipeg Transit

Another feature that has proven beneficial for attracting transit ridership is well-placed transit centres to facilitate transfers. Winnipeg Transit has discussed locating transit centres at the two employment centres.

Any increase in the transit mode split or additional internal trip making also benefits the area street system in that fewer vehicular trips need to be accommodated. Related benefits include reduced fuel consumption and emission levels.

5.0 DEVELOPMENT TRAFFIC

5.1 Waverley West Trip Generation

Trips generated by the proposed Waverley West development were estimated for the weekday a.m. and p.m. peak hours of adjacent street traffic. Estimates of inbound and

outbound trips per hour are based on trip rates obtained from the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 6th Edition* (1997). The ITE trip rates were selected because data was available for the range of land uses forecast for the Waverley West development. A range of trip generation estimates was developed for Waverley West for each peak hour. The high traffic estimate assumes a dense multi-family residential component and a low transit mode split, while the low traffic estimate assumes a less dense multi-family residential component and a high transit mode split.

Local trips expected to take place entirely within the Waverley West development (i.e., school trips, shopping trips) were removed from the trip generation to give an estimate of development trips on the external street network (i.e., outside of the development). It has been assumed that 20 percent of trips to the office park component of the development and 50 percent of shopping trips will originate from within Waverley West. As well, it has been assumed that 100 percent of school trips are internal trips. The trips assumed to be internal have also been reduced from the residential trip generation.

Tables 1 and 2 show the estimated overall and external trips generated by the proposed development for the a.m. and p.m. peak hours.

Table 1: Trip Generation for the Waverley West Development – A.M. Peak Hour

Land Use	Size	Total Trips	Mode Split Reduction	Internal Trip Reduction	Total External Trips	Trips IN	Trips OUT
Office Park *(ITE #750)*	100 acres	1590	- 25% (-13%)	- 20%	875 (1065)	805 (980)	70 (85)
Commercial *(ITE #820)*	100 acres (25% coverage = 1,090,000 sq. ft)	665	- 25% (-13%)	- 50%	165 (245)	100 (150)	65 (95)
Elementary School *(ITE #520)*	350 students x 8 schools	810					
Junior High School *(ITE #522)*	450 students x 3 schools	620					
High School (ITE #530)	1200 students x 1 school	550					
Total School	5350 students	1980	- 25% (-13%)	- 100%	0	0	0
Single Family Residential *(ITE #210)*	6960 units (6960 units)	5220 (5220)					
Bungalow Condos *(ITE #233)*	1585 units (2435 units)	685 (1015)					
Townhouses *(ITE #230)*	225 units (350 units)	100 (155)					
Low-Rise Condos *(ITE #231)*	905 units (1390 units)	600 (915)					
Low-Rise Rental *(ITE #221)*	1585 units (2435 units)	540 (775)					
Elderly Housing *(ITE #250)*	225 units (350 units)	40 (60)					
Total Residential	11,485 units (13,920 units)	7185 (12,375)	- 25% (-13%)	2630 trips (2630 trips)	2760 (4450)	405 (815)	2355 (3635)
TOTAL		**11,420 (16,610)**			**3800 (5765)**	**1310 (1950)**	**2490 (3815)**
Trips per Year (over 25 years)		**455 (665)**			**150 (230)**	**50 (80)**	**100 (150)**

Note: 70 (85) = Low Estimate (High Estimate)

*All of the above figures are for display purposes only – to develop projections and assumptions for this report. Actual development densities will be identified within the Area Structure Plan process.

Table 2: Trip Generation for the Waverley West Development – P.M. Peak Hour

Land Use	Size	Total Trips	Mode Split Reduction	Internal Trip Reduction	Total External Trips	Trips IN	Trips OUT
Office Park *(ITE #750)*	100 acres	1905	- 25% (-13%)	- 20%	1050 (1275)	160 (190)	890 (1085)
Commercial *(ITE #820)*	100 acres (25% coverage = 1,090,000 sq. ft)	3040	- 25% (-13%)	- 50%	760 (1125)	365 (540)	395 (585)
Elementary School *(ITE #520)*	350 students x 8 schools	730					
Junior High School *(ITE #522)*	450 students x 3 schools	215					
High School (ITE #530)	1200 students x 1 school	180					
Total School	5350 students	1125	- 25% (-13%)	- 100%	0	0	0
Single Family Residential *(ITE #210)*	6960 units (6960 units)	7030 (7030)					
Bungalow Condos *(ITE #233)*	1585 units (2435 units)	1000 (1610)					
Townhouses *(ITE #230)*	225 units (350 units)	120 (190)					
Low-Rise Condos *(ITE #231)*	905 units (1390 units)	750 (1155)					
Low-Rise Rental *(ITE #221)*	1585 units (2435 units)	750 (1090)					
Elderly Housing *(ITE #250)*	225 units (350 units)	60 (95)					
Total Residential	11,485 units (13,920 units)	9710 (11,170)	- 25% (-13%)	3025 trips (3025 trips)	4260 (6690)	2895 (4420)	1365 (2270)
TOTAL		**15,780 (17,240)**			**6065 (9095)**	**3415 (5155)**	**2650 (3940)**
Trips per Year (over 25 years)		**630 (690)**			**240 (365)**	**135 (205)**	**105 (160)**

Note: 70 (85) = Low Estimate (High Estimate)

* All of the above figures are for display purposes only – to develop projections and assumptions for this report. Actual development densities will be identified within the Area Structure Plan process.

The "Internal Trip Reduction" refers to a factor that reflects trips that are made by residents and employees within the development area. The focus of this report is on trips external to the development area; therefore internal trips have been removed. The proportion of trips that are internal will vary with the type of land use, and the size of the development area. As an example, a small retail outlet such as a hair salon, video rental shop, or ice cream parlour could be expected to draw a high proportion of their business from within a development area. An office building however, is more likely to attract employees from a larger area, especially initially. In the early stages of development,

with a relatively small population base, trips will tend to be external. Over time, it can be expected that more trips will be internal for all non-residential land uses.

It is recognized that an internal trip reduction factor of 20 percent in the office park may be somewhat high in the short term, although it is believed that it can be achieved in the longer term as the area develops. The 50 percent internal trip reduction for commercial trips is considered conservative in that the type of commercial development envisioned is community or neighbourhood in nature as opposed to regional commercial space. It is assumed that the combined effect of both of these reduction factors will result in a realistic approximation of number of trips in and out of the development.

At full build-out, total external trips generated by the Waverley West development are estimated to range from approximately 3,800 to 5,765 trips per hour in the a.m. peak hour. During the p.m. peak hour, external trips range from 6,065 to 9,095 trips per hour. The total amount of development traffic is expected to be higher within Waverley West. The following table summarizes the estimated trip generation.

Table 3: Waverley West Trip Generation Summary

Time Period		IN (trips/hour)	OUT (trips/hour)	TOTAL (trips/hour)
A.M. Peak Hour	**Traffic Growth/Year**	50-80	100-150	150-230
	Traffic at Build-Out	1,310-1,950	2,490-3,815	3,800-5,765
P.M. Peak Hour	**Traffic Growth /Year**	135-205	105-160	240-365
	Traffic at Build-Out	3,415-5,155	2,650-3,940	6,065-9,095

Note: 50-80 refers to the range between the low and high traffic estimates for Waverley West development traffic.

5.2 Trip Distribution and Assignment

Trip distribution refers to the directional split of traffic entering and exiting an area, and trip assignment assigns distributed trips to the surrounding road network. Trip distribution for the proposed Waverley West development is based on population data for Winnipeg neighbourhoods and concentrated employment areas within the City. Population data was obtained from 1996 Census data, while employment areas were determined from the 1998 *TransPlan 2010 – Moving Towards Solutions* report.

Different trip assignments were determined for each of the three main land use types in the proposed Waverley West development. Trips related to the office park land use were distributed throughout the surrounding street network based on neighbourhood population statistics for Winnipeg as a whole. The rationale of this is that employees of the office park could originate from anywhere in the City. It was assumed that 20 percent of trips to the office park would originate within Waverley West. Trips related to the commercial land use were distributed based on neighbourhood populations in the areas to the immediate south, east, and north of Waverley West. In this case, it was assumed that 50 percent of shopping trips would originate from within Waverley West. Finally, trips

related to the residential development were distributed throughout the street network based on major areas of employment within the City of Winnipeg. It was assumed that there would be few trips to employment areas in the northernmost areas of the city, with most trips destined to the downtown area, the University of Manitoba and other areas in south Winnipeg, as well as areas just north of the Assiniboine River. It was also assumed, based on the TransPlan 2010 report, that 10 percent of Waverley West residents would work outside of the City.

The assumed trip assignment for development related trips is as follows:

- To/from the east on Bishop Grandin Boulevard - 38 percent
- To/from the north on Kenaston Boulevard - 22 percent
- To/from the north on Waverley Street - 19 percent
- To/from the east on Bison Drive - 12 percent
- To/from the south on PTH 100 or Waverley Street - 9 percent

New trips generated by the proposed Waverley West development were distributed and assigned to the street network based on the splits noted above. Waverley West development traffic volumes for the a.m. peak hour and p.m. peak hour are illustrated in Figure 12 and Figure 13, respectively. Existing traffic was redistributed to take into account the potential new road links. The City of Winnipeg Public Works Department provided the consultant with transportation planning model results for forecast traffic with the assumed changes in the arterial road network. A horizon year for background traffic of 2028 (25 years) was used. The redistributed existing traffic was increased to 2028 levels using an annual growth rate of 1.5 percent, combined with the development traffic generated, distributed, and assigned to the street network to determine volume projections for the post development scenario.

Post development traffic volumes for the a.m. peak hour and p.m. peak hour are illustrated in Figure 14 and Figure 15, respectively. Post development screen line diagrams are illustrated in Figure 16.

