3.0 PROPOSED DEVELOPMENT

3.1 CORE FIRE HALL

The proposed fire hall will be a two story building with four (4) emergency vehicle bays in the west half of the first floor. To take advantage of the terrain of the interchange loop which reduces in elevation toward the east property limit, parking will be located on the east side of the development beneath the first floor. Twenty-one (21) employee parking stalls will be provided on-site. Garbage pickup will be located at the rear of the building, behind the northwest corner. A service vehicle parking spot will also be provided at the rear of the building.

As originally proposed, the Core Fire Hall also has a museum display on the southeast corner of the building that is visible from both Portage Avenue and Century Street. To accommodate visitors (i.e. school field trips), bus parking will be provided immediately west of the emergency vehicle exit onto Portage Avenue.

3.2 PROPOSED ACCESS

As originally proposed, the Core Fire Hall will include three separate accesses:

- A right in/out driveway on Portage Avenue for employee and delivery access,
- A one-way southbound exit onto Portage Avenue for emergency vehicles only,
- A one-way southbound entrance located on the westbound to southbound off-ramp loop on the north side of the site for returning emergency vehicles.

Both driveways off Portage Avenue will be located in the middle of a weaving area between interchange on and off ramps. The rear access requires construction of an access lane located between the southbound to Queen Street off-ramp from Century Street and the westbound to southbound loop ramp from Portage Avenue. This lane will provide access to the rear of the fire hall site for traffic on both northbound Queen Street and on the southbound to Queen Street off-ramp from Century Street. All traffic using this access lane would be required to stop and wait for a gap in loop ramp traffic before crossing the westbound to southbound loop to enter the Core Fire Hall site on the north side of the development.

The originally proposed access for the Core Fire Hall is illustrated in Figure 3.1 and summarized below:

3.2.1 Outbound Emergency Traffic

All outbound emergency vehicles will exit from the one-way southbound emergency access onto Portage Avenue. This allows the following movements for emergency vehicles:

- An immediate right turn allows access to the west.

- A median cut on Portage Avenue across from the emergency exit allows access to the east, and access to the south via the eastbound to southbound off-ramp from Portage Avenue to Century Street.
- Emergency traffic travelling to the north will exit onto Portage Avenue and then use Queen/Berry Street and/or St. James Street.

To allow emergency vehicles to exit the Core Fire Hall safely and efficiently, emergency activated signals are proposed for Portage Avenue. These would be activated from within the fire hall and will stop all east and westbound traffic on Portage Avenue for sufficient time to allow emergency vehicles to exit the site eastbound/westbound on Portage Avenue or southbound on Century Street. Signal heads will face eastbound/westbound traffic on Portage Avenue and the southbound emergency vehicle exit will be controlled with a stop sign.

3.2.2 Inbound Emergency Traffic

All inbound emergency vehicle traffic will re-enter the site via a one-way southbound access located on the north side of the development off the westbound to southbound Portage Avenue off-ramp:

- All emergency vehicles approaching from the east would use the westbound to southbound off-ramp from Portage Avenue and then make a right turn into the north access.
- Emergency vehicles approaching from the south would use the northbound to westbound on-ramp to Portage Avenue and continue westerly to the westbound to southbound off-ramp from Portage Avenue and make a right turn into the north access.
- Emergency vehicles approaching from the west on Portage Avenue would make a left turn onto Queen Street and use the proposed access lane located between the southbound Century Street to Queen Street off-ramp and the westbound to southbound Century Street off-ramp from Portage Avenue. This will require modification of the AM peak eastbound left turn prohibition at the Queen Street and Portage Avenue intersection. The prohibition must be removed or modified to allow this movement by emergency vehicles.
- All emergency vehicles approaching from the from the north would exit Century Street using the southbound to Queen Street off-ramp and turn onto the proposed access lane before waiting to cross the westbound to southbound loop ramp.

The access lane off Queen Street and off the southbound Century Street exit ramp would be signed for emergency vehicles only. Use by all other vehicles traffic would be prohibited.

3.2.3 Employee/Delivery Access

All staff and delivery vehicles would enter using the right in/out driveway on Portage Avenue. Left turns from this driveway through the proposed median opening would be prohibited.

As originally proposed the garbage pickup is located on the north side of the site. This requires garbage trucks to access the site using the rear entrance from the loop ramp and exit onto the same ramp heading southbound on Century Street. Use of the proposed access lane by garbage trucks would be prohibited.