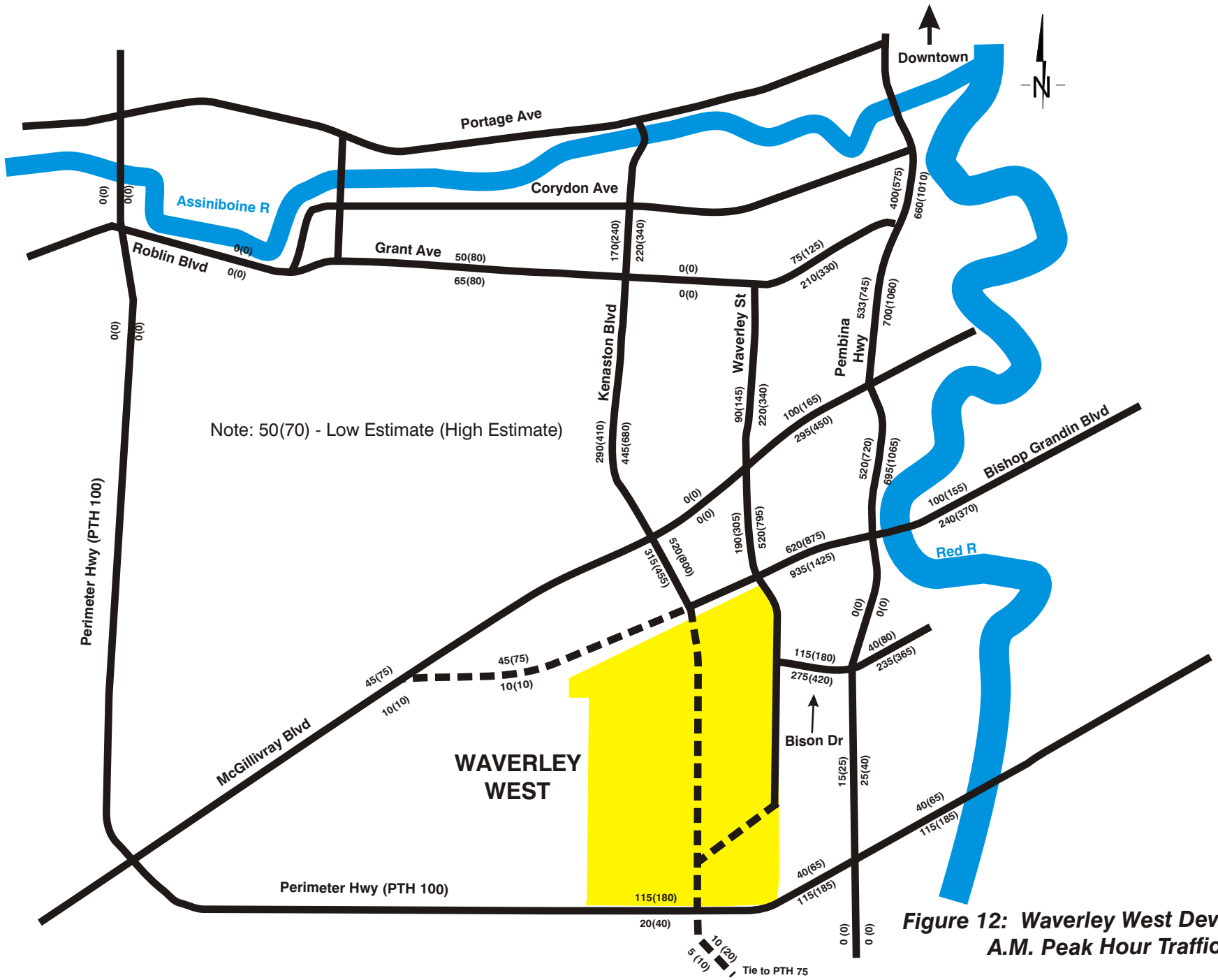


Figure 12: Waverley West Development
A.M. Peak Hour Traffic Volumes

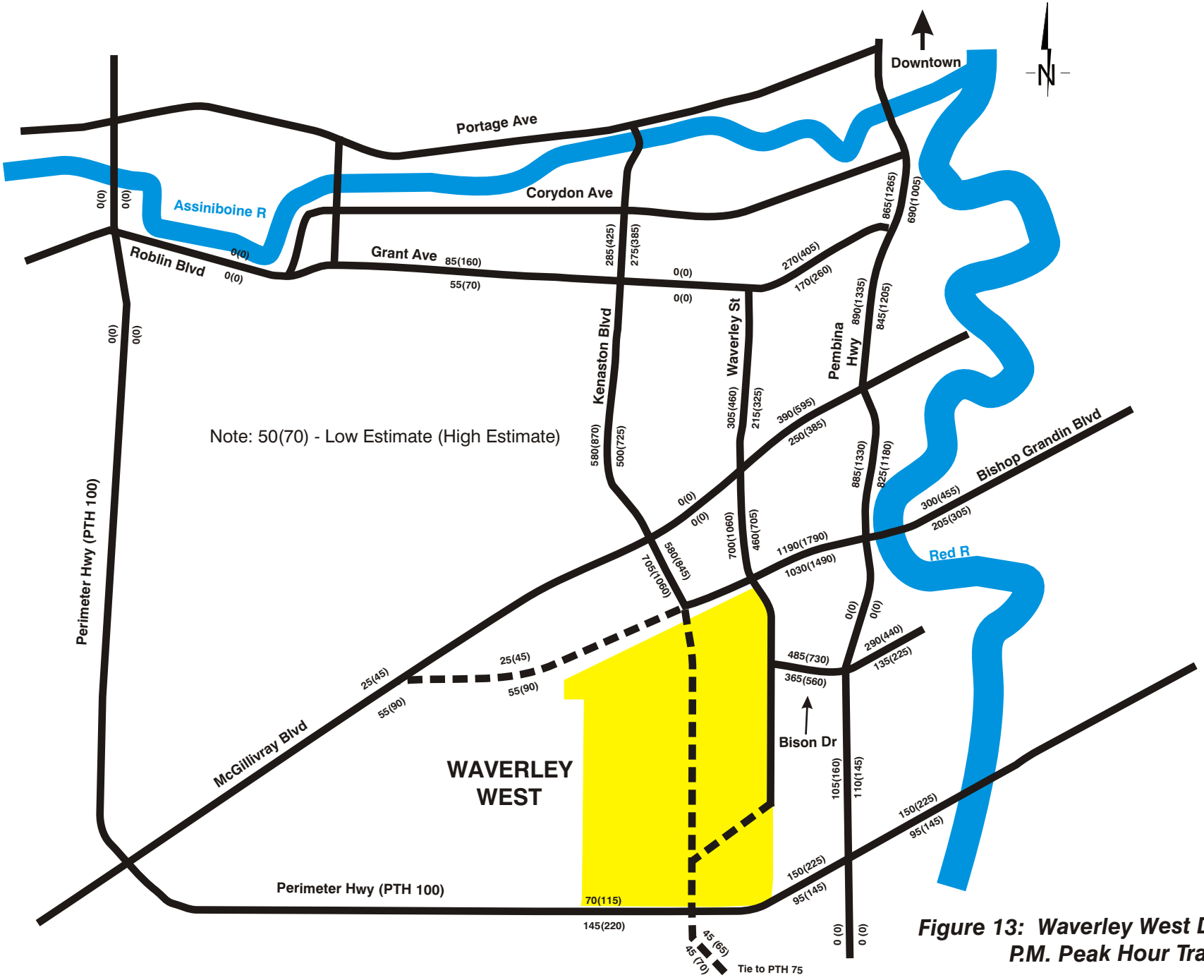


Figure 13: Waverley West Development
P.M. Peak Hour Traffic Volumes

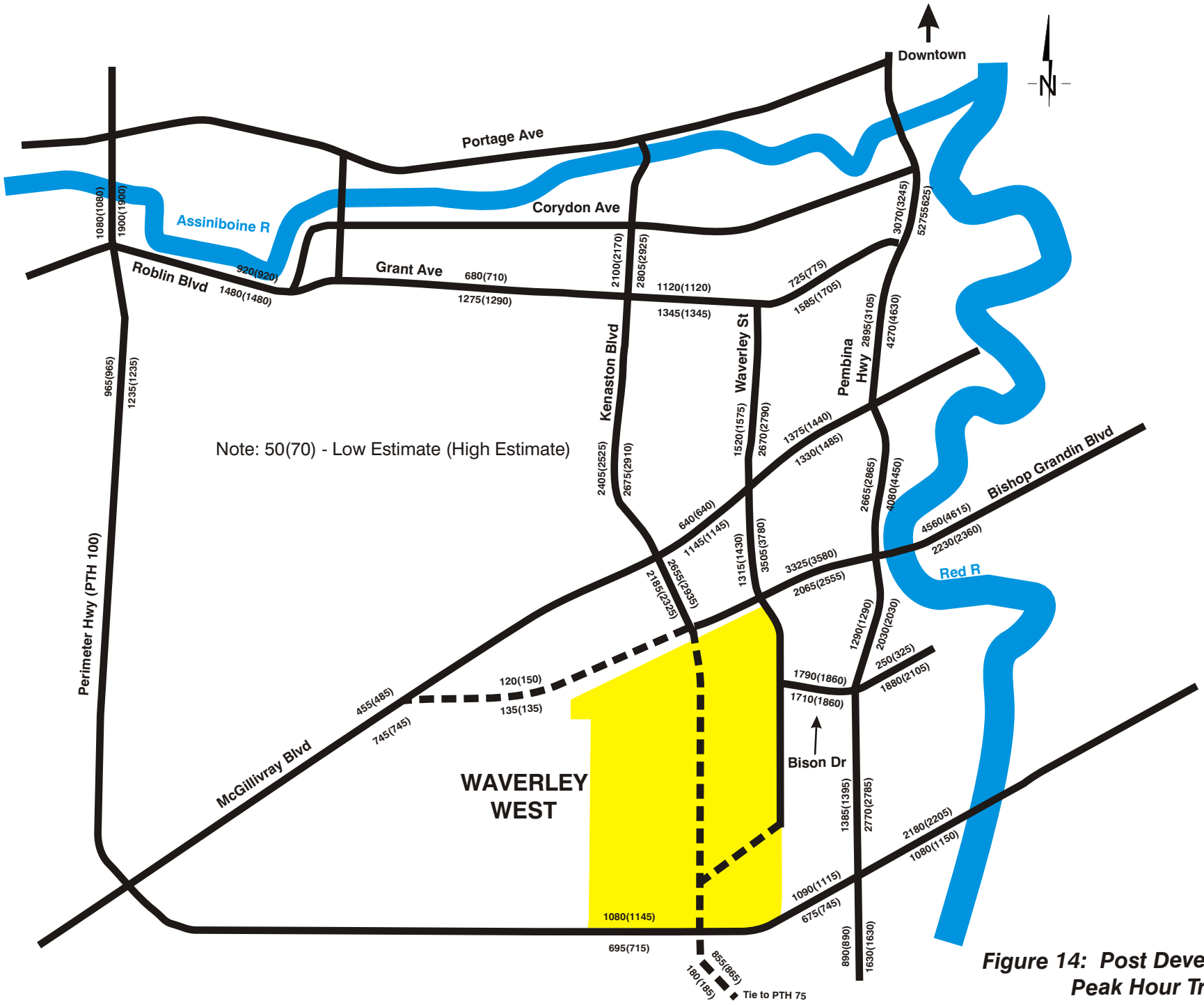


Figure 14: Post Development A.M. Peak Hour Traffic Volumes

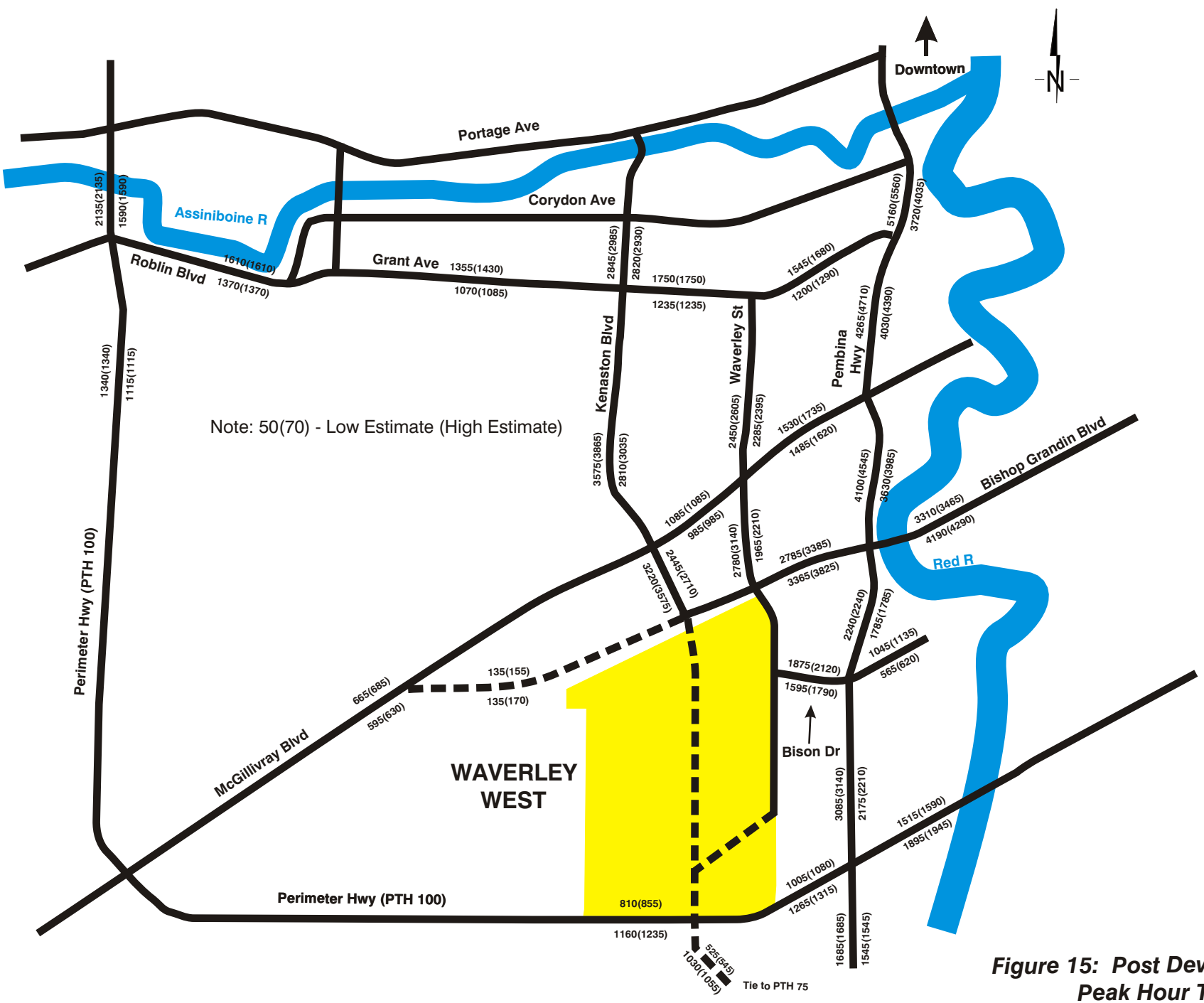
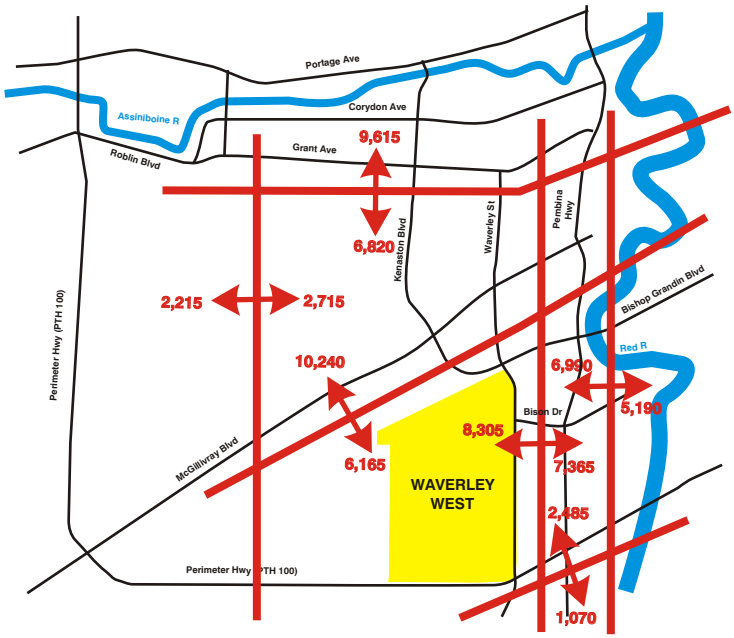
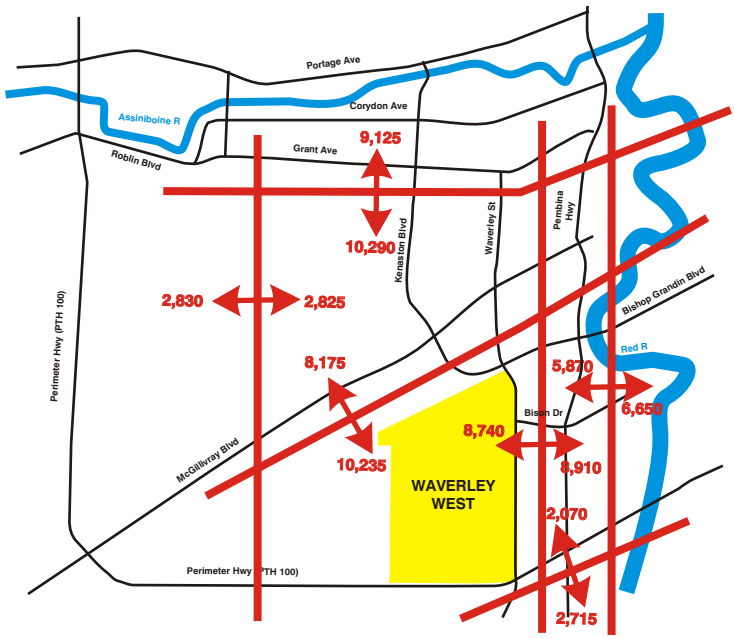