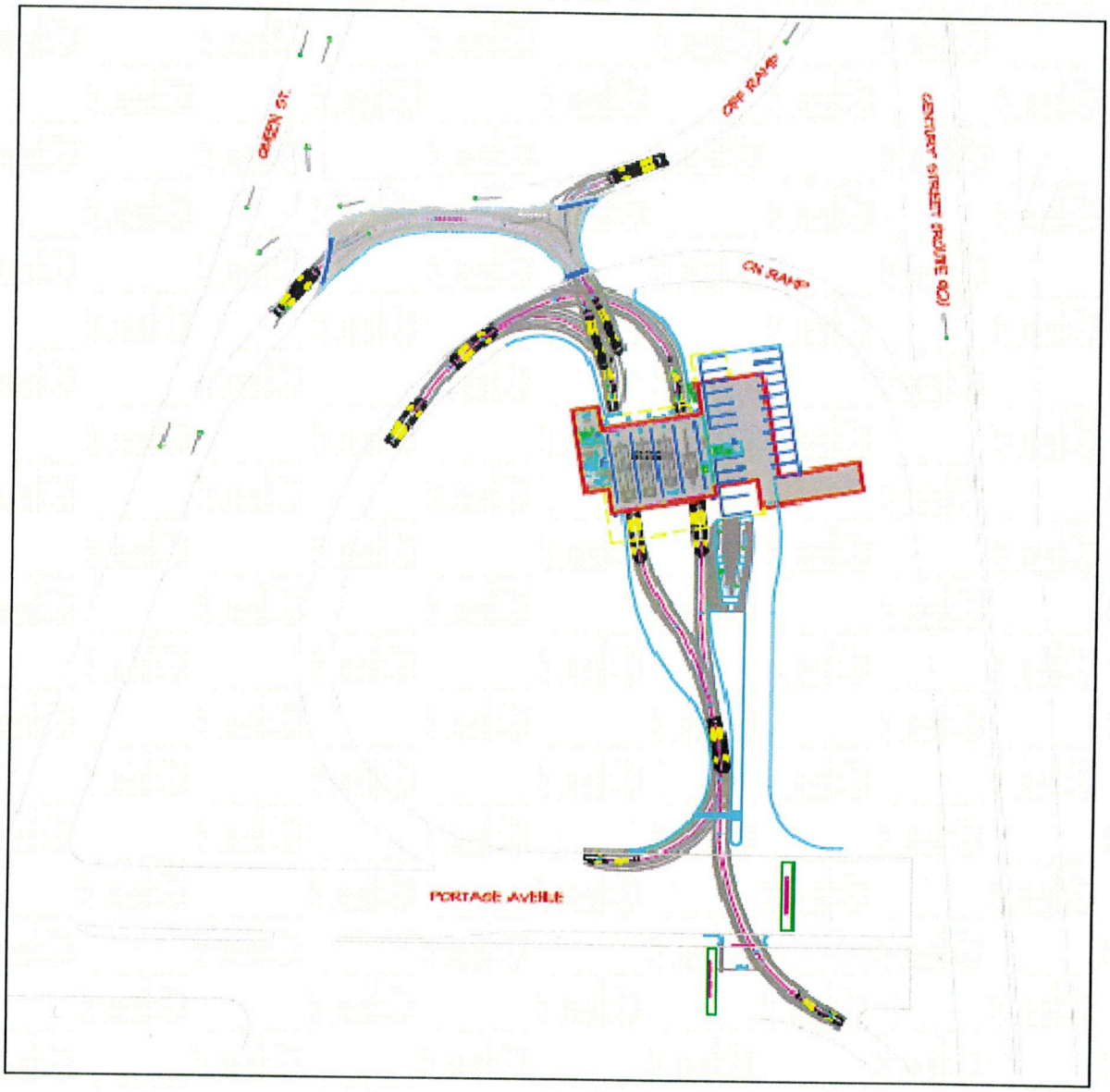

Figure 3.1: Proposed Site Access

4.0 EXISTING TRAFFIC CONDITIONS

4.1 EXISTING TRAFFIC VOLUMES

In order to determine existing traffic conditions within the study area, intersection turning movement counts (TMC) were provided by the City of Winnipeg at the locations listed below:

- Portage Avenue at Queen Street (June 16, 2010)
- Portage Avenue at St. James Street (March 14, 2011)

Only PM peak counts were included in the analysis as they represent the busiest traffic period in the study area. Vehicle classification counts were included in the data provided and used to determine the amount of heavy vehicle traffic at existing intersections. The City also provided 2009 PM peak interchange ramp traffic data developed as part of the on-going Kenaston Boulevard study being conducted by MMM. This data was used in conjunction with the intersection TMC to develop pre-development peak hour traffic volumes for the study area.

Since traffic volume on commuter routes in urban areas is usually consistent throughout the year, seasonalization of the TMC data was considered unnecessary. In addition, there has been no significant area development in the past year and the June 2010 count at Queen Street was assumed to represent existing traffic conditions. Similarly the 2009 ramp intersection volumes were assumed to represent existing traffic volumes.

All count data used in the analysis is provided in *Appendix A.*

4.2 PEAK HOUR TRAFFIC VOLUME

The existing PM peak hour traffic volumes at intersection within the study area are illustrated in Figure 4.1.

4.2.1 Peak Hour Factor

Based on the TMC data, individual peak hour factors (PHF) were calculated for each intersection and are listed in Table 4.1. Since no 15 minute interval count data was available for ramp intersections, a PHF of 0.96 was assumed for all interchange ramps. These PHF were used to analyze existing traffic conditions.