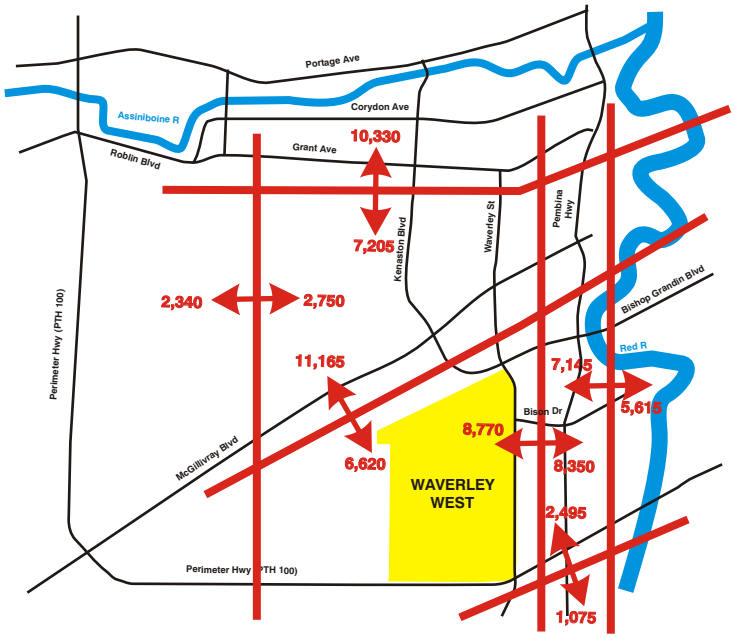
Figure 15: Post Development P.M. Peak Hour Traffic Volumes



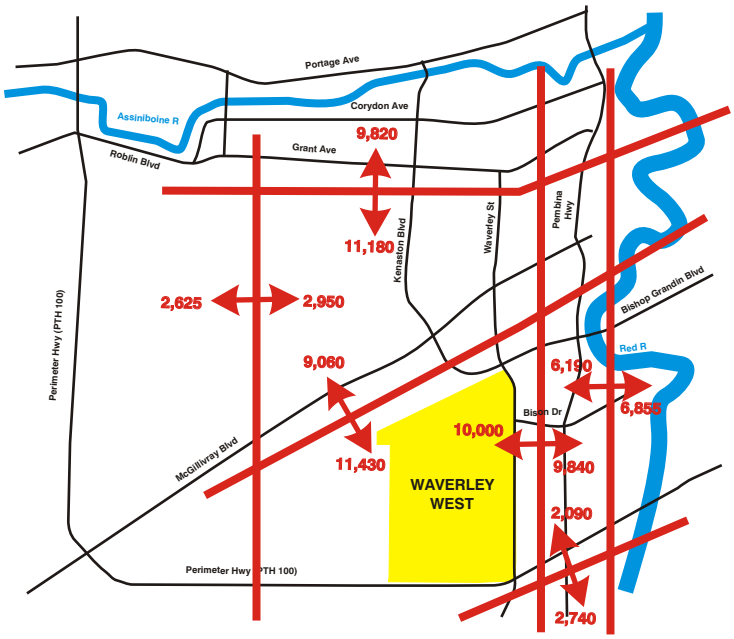
A.M. Peak Hour - Post Development (Low Estimate)



P.M. Peak Hour - Post Development (Low Estimate)



A.M. Peak Hour - Post Development (High Estimate)



P.M. Peak Hour - Post Development (High Estimate)

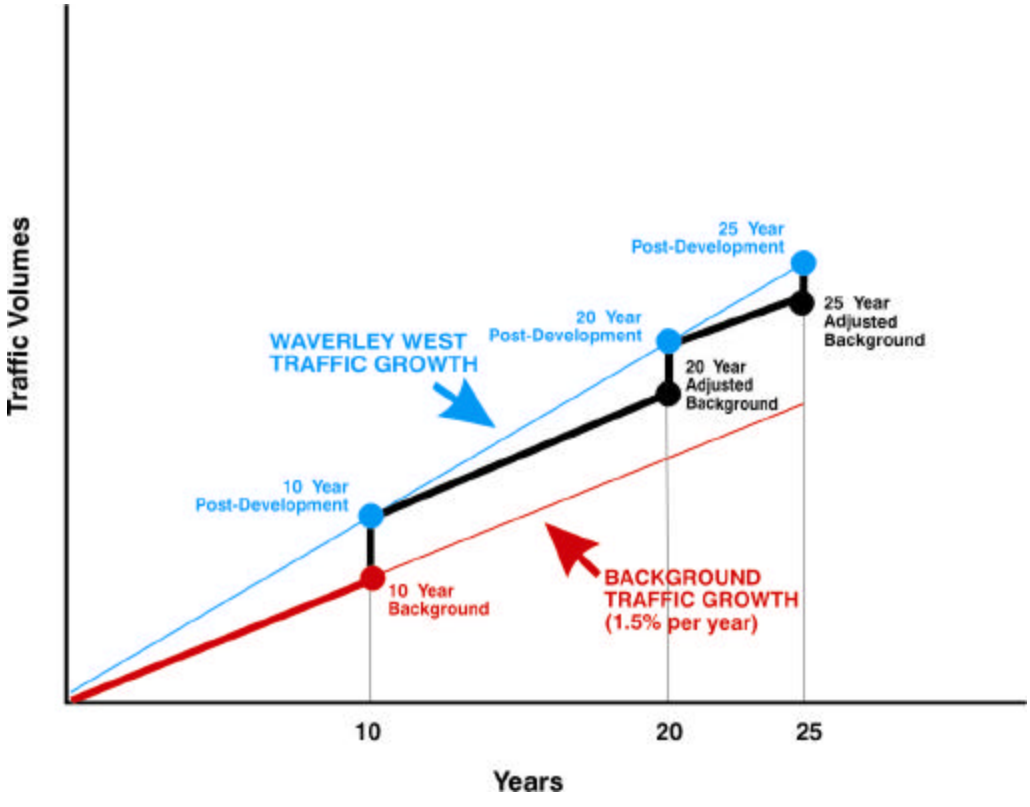
Figure 16: Post Development Screen Line Diagrams

6.0 DEVELOPMENT IMPACTS

6.1 Capacity and Lane Requirements

Post-development lane requirements on the external street network were calculated for future intervals of 10, 20 and 25 years. The various scenarios analyzed are shown in Figure 17. The red line represents "regular" background traffic growth without Waverley West development-related traffic volumes, based on an annual growth rate of 1.5 percent. The scenarios represented by the red line (i.e., background traffic only) were summarized in Section 3.3. The light blue line represents Waverley West traffic growth over the next 25 years over and above the background traffic growth, until full build-out of the development (assumed to be linear). The 20-year "adjusted" development indicated by the first black dot represents a scenario where only the background traffic growth has been added, using the background plus Waverley West development at the 10-year level development as the starting point. The forecast Waverley West traffic at the 20-year time frame is then added to this background level to forecast the 20-year post-development traffic scenario. The same traffic growth assumption was then applied to obtain the 25-year post-development scenario. The thick line represents the progression of scenarios that are examined.

Figure 17: Analysis Scenarios



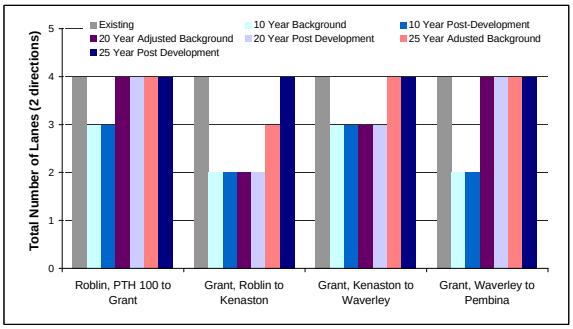
The following graphs (shown in Figures 18 and 19) summarize the findings of the post-development peak hour lane requirement calculations. Each graph shows lane requirements for a specific roadway for seven different scenarios:

- Existing;
- 10-year background;
- 20, and 25-year "adjusted" background traffic; and
- 10, 20, and 25-year post-development traffic.

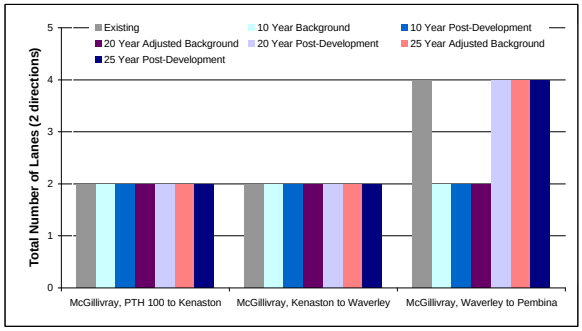
The higher number of lanes required to accommodate the a.m. or p.m. peak hour traffic was used in each graph. A set of graphs has been produced for each of the low and high Waverley West development scenarios. The following graphs show total (i.e., two-directional) lane requirements; lane requirements by direction are summarized in Appendix C.

Figure 18: Forecast Lane Requirements (Low Waverley West Traffic Estimate)

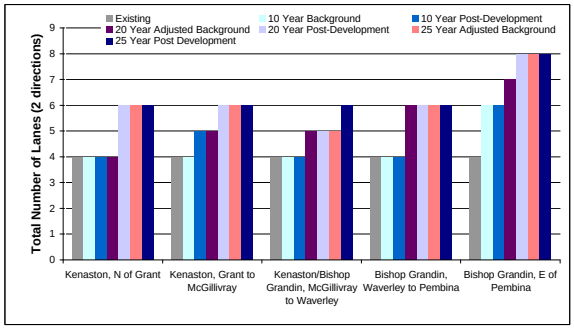
Roblin Boulevard / Grant Avenue



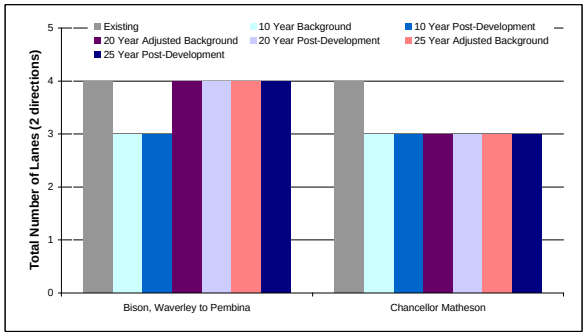
McGillivray Boulevard



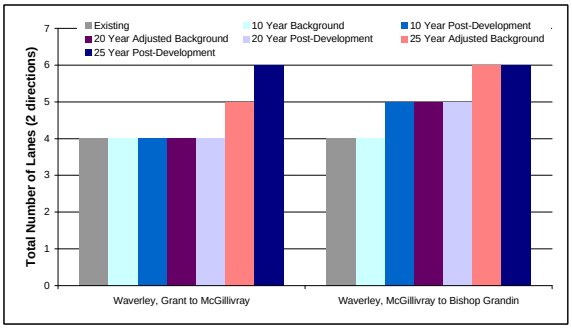
Kenaston Boulevard / Bishop Grandin Boulevard



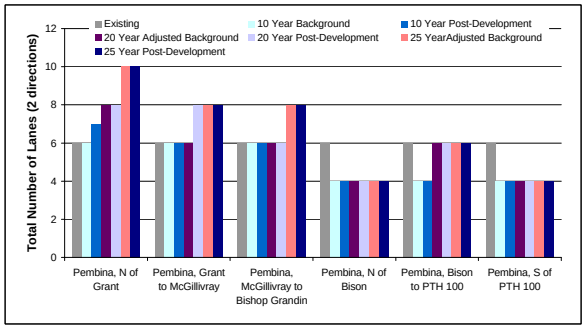
Bison Drive / Chancellor Matheson Road



Waverley Street



Pembina Highway



Perimeter Highway (PTH 100)

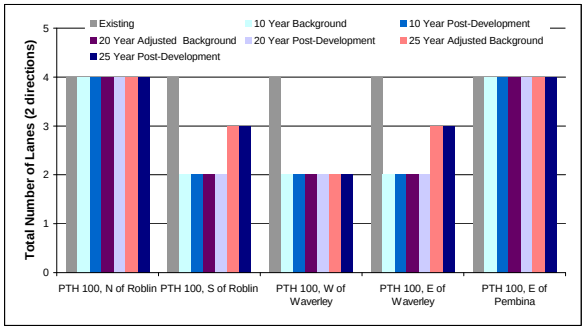
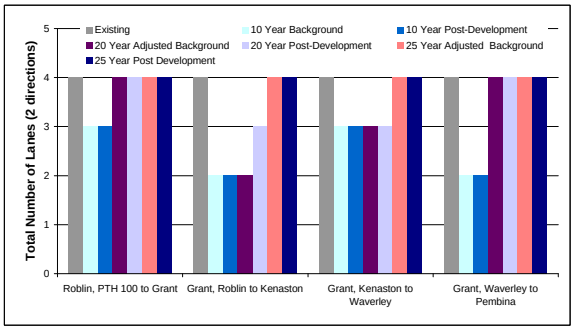
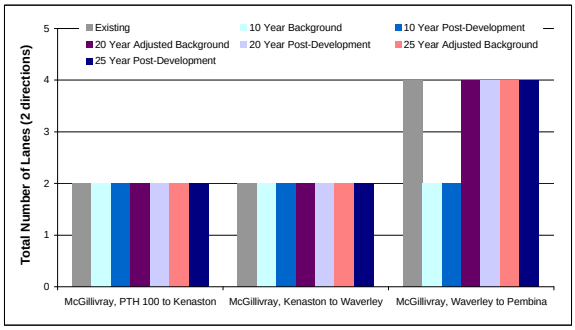


Figure 19: Forecast Lane Requirements (High Waverley West Traffic Estimate)

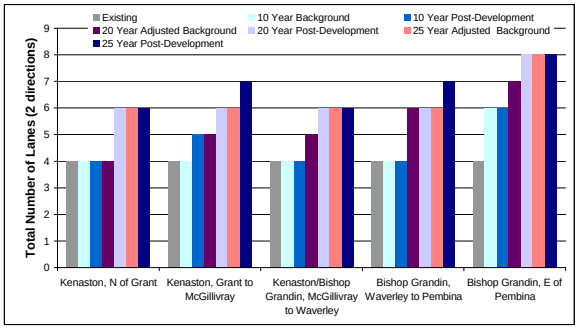
Roblin Boulevard / Grant Avenue



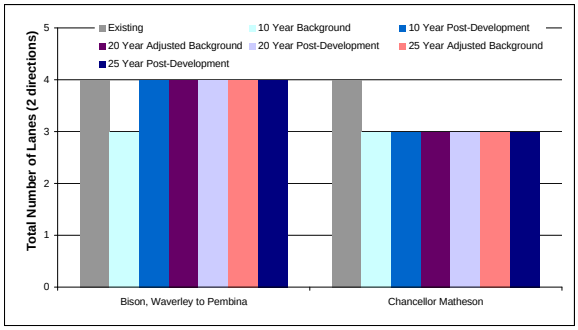
McGillivray Boulevard



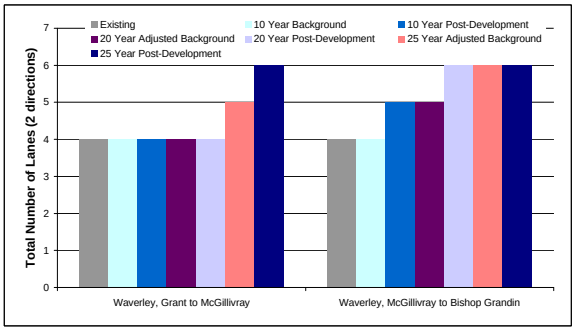
Kenaston Boulevard / Bishop Grandin Boulevard



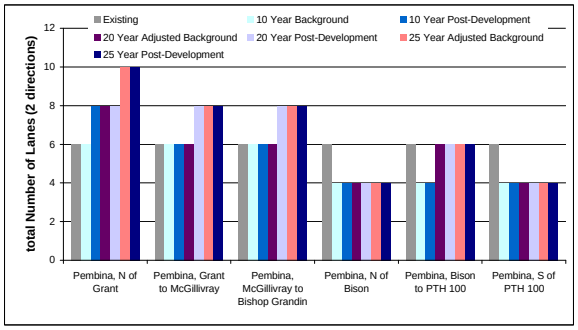
Bison Drive / Chancellor Matheson Road



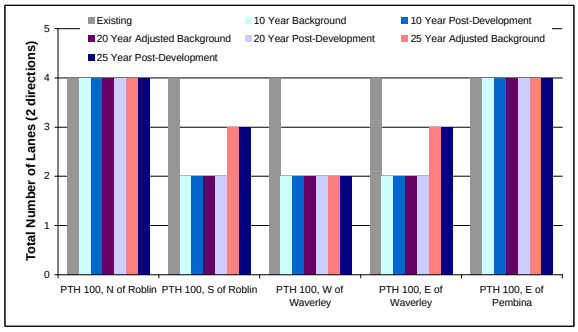
Waverley Street



Pembina Highway



Perimeter Highway (PTH 100)



6.2 Impact on Arterials

Roblin Boulevard/Grant Avenue

Grant Avenue and Roblin Boulevard were examined from PTH 100 to Pembina Highway. In both the low and high post-development traffic estimates, lane requirements on this link are not expected to exceed the existing supply with any of the background or post-development scenarios examined.

McGillivray Boulevard

McGillivray Boulevard was examined from PTH 100 to Pembina Highway. In both the low and high post-development traffic estimates, lane requirements on this link are not expected to exceed the existing supply with any of the background or post-development scenarios examined.

Kenaston Boulevard

Kenaston Boulevard was examined from north of Grant Avenue to Waverley Street. North of Grant, both the low and high post-development traffic estimates result in a need for widening of Kenaston from four to six lanes at the 20-year post-development scenario. Lane requirements are maintained at six lanes for all further scenarios examined.

From Grant to McGillivray, both the low and high traffic estimates result in a need for widening of Kenaston to five lanes at the 10-year post-development scenario and to six lanes at the 20-year post-development scenario. In the high traffic estimate, the calculations indicate that a seventh lane would be required to accommodate traffic in the 25-year post-development scenario, however widening beyond six lanes is likely infeasible at this location.

Along the Kenaston/Bishop Grandin link from McGillivray to Waverley, lane requirements increase beyond the existing four lanes to five lanes in the 10-year post-development scenario for both the low and high traffic estimates. In the low estimate, a requirement of five lanes is maintained through to the 25-year "adjusted" background scenario and increases by another lane to a total of six lanes in the 25-year post-development scenario. In the high traffic estimate, lane requirements increase to six at the 20-year "adjusted" background scenario, which is maintained for all other scenarios.

Bishop Grandin Boulevard

Bishop Grandin Boulevard was examined from Waverley Street to east of Pembina Highway. Between Waverley and Pembina, lane requirements increase from the existing four lanes to six lanes in the 20-year "adjusted" background scenario. In the low traffic

estimate, this is maintained for all other scenarios examined. In the high traffic estimate traffic levels at the 25-year post-development scenario result in a need for a seventh lane, however, widening beyond six lanes is likely infeasible on this link.

East of Pembina Highway, lane requirements increase to six lanes in the 10-year background scenario and then increase further to seven lanes in the 20-year "adjusted" background scenario. The 20-year post-development scenario lane requirements level off at a total of eight lanes. This is the same for both the low and high traffic estimates. Widening to this extent is considered infeasible, especially considering that this link includes the Fort Garry Bridge over the Red River.

Bison Drive/Chancellor Matheson Road

Bison Drive/Chancellor Matheson Road was examined from Waverley Street to the University of Manitoba. In both the low and high post-development traffic estimates, lane requirements on this link are not expected to exceed the existing supply with any of the background or post-development scenarios examined.

Waverley Street

Waverley Street was examined from Grant Avenue to Bishop Grandin Boulevard. From Grant to McGillivray, it is expected that the existing four lanes are sufficient to accommodate traffic volumes up until the 25-year "adjusted" background scenario, which results in a need for five lanes. The 25-year post-development scenario increases lane requirements further to a total of six lanes. This is the same for both the low and high traffic estimates.

Between McGillivray and Bishop Grandin, lane requirements are expected to increase to five lanes with the 10-year post-development scenario. In the low traffic estimate, this is maintained up until the 25-year "adjusted" background scenario, which results in a need for six lanes on this link. In the high traffic estimate, a requirement for six lanes is triggered at the 20-year post-development scenario and maintained for all other scenarios examined.

Pembina Highway

Pembina Highway was examined from north of Grant Avenue to south of PTH 100. The link north of Grant Avenue results in the highest lane requirements along Pembina Highway. In the low traffic estimate, lane requirements increase beyond the existing supply to seven lanes in the 10-year post-development scenario, increase further to eight lanes with the 20-year "adjusted" background scenario, and level off at 10 lanes in the 25-year "adjusted" background scenario.

From Grant to McGillivray, lane requirements are maintained at existing levels until the 20-year post-development scenario, where they increase to eight lanes. The eight-lane

requirement is maintained for all other scenarios examined. This is the same for both the low and high traffic estimates.

Between McGillivray and Bishop Grandin, lane requirements are maintained at existing levels through to the 20-year post-development scenario for the low traffic estimate and to the 20-year "adjusted" background scenario for the high traffic estimate. Beyond these points, lane requirements increase to a total of eight lanes. Widening beyond the existing six lanes on Pembina Highway is considered to be infeasible due to right-of-way limitations.

From Bison Drive to south of PTH 100, lane requirements are not expected to exceed the existing supply with any of the background or post-development scenarios examined for both the low and high traffic estimates.

PTH 100

The Perimeter Highway (PTH 100) was examined from north of Roblin Boulevard to east of Pembina Highway. In both the low and high post-development traffic estimates, lane requirements on this link are not expected to exceed the existing supply of four lanes with any of the background or post-development scenarios examined.

6.3 Neighbourhood Impacts

City street systems are made up of a hierarchy of different classes of streets that serve a variety of functions. This includes local streets on which most residential properties are located; collector streets that collect traffic from the local streets within a neighbourhood and direct it to arterial streets; arterial streets that collect traffic from collectors, and some local streets within a sector of a city; and expressways that generally do not serve adjacent development, but rather, carry traffic between sectors of a city and beyond.

Traffic tends to concentrate on the arterials, especially for longer trips, because of the typically higher level of service. However, if the arterial street system capacity is insufficient to carry the traffic demand in an efficient manner, some traffic may migrate to other alternatives. This could include other arterial streets, or if not readily available, may gravitate to collector or local streets for some portion of the trip, depending on the trip destination and length. This phenomenon has been identified as occurring in the River Heights area in southwest Winnipeg. Although southwest Winnipeg is well served by north-south and east-west arterials, some are discontinuous links (e.g., Waverley Street's role as an arterial stops at Grant Avenue).

The forecast traffic loads on the key arterial streets in southwest Winnipeg were examined in Section 6.2. The graphs included in that section identify forecast lane requirements. Overall, the east-west arterial streets can accommodate the estimated traffic volumes, except for Bishop Grandin from Waverley to east of Pembina. Although a capacity shortfall may occur on Bishop Grandin, neighbourhood impacts should not be

an issue. Few route alternatives to Bishop Grandin exist, especially for crossing the Red River.

Most of the roadway capacity deficiencies, and hence the potential for neighbourhood impacts, occur on the north-south arterials. The main areas with potential capacity shortfalls are Kenaston from Grant to McGillivray, Waverley between Grant and Bishop Grandin, and Pembina north of Grant to Bishop Grandin. If traffic movement becomes overly difficult there is the possibility of some traffic spill over occurring, especially north of Grant, between Kenaston and Pembina.

There is a limit to the level of street expansion that can occur in a cost-effective manner. This can be addressed through ongoing encouragement and enhancement of the transit alternative and other Transportation Demand Measurement measures to reduce the number of private vehicle trips.

It should also be noted that given the proponent's plans to develop the Waverley West area in a manner different from typical suburban developments in Winnipeg (i.e., by including some commercial and employment centres within the development) the result may be a reduced number of vehicles on the exterior street network, and therefore, less impact on adjacent neighbourhoods, than there would be with a typical suburban development. Given the long-range nature of the traffic forecasts, it is advisable to monitor traffic activity to determine if, and the nature of, any traffic impacts that occur on non-arterial streets.

6.4 Transit Requirements

Transit requirements were based on the parameters set out by Winnipeg Transit and the low/high range of peak hour transit ridership forecasts. The focus in this report is the transit ridership; bus needs, cost and revenue related to Waverley West originating/destined trips. In reality, the routes that service Waverley West will also provide service to neighbourhoods between Waverley West and the ultimate route destination, which will increase route ridership and revenues.

6.4.1 Transit Volumes

Transit volumes were based on a range, with the lower mode split (13 percent) applied to the higher development density and the higher mode split (25 percent) applied to the lower development density. The lower mode split is considered typical for a suburban residential subdivision in Winnipeg. The upper range is what Transit feel is achievable with a transit supportive subdivision concept that includes higher densities, a greater range of household types, internal employment opportunities and supportive measures such as good pedestrian connections.

The range of forecast peak hour transit trips is 1,500 to 3,100 passengers per hour in the a.m. peak hour, and 2,050 to 4,300 passengers per hour in the p.m. peak hour. A portion

of these trips is estimated to be internal trips (i.e., trip origin and destination within Waverley West) due to the internal employment, shopping, and education opportunities.

Internal trips were estimated at 175 to 325 passengers per hour in the a.m. peak hour, and 500 to 950 passengers per hour in the p.m. peak hour.

External trips are therefore estimated at 1,325 to 2,775 passengers per hour in the a.m. peak hour, and 1,550 to 3,350 passengers per hour in the p.m. peak hour. The mix between inbound and outbound trips and travel destination between the four proposed routes was assumed to be similar to the directional split of the vehicle trips.

The estimated volumes on the "Polo Park – University" route are approximately 300 to 600 passengers per hour in the a.m. peak hour, and 350 to 750 passengers per hour in the p.m. peak hour. The estimated volumes on the "Waverley West – University" route are approximately 275 to 575 passengers per hour in the a.m. peak hour, and 325 to 700 passengers per hour in the p.m. peak hour. The combined estimated volumes on the two "Waverley West – Downtown" routes are 750 to 1,575 passengers per hour in the a.m. peak hour, and 900 to 1,900 passengers per hour in the p.m. peak hour.

Yearly ridership for the Waverley West development was estimated based on ridership data for the morning and afternoon peak hours, an average weekday, and revenue passengers for 2002. This results in an estimated yearly ridership of approximately 2,100,00 riders with the lower development levels and mode split, rising to approximately 2,900,000 with the higher development levels and mode split. This is a five to eight percent increase in yearly ridership for the overall transit system compared to 2002 levels.

6.4.2 Bus Requirements

Winnipeg Transit anticipates servicing Waverley West exclusively with low floor buses that feature 40 seats plus room for standees. A bus capacity of 45 to 50 is generally used for planning purposes. A capacity of 50 was assumed for the lower range, with 45 for the upper range forecast. These capacity levels were applied to the forecast volumes on the different routes.

The number of buses required to service Waverley West is based on the anticipated headway (time between buses at any particular point), route length, and passenger demand. At this time Winnipeg Transit are basing preliminary planning on 15-minute peak period headways, 30-minute off-peak headways, and four routes. The estimated round trip travel times were based on average speeds of 20 km/hr for normal street operations, with 30 km/hr on dedicated transit corridors. The estimated round trip travel times for the proposed routes were estimated at:

- Polo Park – University: 120 minutes (38 km)
- Waverley West – University: 70 minutes (22 km)

- Waverley West – Downtown: 110 minutes (42 km)

Bus requirements based on the round trip travel times and the proposed headways are:

- Polo Park – University: eight buses in the peak periods, four buses in the off-peak.
- Waverley West – University: five buses in the peak periods, three buses in the off-peak.
- Waverley West – Downtown: eight buses in the peak periods, four buses in the off-peak on each of the two routes.

Bus requirements for the peak period were based on the 45/50 passenger load factors and estimated peak hour external passenger volumes (Section 6.4.1). The results are as follows:

- Polo Park – University: three to four buses in the peak periods with the lower mode split, and six to nine buses in the peak periods with the higher mode split.
- Waverley West – University: three to four buses in the peak periods with the lower mode split, and six to nine buses in the peak periods with the higher mode split.
- Waverley West – Downtown: seven to 10 buses in the peak periods with the lower mode split, and 15 to 23 buses in the peak periods with the higher mode split.

Winnipeg Transit's planned bus service levels appear sufficient to meet the area's transit needs with the higher mode split and development density levels, except for a potential shortfall in the higher development density scenario for the downtown service. Additional buses travelling in convoy, or a reduced headway to 10 minutes would be required to meet this demand level. Peak period headways could be reduced to 20 to 30 minutes for the other two routes based on the lower demand levels. In total, 13 to 18 peak period buses would be required with the lower mode split estimate, and 27 to 41 would be required with the higher mode split estimate, compared to the proposed 21 buses with the planned service.

6.5 Goods Movement

Goods movement is concerned with the movement of freight and the trucks on which the freight moves. Little information concerning goods movements within the city of Winnipeg is available prior to or since the 1996 Profile of Urban Goods Movement in Winnipeg conducted by the University of Manitoba Transport Information Group on behalf of ND LEA (then know as DS Lea Consultants Ltd.) for Phase 1 of TransPlan 2010. The report identifies and clarifies issues and options about urban goods movements in Winnipeg. The following discussion about urban goods movements in

Winnipeg and the effect of the Waverley West development on goods movements in the city is based directly on the findings contained in this report.

Many of the primary roads in southwest Winnipeg are part of the existing City of Winnipeg designated truck route network, including Kenaston Boulevard, Waverley Street, Pembina Highway, McGillivray Boulevard, Bishop Grandin Boulevard, and the south Perimeter Highway. Based on the layout of the current truck route network, it is anticipated that the westward extension of Bishop Grandin to PTH 3 and the southward extension of Kenaston through Waverley West to PTH 75 south of St. Norbert will be included in the Winnipeg truck route network. The Perimeter Highway and PTH 75, along with its extension(s) into the City are considered economic routes by MTGS.

In 1996, there were 20 major truck terminals and two intermodal terminals in Winnipeg. The majority of these terminals are located adjacent to Route 90 and Bishop Grandin Boulevard. For-hire trucking companies are scattered throughout Winnipeg, with a high concentration located along Route 90 north of Portage Avenue. The locations of the truck terminals and trucking companies correspond to truck volumes on Winnipeg roads. Average annual weekday truck volumes on Winnipeg truck routes for 1995 were available in the *Profile of Urban Goods Movement in Winnipeg* report. High volumes of truck traffic were recorded on Lagimodiere Boulevard, Route 90 (Kenaston Boulevard), Inkster Boulevard, Portage Avenue, and McGillivray Boulevard. Fermor Avenue, Pembina Highway, Waverley Street and Wilkes Avenue also recorded significant truck volumes.

Based on the pattern of existing truck volumes in southwest Winnipeg, Pembina Highway, the south Perimeter Highway and Waverley Street are currently the primary trucking routes used to access PTH 75 south of Winnipeg. The proposed extension of Kenaston south through the Waverley West development to PTH 75, bypassing St. Norbert, will likely become another attractive north-south route for trucks originating in or destined for the western part of Winnipeg. As well, tentative plans for Waverley West indicate that Waverley Street will end within the development and will no longer connect to the south Perimeter Highway. It is therefore anticipated that some of the truck traffic currently using Pembina, and much of the truck traffic using Waverley, will shift to the Kenaston extension.

The office park and commercial developments tentatively planned for the Waverley West development will result in some shipping and delivery truck traffic. Most of these truck trips will be intra-city trips using small trucks (2 or 3-axle single unit trucks). The major portion of truck traffic on the Kenaston extension through Waverley West will likely be through trips that do not originate in and are not destined for locations within the Waverley West development. Many of these trips will originate in or be destined for locations south of the city of Winnipeg. Approximately three-quarters of external truck trips are made using combination trucks, primarily tractor-semi trailers. It is expected that a portion of trucks moving between the trucking terminals and companies along Route 90 and locations south of Winnipeg will use the Kenaston extension to bypass St.

Norbert and avoid heavy traffic volumes along Pembina Highway. As well, truck trips destined for industrial areas in west Winnipeg such as the airport or the Inkster industrial park will also find the Kenaston extension to be an attractive trucking route.

7.0 SUMMARY OF FINDINGS

7.1 System Requirements

7.1.1 Transit

Winnipeg Transit has identified a potential routing system to service Waverley West. The proposed routing patterns provide direct service to three major destination areas, with connections to many other routes available downtown and at Polo Park. A key point in Transit being able to competitively serve the area is the planned Southwest Transit Corridor, which brings this area to within Transit's optimum travel time to the downtown (less than 35 minutes). This, combined with the opportunity for two directional travel, and supporting pedestrian infrastructure within the area, should help transit achieve higher than typical mode splits. Another feature that has proven beneficial in other areas of the City is locating transit centres at key points within the area. This should be considered for the two employment centres.

7.1.2 Road Network

The internal roadway system will be developed as part of the area structure plan, with additional details available as part of the subdivision plan process for areas within Waverley West. For the purposes of this review, it was assumed that two major roadway extensions are desirable. One is the extension of Kenaston through the area, continuing south of the Perimeter, connecting to PTH 75 south of St. Norbert. This would result in Waverley being redirected into the Kenaston extension north of the Perimeter.

The westerly extension of Bishop Grandin, with a tie in to PTH 3 has also been identified. This would result in McGillivray being redirected into the Bishop Grandin extension, possibly west of the City limit.

Other roadway modifications have been identified, with most occurring due to forecast background traffic growth, irrespective of whether or not Waverley West proceeds. As with any upgrade such as this, the actual need, and timing, should be based on measured traffic volumes as opposed to long-range forecasts.

7.2 Cost Estimates

7.2.1 Transit

Transit bus costs were based on $70 per bus-hour, which includes bus operations, replacement cost for new buses, and administration/overhead costs. While the addition of new services may reduce some of the system-side overhead costs, additional route-specific overhead costs such as additional transit supervisors would be added. As such, Winnipeg Transit indicate that $70 is a reflection of the actual cost of adding new service. Costs were estimated for the planned service levels and resultant minimum requirements. It was assumed that peak hour service would comprise four hours of the weekday, with off-peak service the balance of the weekday, Saturdays, Sundays, and statutory holidays.

The resultant cost to operate four routes is approximately $9M per year. Actual cost will depend on the ridership levels and the number of buses that are needed.

Transit will also collect revenue to help offset the service costs. The revenue was based on the Waverley Wes-related ridership, and average revenue per revenue rider for January to June in 2002 of approximately $1.28. This was applied to the forecast yearly ridership for Waverley West riders, yielding revenue of approximately $2,700,000 to $3,700,000 per year depending on the actual mode split. Please note that riders outside of Waverley West will also contribute to revenue generation.

7.2.2 External Road Network

Tables 4 and 5 summarize cost estimates for the construction of additional lanes on various links in the study area that are external to the Waverley West development based on the low and high traffic estimates. Forecast costs are provided at the 10, 20, and 25-year timeframe. The capacity improvements summarized below are as a result of the combination of background traffic and Waverley West development traffic, over the 25-year time frame of this study. A maximum of three lanes per direction was assumed due to limitations on right-of-way acquisition. In some cases, lane requirements for the future background and/or post-development scenarios exceeded three lanes per direction, which was thought to be unreasonable. Costs for widening existing roadways include roadworks and street lighting and a 25 percent contingency. The cost estimates do not include additional property costs, engineering fees, or G.S.T.

Street Link	Existing # of Lanes	10 Year Interval					20 Year Interval					25 Year Interval				
		10 Year Background Lane Requirement	10 Year Post Dev. Lane Requirement	Total Cost	Back-ground Cost	Post Dev. Cost	20 Year Background Lane Requirement	20 Year Post Dev. Lane Requirement	Total Cost	Back-ground Cost	Post Dev. Cost	25 Year Background Lane Requirement	25 Year Post Dev. Lane Requirement	Total Cost	Back-ground Cost	Post Dev. Cost
Kenaston (Corydon-Grant)	4	4	4	$0	$0	$0	4	6	$1.3M	$0	$1.3M	6	6	$0	$0	$0
Kenaston (Grant-McGillivray)	4	4	5	$3.5M	$0	$3.5M	5	6	$3.5M	$0	$3.5M	6	6	$0	$0	$0
Kenaston/Bishop Grandin (McGillivray-Waverley)	4	4	4	$0	$0	$0	5	5	$1.9M	$1.9M	$0	5	6	$1.9M	$0	$1.9M
Bishop Grandin (Waverley-Pembina)	4	4	4	$0	$0	$0	6	6	$3.3M	$3.3M	$0	6	6	$0	$0	$0
Bishop Grandin (E of Pembina)	4	6	6	*			7	8	*			8	8	*		
Waverley (Grant-McGillivray)	4	4	4	$0	$0	$0	4	4	$0	$0	$0	5	6	$4.7M	$2.35M	$2.35M
Waverley (McGillivray-Bishop Grandin)	4	4	5	$1.55M	$0	$1.55M	5	5	$0	$0	$0	6	6	$1.55M	$1.55M	$0
Pembina (Corydon-Grant)	6	6	7	*			8	8	*			10	10	*		
Pembina (Grant-McGillivray)	6	6	6	$0	$0	$0	6	8	*			8	8	*		
Pembina (McGillivray-Bishop Grandin)	6	6	6	$0	$0	$0	6	6	*			8	8	*		
TOTAL				**$5.05M**	**$0**	**$5.05M**			**$10.0M**	**$5.2M**	**$4.8M**			**$8.15M**	**$3.9M**	**$4.25**
NET PRESENT VALUE**				**$3.4M**	**$0**	**$3.4M**			**$4.6M**	**$2.4M**	**$2.2M**			**$3.1M**	**$1.5M**	**$1.6M**

***** Refers to links where construction of further additional lanes is not practical due to right-of-way limitations. Alternative travel choices such as increased transit use, other mode choices, and/or non-peak hour travelling may result.

** Calcuation of Net Present Value includes an assumed inflation rate of 2% per year and interest rate of 6% per year.

	Total Cost	Net Present Value
Background	**$9.1M**	**$3.9M**
Post Development	**14.1M**	**$7.2M**
	$23.2M	**$11.1M**

Table 4: External Road Network - Low Waverley West Traffic Estimate

Street Link	Existing # of Lanes	10 Year Interval					20 Year Interval					25 Year Interval				
		10 Year Background Lane Requirement	10 Year Post Dev. Lane Requirement	Total Cost	Back-ground Cost	Post Dev. Cost	20 Year Background Lane Requirement	20 Year Post Dev. Lane Requirement	Total Cost	Back-ground Cost	Post Dev. Cost	25 Year Background Lane Requirement	25 Year Post Dev. Lane Requirement	Total Cost	Back-ground Cost	Post Dev. Cost
Kenaston (Corydon-Grant)	4	4	4	$0	$0	$0	4	6	$1.3M	$0	$1.3M	6	6	$0	$0	$0
Kenaston (Grant-McGillivray)	4	4	5	$3.5M	$0	$3.5M	5	6	$3.5M	$0	$3.5M	6	7	*		
Kenaston/Bishop Grandin (McGillivray-Waverley)	4	4	4	$0	$0	$0	5	6	$3.8M	$1.9M	$1.9M	6	6	$0	$0	$0
Bishop Grandin (Waverley-Pembina)	4	4	4	$0	$0	$0	6	6	$3.3M	$3.3M	$0	6	7	*		
Bishop Grandin (E of Pembina)	4	6	6	*			7	8	*			8	8	*		
Waverley (Grant-McGillivray)	4	4	4	$0	$0	$0	4	4	$0	$0	$0	5	6	$4.7M	$2.35M	$2.35M
Waverley (McGillivray-Bishop Grandin)	4	4	5	$1.55M	$0	$1.55M	5	6	$1.55M	$0	$1.55M	6	6	$0	$0	$0
Pembina (Corydon-Grant)	6	6	8	*			8	8	*			10	10	*		
Pembina (Grant-McGillivray)	6	6	6	$0	$0	$0	6	8	*			8	8	*		
Pembina (McGillivray-Bishop Grandin)	6	6	6	$0	$0	$0	6	8	*			8	8	*		
TOTAL				**$5.05M**	**$0**	**$5.05M**			**$13.45M**	**$5.2M**	**$8.25M**			**$4.7M**	**$2.35M**	**$2.35M**
NET PRESENT VALUE**				**$3.4M**	**$0**	**$3.4M**			**$6.2M**	**$2.4M**	**$3.8M**			**$1.8M**	**$0.9M**	**$0.9M**

***** Refers to links where construction of further additional lanes is not practical due to right-of-way limitations. Alternative travel choices such as increased transit use, other mode choices, and/or non-peak hour travelling may result.

** Calcuation of Net Present Value includes an assumed inflation rate of 2% per year and interest rate of 6% per year.

	Total Cost	Net Present Value
Background	**$7.55M**	**$3.3M**
Post Development	**$15.65M**	**$8.1M**
	$23.2M	**$11.4M**

Table 5: External Road Network - High Waverley West Traffic Estimate

This report has been prepared for three specific time-related scenarios, with potential roadway modifications identified for the same corresponding years. In fact, roadway modification are not typically tied to a "point in time" given the number of assumptions that must be made when forecasting future traffic needs. The actual timing and nature of development, as well as changes in background traffic trends, can influence future traffic volumes, and hence, the timing for the need for transportation-related modifications. Roadway requirements are more typically based on monitoring future traffic volumes and operational performance and implementing road modifications when they become warranted.

A specific change in the cross-section for a number of roadway links is not identified if it was considered impractical or not cost effective. An example is along Pembina Highway, where the only opportunity to widen would require acquisition of the frontage development, which is not considered appropriate. These are cases where future travel trends must be monitored and where implementation of the Southwest Transit Corridor, or a continuing downward trend in background traffic growth (especially in the peak hours), may moderate traffic demand. In addition, the analysis in this report has assumed maintaining level of service D, however, as growth occurs, level of service E has often been tolerated by both the user and road authority.

As an example of this approach, development in southeast Winnipeg in areas such as South St. Vital, Royal Wood, and Island Lakes is of a similar magnitude to Waverley West. These developments resulted in roadway additions and upgrades within and adjacent to the development areas, but few changes in the routes used to access major destinations such as the downtown on links such as St. Anne's Road, St. Mary's Road, Dakota Street, Archibald Street, etc. occurred.

The City of Winnipeg Council adopted an amendment to the developer agreement parameters in 2002. The amendment states that the developer is 100 percent responsible for the construction of local and collector streets within a new development, while the City is entirely responsible for expressway and higher designation roadways. Arterials are cost-shared approximately 50/50 between the City and the developer on streets within or abutting the new development. For example, for a new four-lane divided arterial, the City may pay for the inside two lanes, while the property owners on each side of the street will pay for the outside two lanes.

8.0 DISCUSSION

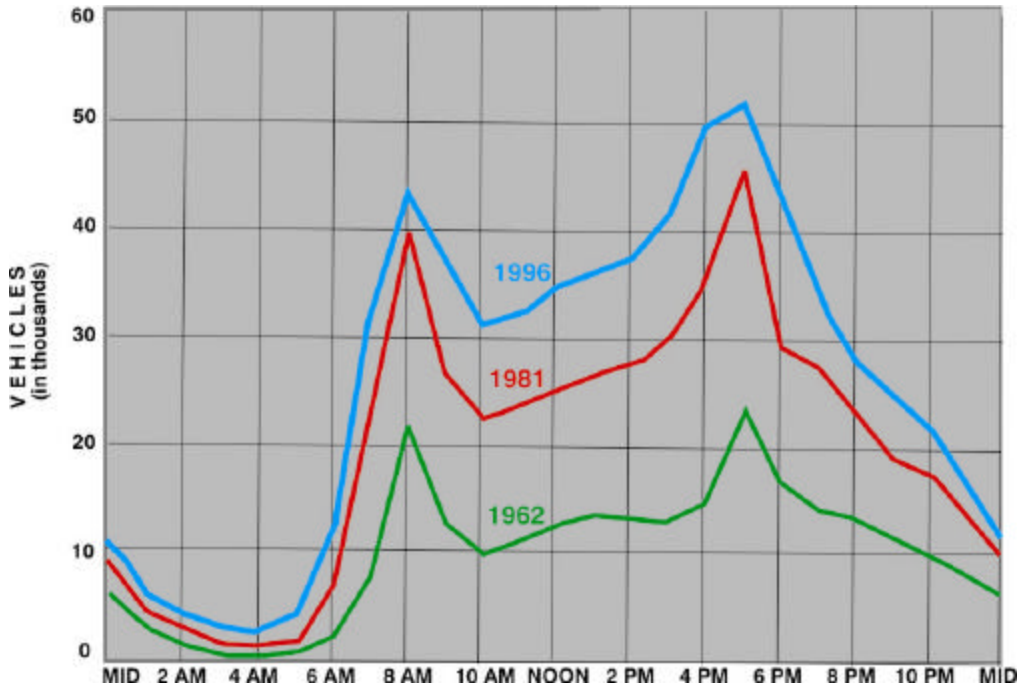
The forecasts discussed in this report are based on a series of assumptions. Many factors may change in the future to alter the traffic forecasts. The traffic growth rate for background traffic, while seemingly appropriate at 1.5 percent per year based on historical growth rates for southwest Winnipeg, may change within the next few decades, altering the traffic forecast. The forecast traffic also assumes similar travel

characteristics to what has occurred in the past. This includes the traditional work place, as opposed to additional "work at home" options in the future.

In addition, the forecast assumes the traditional peak hour time distribution for traffic. As volumes increase to the point that street capacity becomes an issue, peak spreading will likely occur, as has happened in other larger cities. In a small community, the peak "hour" may in fact be a peak 15 to 30 minutes; as the size of the city increases, so does the length of the peak period. In examining historic traffic data for Winnipeg arterials, a distinct morning and afternoon peak hour is evident. It may well be that in the future the length of the peak "hour" may increase to spread the peak traffic load on either side of the current peak hour. This allows for greater use of the existing roadway capacity. This was reviewed for a number of locations in Winnipeg, examining the percent of the daily traffic that occurs in the peak hour and the hours immediately prior and after the peak hour. While not definitive due to the limited sample size, it suggests that peak hour volumes as a percentage of the daily traffic is stable to slightly decreasing, whereas the adjacent hours are stable to slightly increasing as a percentage of the daily traffic.

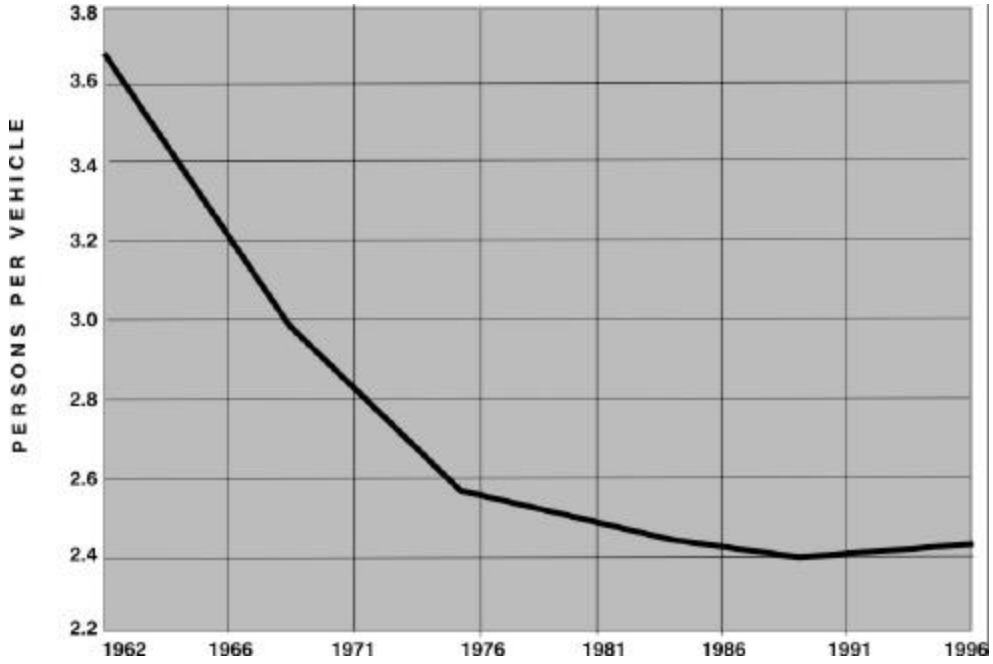
The *TransPlan 2010 – Moving Towards Solutions (1998)* final report describes the peak hour spreading trend. The report states, "*peak periods of traffic are not increasing substantially but are spreading over a longer period of time, and the non-peak traffic is increasing*." Reasons given for this trend include increases in service-industry employment; more part-time employment; and increase in home workplaces. Figure 3.11 of the TransPlan report is reproduced here as Figure 20 and illustrates historical traffic volumes crossing the city's bridges, by time of day.

Figure 20: Traffic Crossing Rivers, by Time of Day



Other important demographic trends noted in the TransPlan report suggest that the number of persons per passenger-vehicle has stabilized at about 2.4 after a rapid decline from 3.67 in 1962 to 2.46 in 1981. Therefore, car ownership per person may have hit a maximum and future increases in car registrations may be more closely related to population increases. In addition, the aging population represents a smaller work force and a resulting decrease in peak-hour travel, but will likely cause an increase in off-peak travel. Figure 3.12 of the TransPlan report is reproduced here as Figure 21 and shows the historical decline and levelling of persons per registered passenger vehicle in Winnipeg.

Figure 21: Persons per Registered Passenger Vehicle



The TransPlan report states that, *"based on these demographic trends, we would expect that growth in commuter travel, particularly in the peak-hour periods, would occur at a slower rate than in the past and would be more closely related to population changes than to increased automobile ownership."*

The traffic forecasts used in this report also make assumptions regarding the percent of internal trips and transit mode split. It is understood that the proponents for the Waverley West development hope to create an environment that offers choices to residents, in both their travel mode, and ability to live and work within the development. This may influence the number of external trips.

Winnipeg Transit is planning to begin construction of the first phase of the Southwest Transit Corridor in the short-term, and expect to see its extension to the University of Manitoba within the study horizon. This, combined with what may well be the most alternative mode-friendly subdivision in the City, is hoped to increase the transit mode split to well above what occurs in many other subdivisions. This would reduce the number of vehicle trips generated by the development.

The intent of this discussion is to highlight the various factors that influence trip generation and forecasting that may well contribute to a reduction in the traffic impact as reported in this report.

APPENDIX A

Growth Rate Sensitivity Analysis

Appendix A: Growth Rate Sensitivity Analysis

The Public Works Department recommended a sensitivity analysis of the growth rate. Growth rates of 1.25%, 1.5% and 1.75% were compared. In terms of total traffic in the study area, total volumes vary by less than 6.5 percent between the 1.25% and 1.5% scenarios, as well as between the 1.5% and 1.75% scenarios.

The following tables illustrate variations in the lane requirement calculations using the three percentage growth rates. Lane requirements are examined in Section 3.3 and 6.1 of the report. The calculations use a capacity of 1,275 vehicles per hour per lane. One table is given for each of the 25-year background traffic, Waverley West post-development (low estimate), and Waverley West post-development (high estimate) scenarios. Only those links where capacity improvements are eventually triggered are shown in the tables. Tables A1 to A3 indicate that there are moderate differences in the lane requirements depending on the growth rate used.

Table A1: 25-Year Background Traffic

Street Link	Existing # of Lanes		1.25% Growth		1.5% Growth		1.75% Growth	
	Dir 1	Dir 2	Dir 1	Dir 2	Dir 1	Dir 2	Dir 1	Dir 2
Kenaston *(North of Grant)*	2	2	*	*	+1	+1	+1	+1
Kenaston *(Grant to McGillivray)*	2	2	*	+1	*	+1	*	+1
Kenaston/Bishop Grandin *(McGillivray to Waverley)*	2	2	*	*	*	*	*	+1
Bishop Grandin *(East of Waverley)*	2	2	*	*	*	+1	+1	+1
Bishop Grandin *(East of Pembina)*	2	2	+1	+2	+2	+2	+2	+2
Waverley *(Grant to McGillivray)*	2	2	*	*	*	*	+1	*
Waverley *(McGillivray to Bishop Grandin)*	2	2	+1	*	+1	*	+1	*
Pembina *(North of Grant)*	3	3	+1	+1	+1	+1	+1	+2
Pembina *(Grant to McGillivray)*	3	3	*	*	*	*	*	*
Pembina *(McGillivray to Bishop Grandin)*	3	3	*	*	*	*	*	*
PTH 100 *(North of Roblin)*	2	2	*	*	*	*	*	+1

Note: Dir 1 = Northbound or Eastbound; Dir 2 = Southbound or Westbound
* = Demand met with existing supply
+1 = Number of lanes required over existing supply

Table A2: Waverley West Post-Development (Low Estimate)

Street Link	Existing # of Lanes		1.25% Growth		1.5% Growth		1.75% Growth	
	Dir 1	Dir 2	Dir 1	Dir 2	Dir 1	Dir 2	Dir 1	Dir 2
Kenaston *(North of Grant)*	2	2	+1	+1	+1	+1	+1	+1
Kenaston *(Grant to McGillivray)*	2	2	+1	+1	+1	+1	+1	+1
Kenaston/Bishop Grandin *(McGillivray to Waverley)*	2	2	*	+1	+1	+1	+1	+1
Bishop Grandin *(East of Waverley)*	2	2	+1	+1	+1	+1	+2	+1
Bishop Grandin *(East of Pembina)*	2	2	+2	+2	+2	+2	+3	+2
Waverley *(Grant to McGillivray)*	2	2	*	*	+1	*	+1	+1
Waverley *(McGillivray to Bishop Grandin)*	2	2	+1	+1	+1	+1	+1	+1
Pembina *(North of Grant)*	3	3	+1	+1	+2	+2	+2	+2
Pembina *(Grant to McGillivray)*	3	3	+1	+1	+1	+1	+1	+1
Pembina *(McGillivray to Bishop Grandin)*	3	3	+1	+1	+1	+1	+1	+1
PTH 100 *(North of Roblin)*	2	2	*	*	*	*	*	+1

Note: Dir 1 = Northbound or Eastbound; Dir 2 = Southbound or Westbound
* = Demand met with existing supply
+1 = Number of lanes required over existing supply

Table A3: Waverley West Post-Development (High Estimate)

Street Link	Existing # of Lanes		1.25% Growth		1.5% Growth		1.75% Growth	
	Dir 1	Dir 2	Dir 1	Dir 2	Dir 1	Dir 2	Dir 1	Dir 2
Kenaston *(North of Grant)*	2	2	+1	+1	+1	+1	+1	+1
Kenaston *(Grant to McGillivray)*	2	2	+1	+1	+1	+2	+1	+2
Kenaston/Bishop Grandin *(McGillivray to Waverley)*	2	2	+1	+1	+1	+1	+1	+1
Bishop Grandin *(East of Waverley)*	2	2	+1	+1	+2	+1	+2	+2
Bishop Grandin *(East of Pembina)*	2	2	+2	+2	+2	+2	+3	+2
Waverley *(Grant to McGillivray)*	2	2	+1	*	+1	+1	+1	+1
Waverley *(McGillivray to Bishop Grandin)*	2	2	+1	+1	+1	+1	+2	+1
Pembina *(North of Grant)*	3	3	+2	+2	+2	+2	+2	+3
Pembina *(Grant to McGillivray)*	3	3	+1	+1	+1	+1	+1	+1
Pembina *(McGillivray to Bishop Grandin)*	3	3	+1	+1	+1	+1	+1	+1
PTH 100 *(North of Roblin)*	2	2	*	*	*	*	*	+1

Note: Dir 1 = Northbound or Eastbound; Dir 2 = Southbound or Westbound
* = Demand met with existing supply
+1 = Number of lanes required over existing supply

APPENDIX B

Executive Summary from Waverley West Plan Winnipeg Amendment Housing & Population Report

PREAMBLE

The purpose of this report is to determine whether there is a demand and need for additional Plan Winnipeg Neighbourhood Policy area lands in southwest Winnipeg.

The availability of lands for residential development within the City of Winnipeg – and especially those within the southwest quadrant – is nearing a critical juncture. There is an insufficient supply of serviceable building lots and apartment sites to support medium and long-term housing market demands in this quadrant of the city. This report identifies a need for additional "Neighbourhood Policy Area" lands to support Plan Winnipeg policies. With the exception of the Whyte Ridge subdivision, there have been no significant additions to the City's Neighbourhood Policy areas in southwest Winnipeg since 1968. The existing designated land areas, including Linden Woods, Whyte Ridge and Richmond West, are built-out or are nearing build-out conditions. Waverley West represents the logical extension of Neighbourhoods Policy Area lands in Fort Garry and southwest Winnipeg. Without its development and at present rates of growth, there will be almost no lots available for construction in the Fort Garry area within two years.

EXECUTIVE OVERVIEW

The overriding conclusion of this report is that there is very limited capacity within the existing inventories of available developable land and vacant lots to supply Winnipeg's medium and long-term housing needs. This is especially true in southwest Winnipeg. There is a need for additional "Neighbourhood Policy Area" lands for future residential development, regardless of the location within the city. Lands within Waverley West are capable of providing a significant component of this supply to meet projected demand. The availability of trunk services and access to major transportation infrastructure, as well as proximity to other residential neighbourhoods makes this area particularly suitable as a Neighbourhood Policy Area and for the development of new residential neighbourhoods.

The projected demand for new housing units – single and multiple family – within the City of Winnipeg ranges between 1,850 and 2,680 units per year over the next 20 years. This is an increase in the average number of new units constructed annually over the past decade. It is expected that residential construction in Waverley West would account for approximately 25-30% of this development. The remaining construction would occur in the other three quadrants, existing neighbourhoods, and downtown Winnipeg. The present Fort Garry market currently absorbs well over 30% of the city's new residential development, and Waverley West would represent the logical extension of this market as the existing developments reach full build-out.

Is the projected housing demand reasonable?

This report makes seven key assumptions in order to determine the projected demand for future housing in Winnipeg. Many of the assumptions represent cautious or conservative approaches with respect to suburban growth projections. The rationale for adopting this

approach was to ensure that the suburban growth scenarios met what would be considered the minimum demand criteria for determining the need for additional Neighbourhood Policy Area lands. In the event that the assumptions are too conservative, it does not change the conclusion that the Waverley West lands are required to meet the expected demand. A more aggressive suburban growth scenario would result in a shorter build-out schedule for the area than is discussed in this report.

Key Assumptions:

1. *Winnipeg's population will increase in the order of 18,600 persons by 2011, and 39,700 by 2021.* These figures are in keeping with Plan Winnipeg projections.

2. *Household size will decrease from the current average of 2.45 persons per household to 2.30 within ten years and remain constant thereafter.* This trend is widely accepted and is evident in most developed countries. The impact of the decrease in household size is equally important in contributing to demand for new housing, if not more so, as is an increase in population.

3. *Overall in the city, the ratio of construction between single-family homes and multi-family units will increase into the range of 65:35 and 70:30.* These ratios represent an increase in multi-family construction (including rental apartments and condo units). The existing single/multi-family split for Winnipeg is approximately 77:23.

4. *25% of new multi-family units will be built in downtown and city centre neighbourhoods.* This is significantly greater than existing residential development in the downtown. The traditional capture rate for downtown Winnipeg was in the order of 20%. However, between 1990-2000 the rate was near 0%.

5. *5% of all new single-family homes will be built on an infill basis in older established neighbourhoods.* This is more than a doubling of past and current trends. In recent years, about 2% of homes have been constructed on infill lots.

6. *Approximately 30% of the market share for suburban development will be in the southwest quadrant.* Since the early 1990s, the two southern quadrants of the city have captured close to 70% of the overall residential housing market for Winnipeg. Much of the new home construction in the northeast and northwest quadrants has actually occurred outside Winnipeg in the surrounding rural municipalities.

7. *The addition of 1,500 new rental units is required simply to restore some balance to the existing rental market by raising the vacancy rate into the 3% range.* Over the past ten years there have been almost no new conventional rental units constructed in the city. With a vacancy rate dropping to less than

1%, new units are likely to emerge and would boost multiple family developments.

KEY QUESTIONS ADDRESSED IN THIS REPORT

Is the current supply report accurate?

The City of Winnipeg Vacant Lot Inventory identifies approximately 6,000 vacant lots within the entire city. This in itself sounds like a significant supply; however, the inventory does not distinguish between developable lots and those that may not be suitable or easy to develop due to servicing constraints, marketability, and additional land use approval requirements. Even should all lots be developable, this would represent less than a five-year supply of lots, which would not adequately contribute to a sustainable and balanced residential market.

The availability of developable land within Winnipeg is affected by servicing constraints, marketability issues, and the degree of difficulty of land use approvals. Based on these factors, it is estimated that there are only approximately 1,200 existing lots available throughout the entire city that can be developed immediately or within a short time frame. Given the demonstrated demand for new housing units, the existing supply of readily developable land is expected to be able to supply the current need for less than two years in the southwest quadrant of the city.

Will the development of Waverley West be at the expense of infill development?

There is no evidence to support this. The report has accounted for an increasing level of development of infill housing in older neighbourhoods. It is expected that the market share for infill development will more than double to approximately 5%, accounting for an additional 80 to 100 new single-family dwellings per year in established neighbourhoods. The continued development of infill lots is expected to continue simultaneously with development in *greenfield* areas. A sustainable and balanced new home residential market requires a wide variety of choice – a choice of location; type; tenure, etc.

Will the development of Waverley West be at the expense of downtown and inner city development?

Development of the Waverley West area will not affect the continued redevelopment of downtown and established neighbourhoods. The type of single-family homes that will be built in Waverley West will serve a significantly different market than those housing units that may be developed on infill lots or in the downtown. This report acknowledges infill and downtown development to serve important niche markets.

In addition, this report includes assumptions that multi-family development will increase significantly in downtown and city centre neighbourhoods. This will bring the multi-family market share for the city centre back to 1980s levels, where the downtown and near downtown neighbourhoods captured roughly 20% of new multi-family unit construction.

Will the development of Waverley West be at the expense of other areas (quadrants) of the City of Winnipeg?

Historically, development within the city boundaries had been evenly divided between each of the four quadrants. More recently, market share in the south has increased while demand for new housing in the north has tended to occur outside the city's boundaries. Providing additional lands for development within the city will help to ensure that the market served by this type of development does not *leak* outside of Winnipeg into the adjacent rural municipalities.

Within the southwest quadrant, the Waverley West lands are readily serviceable and represent a logical extension of the city to accommodate natural growth patterns. Waverley West lands also provide the largest, and most contiguous source of new "Neighbourhood Policy Area" lands within Winnipeg city limits.

Will the development of Waverley West harm or enhance City of Winnipeg finances?

The analysis in this report suggests that the City of Winnipeg requires an average contribution of approximately $1,000 per household for ongoing city operations. This includes the cost of maintaining infrastructure such as streets and sewers, etc., as well as for capital works. It is expected that, on average, each household in Waverley West will generate approximately $2,200 in municipal tax revenue for the City (adjusted to a 2002 base year). This is more than double the City's annual per household operating cost. Regional capital works requirements directly and indirectly attributed to area development will be paid for by realty taxes paid by new residential property owners.

It is also important to note that the cost of developing the proposed subdivisions, including the construction of all local streets, sewers, watermains, parks, etc., are borne by the developer and paid for by the new homebuyers in the price of their houses.

Will the development of Waverley West be at the expense of the environment?

Development in Waverley West will incorporate Smart Growth principles as promoted by the City of Winnipeg's Civic Environmental Committee. In the present state, most of the land within Waverley West has already been altered by development, either through agriculture or development. New development in Waverley West proposes that 20% of the land area will be dedicated for parkland and natural areas – significantly greater than the City's minimum 8% requirement. Significant natural areas including tree stands and drainage patterns are to be integrated into the development. Innovative solutions will be sought to resolve direct environmental impacts.

The development objective for Waverley West is approximately 6 - 7 residential units per net developable acre, which is higher than most traditionally designed new suburbs, and is higher than many of Winnipeg's existing older residential neighbourhoods. Higher densities mean more people are using less land. A planned ratio of 65/35 for single family and multiple-family homes supports sustainable social design. The subdivision will be

laid out with transit service as critical design criteria and with integrated linear pathways for cycling and pedestrian use, focusing on mixed-use nodes.

Will the development of Waverley West add an unnecessary burden on the regional transportation system in southwest Winnipeg?

Growth that will add to the demands on the city's transportation system will occur whether Waverley West develops or not. The question is where the growth occurs and, therefore, where the demand will increase. If Waverley West does not develop and the growth is shifted to other quadrants in the city, the demands on the regional streets will rise elsewhere in the system. If the growth is shifted to rural areas outside of Winnipeg, there will be a corresponding increase of demand on the city's regional street system, but without the capture of new realty taxes to help pay for the system. The report demonstrates that without Waverley West, the demand for new suburban housing will not shift to inner city neighbourhoods or the downtown. The demand for these areas has been accounted for in other ways (25% capture of new multi-family units and 5% of new single family infill).

An additional comprehensive transportation impact review has been prepared for the Waverley West proposal as part of the Plan Winnipeg amendment process.

Is the development of Waverley West in accordance with Plan Winnipeg policy?

Waverley West represents a readily serviceable, logical extension of the city, perhaps to a greater extent than any previous development in the city. The following relevant Plan Winnipeg policies are supported by Waverley West:

3B-02 Guide the Development of New and Existing Residential Areas

3B-08 Regulate Land Uses in Rural Areas

3B-01 Promote Vibrant Neighbourhoods

3A-02 Promote Compact Urban Form

2B-03 Commit to Responsive Government

3A-01 Promote Orderly Development

3C-03 Commit to Traffic Operations Improvements

3A-04 Protect Traffic Flows from Significant Increases

1A-01 Promote Downtown Development

2A-01 Commit to Citizen Engagement

STEPS IN THE DEVELOPMENT PROCESS

The amendment to Plan Winnipeg 2020 Vision is the first step in the development process. The level of detail (subdivision designs, servicing plans, pedestrian plans, etc.) will increase as the process advances through additional steps. An Area Structure Plan will be developed to address the regional needs of this quadrant. Prior to Council's approval, this Area Structure Plan will be subject to public review and public hearing processes. The final step in the approval process involves the filing of specific subdivision and rezoning applications by individual landowners.

Step 1 – Plan Winnipeg Amendment (2003 – 2004)

- Deals with broad policy issues.

Step 2 – Adoption of Area Structure Plan (2004)

- Outlines design criteria and establishes land use and transportation concepts.

Step 3 – Subdivision and Rezoning Applications (starting 2004)

- Deals with individual landowner's applications for street and lot layouts and specific zoning designations for each parcel of land.

APPENDIX C

Lane Requirements by Direction

Appendix C – Lane Requirements

Table C1: Existing and Future Background Lane Requirements by Link

(i.e., without Waverley West Development)

Street Link	Existing # of Lanes		10-Year		20-Year		25-Year	
	Dir 1	Dir 2	Dir 1	Dir 2	Dir 1	Dir 2	Dir 1	Dir 2
Roblin *(PTH 100 to Grant)*	2	2	1	2	2	2	2	2
Grant *(Roblin to Kenaston)*	2	2	1	1	1	1	1	1
Grant *(Kenaston to Waverley)*	2	2	1	2	1	2	2	2
Grant (Waverley to Pembina)	2	2	1	1	2	1	2	2
McGillivray *(PTH 100 to Kenaston)*	1	1	1	1	1	1	1	1
McGillivray *(Kenaston to Waverley)*	1	1	1	1	1	1	1	1
McGillivray *(Waverley to Pembina)*	2	2	1	1	1	1	1	1
Kenaston *(North of Grant)*	2	2	2	2	2	2	***3***	***3***
Kenaston *(Grant to McGillivray)*	2	2	2	2	2	***3***	2	***3***
Kenaston/Bishop Grandin *(McGillivray to Waverley)*	2	2	2	2	2	2	2	2
Bishop Grandin *(East of Waverley)*	2	2	2	2	2	2	2	***3***
Bishop Grandin *(East of Pembina)*	2	2	***3***	***3***	***3***	***4***	***4***	***4***
Bison *(Waverley to Pembina)*	2	2	1	2	2	2	2	2
Chancellor Matheson *(East of Pembina)*	2	2	2	1	2	1	2	1
Waverley *(Grant to McGillivray)*	2	2	2	2	2	2	2	2
Waverley *(McGillivray to Bishop Grandin)*	2	2	2	2	***3***	2	***3***	2
Pembina *(North of Grant)*	3	3	3	3	***4***	***4***	***4***	***4***
Pembina *(Grant to McGillivray)*	3	3	3	3	3	3	3	3
Pembina *(McGillivray to Bishop Grandin)*	3	3	3	3	3	3	3	3
Pembina *(North of Bison)*	3	3	2	2	2	2	2	2
Pembina *(Bison to PTH 100)*	3	3	2	2	2	3	3	3
Pembina *(South of PTH 100)*	2	2	2	2	2	2	2	2
PTH 100 *(North of Roblin)*	2	2	2	2	2	2	2	2
PTH 100 *(South of Roblin)*	2	2	1	1	1	1	1	2
PTH 100 *(West of Waverley)*	2	2	1	1	1	1	1	1
PTH 100 *(East of Waverley)*	2	2	1	1	1	1	1	1
PTH 100 *(E of Pembina)*	2	2	2	2	2	2	2	2

Note: Dir 1 = Northbound or Eastbound; Dir 2 = Southbound or Westbound

3 = Lane requirement greater than the existing supply

Table C2: Future (Adjusted) Background Lane Requirements by Link – LOW Waverley West Traffic Estimate

Street Link	Existing # of Lanes		10-Year		20-Year		25-Year	
	Dir 1	Dir 2	Dir 1	Dir 2	Dir 1	Dir 2	Dir 1	Dir 2
Roblin *(PTH 100 to Grant)*	2	2	1	2	2	2	2	2
Grant *(Roblin to Kenaston)*	2	2	1	1	1	1	1	1
Grant *(Kenaston to Waverley)*	2	2	1	2	1	2	2	2
Grant (Waverley to Pembina)	2	2	1	1	2	2	2	2
McGillivray *(PTH 100 to Kenaston)*	1	1	1	1	1	1	1	1
McGillivray *(Kenaston to Waverley)*	1	1	1	1	1	1	1	1
McGillivray *(Waverley to Pembina)*	2	2	1	1	1	1	2	2
Kenaston *(North of Grant)*	2	2	2	2	2	2	***3***	***3***
Kenaston *(Grant to McGillivray)*	2	2	2	2	2	***3***	***3***	***3***
Kenaston/Bishop Grandin *(McGillivray to Waverley)*	2	2	2	2	2	***3***	2	***3***
Bishop Grandin *(East of Waverley)*	2	2	2	2	***3***	***3***	***3***	***3***
Bishop Grandin *(East of Pembina)*	2	2	***3***	***3***	***3***	***4***	***4***	***4***
Bison *(Waverley to Pembina)*	2	2	1	2	2	2	2	2
Chancellor Matheson *(East of Pembina)*	2	2	2	1	2	1	2	1
Waverley *(Grant to McGillivray)*	2	2	2	2	2	2	***3***	2
Waverley *(McGillivray to Bishop Grandin)*	2	2	2	2	***3***	2	***3***	***3***
Pembina *(North of Grant)*	3	3	3	3	***4***	***4***	***5***	***5***
Pembina *(Grant to McGillivray)*	3	3	3	3	3	3	***4***	***4***
Pembina *(McGillivray to Bishop Grandin)*	3	3	3	3	3	3	***4***	***4***
Pembina *(North of Bison)*	3	3	2	2	2	2	2	2
Pembina *(Bison to PTH 100)*	3	3	2	2	3	3	3	3
Pembina *(South of PTH 100)*	2	2	2	2	2	2	2	2
PTH 100 *(North of Roblin)*	2	2	2	2	2	2	2	2
PTH 100 *(South of Roblin)*	2	2	1	1	1	1	1	2
PTH 100 *(West of Waverley)*	2	2	1	1	1	1	1	1
PTH 100 *(East of Waverley)*	2	2	1	1	1	1	2	1
PTH 100 *(E of Pembina)*	2	2	2	2	2	2	2	2

Note: Dir 1 = Northbound or Eastbound; Dir 2 = Southbound or Westbound

3 = Lane requirement greater than the existing supply

Table C3: Post-Development Lane Requirements by Link – LOW Waverley West Traffic Estimate

Street Link	Existing # of Lanes		10-Year		20-Year		25-Year	
	Dir 1	Dir 2	Dir 1	Dir 2	Dir 1	Dir 2	Dir 1	Dir 2
Roblin *(PTH 100 to Grant)*	2	2	1	2	2	2	2	2
Grant *(Roblin to Kenaston)*	2	2	1	1	1	1	2	2
Grant *(Kenaston to Waverley)*	2	2	1	2	1	2	2	2
Grant (Waverley to Pembina)	2	2	1	1	2	2	2	2
McGillivray *(PTH 100 to Kenaston)*	1	1	1	1	1	1	1	1
McGillivray *(Kenaston to Waverley)*	1	1	1	1	1	1	1	1
McGillivray *(Waverley to Pembina)*	2	2	1	1	2	2	2	2
Kenaston *(North of Grant)*	2	2	2	2	***3***	***3***	***3***	***3***
Kenaston *(Grant to McGillivray)*	2	2	2	***3***	***3***	***3***	***3***	***3***
Kenaston/Bishop Grandin *(McGillivray to Waverley)*	2	2	2	2	2	***3***	***3***	***3***
Bishop Grandin *(East of Waverley)*	2	2	2	2	***3***	***3***	***3***	***3***
Bishop Grandin *(East of Pembina)*	2	2	***3***	***3***	***4***	***4***	***4***	***4***
Bison *(Waverley to Pembina)*	2	2	1	2	2	2	2	2
Chancellor Matheson *(East of Pembina)*	2	2	2	1	2	1	2	1
Waverley *(Grant to McGillivray)*	2	2	2	2	2	2	***3***	***3***
Waverley *(McGillivray to Bishop Grandin)*	2	2	***3***	2	***3***	2	***3***	***3***
Pembina *(North of Grant)*	3	3	***4***	3	***4***	***4***	***5***	***5***
Pembina *(Grant to McGillivray)*	3	3	3	3	***4***	***4***	***4***	***4***
Pembina *(McGillivray to Bishop Grandin)*	3	3	3	3	3	3	***4***	***4***
Pembina *(North of Bison)*	3	3	2	2	2	2	2	2
Pembina *(Bison to PTH 100)*	3	3	2	2	3	3	3	3
Pembina *(South of PTH 100)*	2	2	2	2	2	2	2	2
PTH 100 *(North of Roblin)*	2	2	2	2	2	2	2	2
PTH 100 *(South of Roblin)*	2	2	1	1	1	1	1	2
PTH 100 *(West of Waverley)*	2	2	1	1	1	1	1	1
PTH 100 *(East of Waverley)*	2	2	1	1	1	1	2	1
PTH 100 *(E of Pembina)*	2	2	2	2	2	2	2	2

Note: Dir 1 = Northbound or Eastbound; Dir 2 = Southbound or Westbound

3 = Lane requirement greater than the existing supply

Table C4: Future (Adjusted) Background Lane Requirements by Link – HIGH Waverley West Traffic Estimate

Street Link	Existing # of Lanes		10-Year		20-Year		25-Year	
	Dir 1	Dir 2	Dir 1	Dir 2	Dir 1	Dir 2	Dir 1	Dir 2
Roblin *(PTH 100 to Grant)*	2	2	1	2	2	2	2	2
Grant *(Roblin to Kenaston)*	2	2	1	1	1	1	2	2
Grant *(Kenaston to Waverley)*	2	2	1	2	1	2	2	2
Grant (Waverley to Pembina)	2	2	1	1	2	2	2	2
McGillivray *(PTH 100 to Kenaston)*	1	1	1	1	1	1	1	1
McGillivray *(Kenaston to Waverley)*	1	1	1	1	1	1	1	1
McGillivray *(Waverley to Pembina)*	2	2	1	1	2	2	2	2
Kenaston *(North of Grant)*	2	2	2	2	2	2	***3***	***3***
Kenaston *(Grant to McGillivray)*	2	2	2	2	2	***3***	***3***	***3***
Kenaston/Bishop Grandin *(McGillivray to Waverley)*	2	2	2	2	2	***3***	***3***	***3***
Bishop Grandin *(East of Waverley)*	2	2	2	2	***3***	***3***	***3***	***3***
Bishop Grandin *(East of Pembina)*	2	2	***3***	***3***	***3***	***4***	***4***	***4***
Bison *(Waverley to Pembina)*	2	2	1	2	2	2	2	2
Chancellor Matheson *(East of Pembina)*	2	2	2	1	2	1	2	1
Waverley *(Grant to McGillivray)*	2	2	2	2	2	2	***3***	2
Waverley *(McGillivray to Bishop Grandin)*	2	2	2	2	***3***	2	***3***	***3***
Pembina *(North of Grant)*	3	3	3	3	***4***	***4***	***5***	***5***
Pembina *(Grant to McGillivray)*	3	3	3	3	3	3	***4***	***4***
Pembina *(McGillivray to Bishop Grandin)*	3	3	3	3	3	3	***4***	***4***
Pembina *(North of Bison)*	3	3	2	2	2	2	2	2
Pembina *(Bison to PTH 100)*	3	3	2	2	3	3	3	3
Pembina *(South of PTH 100)*	2	2	2	2	2	2	2	2
PTH 100 *(North of Roblin)*	2	2	2	2	2	2	2	2
PTH 100 *(South of Roblin)*	2	2	1	1	1	1	1	2
PTH 100 *(West of Waverley)*	2	2	1	1	1	1	1	1
PTH 100 *(East of Waverley)*	2	2	1	1	1	1	2	1
PTH 100 *(E of Pembina)*	2	2	2	2	2	2	2	2

Note: Dir 1 = Northbound or Eastbound; Dir 2 = Southbound or Westbound

3 = Lane requirement greater than the existing supply

Table C5: Post-Development Lane Requirements by Link – HIGH Waverley West Traffic Estimate

Street Link	Existing # of Lanes		10-Year		20-Year		25-Year	
	Dir 1	Dir 2	Dir 1	Dir 2	Dir 1	Dir 2	Dir 1	Dir 2
Roblin *(PTH 100 to Grant)*	2	2	1	2	2	2	2	2
Grant *(Roblin to Kenaston)*	2	2	1	1	1	1	2	2
Grant *(Kenaston to Waverley)*	2	2	1	2	1	2	2	2
Grant (Waverley to Pembina)	2	2	1	1	2	2	2	2
McGillivray *(PTH 100 to Kenaston)*	1	1	1	1	1	1	1	1
McGillivray *(Kenaston to Waverley)*	1	1	1	1	1	1	1	1
McGillivray *(Waverley to Pembina)*	2	2	1	1	2	2	2	2
Kenaston *(North of Grant)*	2	2	2	2	***3***	***3***	***3***	***3***
Kenaston *(Grant to McGillivray)*	2	2	2	***3***	***3***	***3***	***3***	***4***
Kenaston/Bishop Grandin *(McGillivray to Waverley)*	2	2	2	2	***3***	***3***	***3***	***3***
Bishop Grandin *(East of Waverley)*	2	2	2	2	***3***	***3***	***4***	***3***
Bishop Grandin *(East of Pembina)*	2	2	***3***	***3***	***4***	***4***	***4***	***4***
Bison *(Waverley to Pembina)*	2	2	2	2	2	2	2	2
Chancellor Matheson *(East of Pembina)*	2	2	2	1	2	1	2	1
Waverley *(Grant to McGillivray)*	2	2	2	2	2	2	***3***	***3***
Waverley *(McGillivray to Bishop Grandin)*	2	2	***3***	2	***3***	***3***	***3***	***3***
Pembina *(North of Grant)*	3	3	***4***	***4***	***4***	***4***	***5***	***5***
Pembina *(Grant to McGillivray)*	3	3	3	3	***4***	***4***	***4***	***4***
Pembina *(McGillivray to Bishop Grandin)*	3	3	3	3	3	3	***4***	***4***
Pembina *(North of Bison)*	3	3	2	2	2	2	2	2
Pembina *(Bison to PTH 100)*	3	3	2	2	3	3	3	3
Pembina *(South of PTH 100)*	2	2	2	2	2	2	2	2
PTH 100 *(North of Roblin)*	2	2	2	2	2	2	2	2
PTH 100 *(South of Roblin)*	2	2	1	1	1	1	1	2
PTH 100 *(West of Waverley)*	2	2	1	1	1	1	1	1
PTH 100 *(East of Waverley)*	2	2	1	1	1	1	2	1
PTH 100 *(E of Pembina)*	2	2	2	2	2	2	2	2

Note: Dir 1 = Northbound or Eastbound; Dir 2 = Southbound or Westbound

3 = Lane requirement greater than the existing supply