Table 4.1: Intersection Peak Hour Factors – PM Peak

Study Area Intersection	PM Peak PHF
Portage Avenue at Queen Street	0.96
Portage Avenue at St. James Street	0.96

4.2.2 Traffic Volume Expansion

Because the available peak hour traffic volumes were collected in different years they must be expanded to develop existing (2011) traffic conditions. Similarly, the volumes must be expanded to 2012 to project background traffic conditions for the expected completion of the Core Fire Hall.

Based on similar studies in the surrounding area, an average annual growth rate of 1.0% was assumed. Equation (a) listed below was used to develop expansion factors applicable to the available count data year.

$$E_f = (1 + G_r)^n \qquad \text{equation (a)}$$

where: E_f = expansion factor
G_r = annual growth rate
n = no. of years

4.2.3 Traffic Volume Balancing

Because there are various commercial establishments and local streets between the intersections of Portage Avenue at Queen Street and St. James Street, traffic volume balancing between the two intersections was not considered necessary. The commercial land uses and local street intersections along Portage Avenue will act as sources/sinks of vehicle trips and will account for the unbalanced volumes between the two.

4.2.4 Design Year Traffic Volume

The 2012 PM peak Pre-Development design year traffic volume at study area intersections is provided in Figure 4.2. The annual 1.0% growth rate was also used to develop 2022 pre-development volumes to allow a 10 year design horizon. The 2022 design year traffic is illustrated in Figure 4.3.

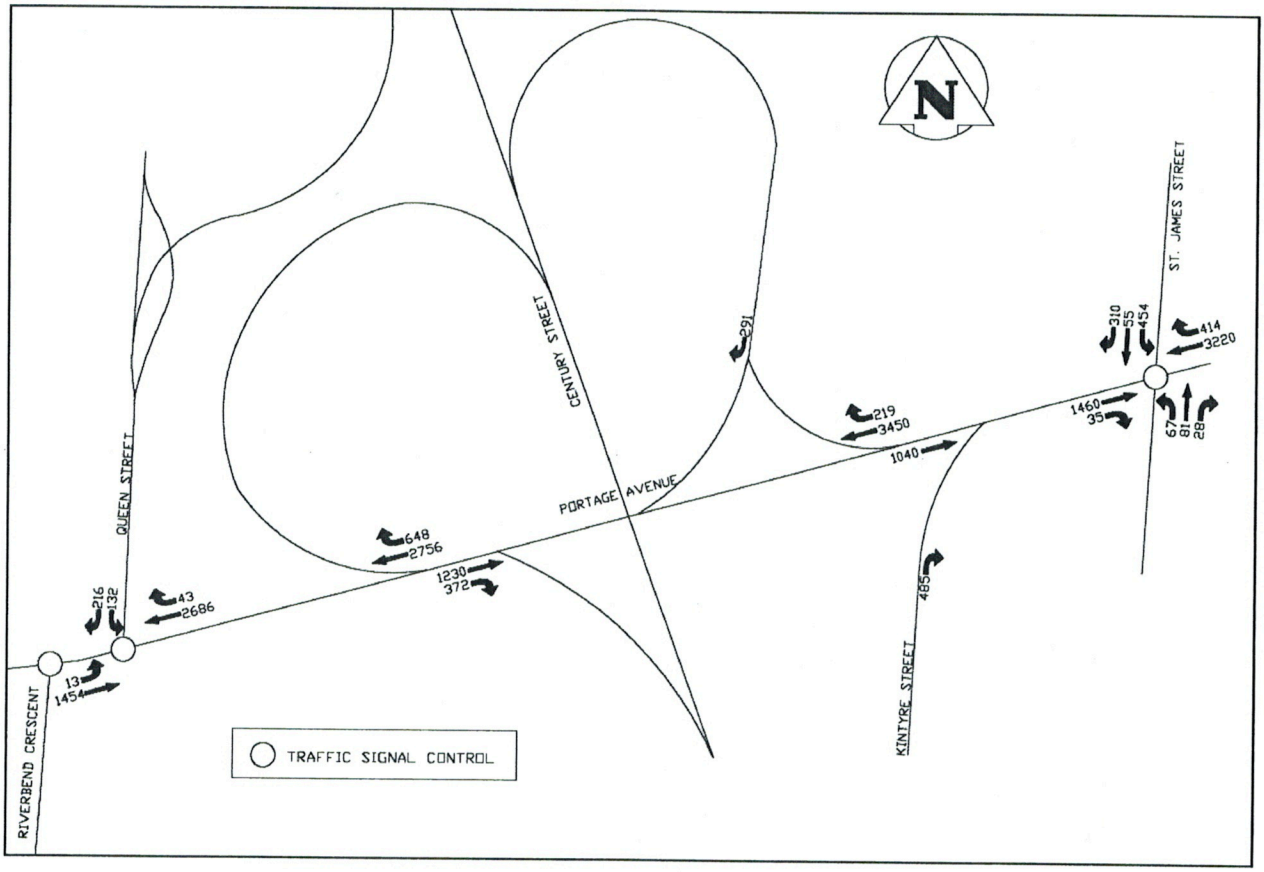

Figure 4.1: 2011 PM Peak Existing Traffic Conditions

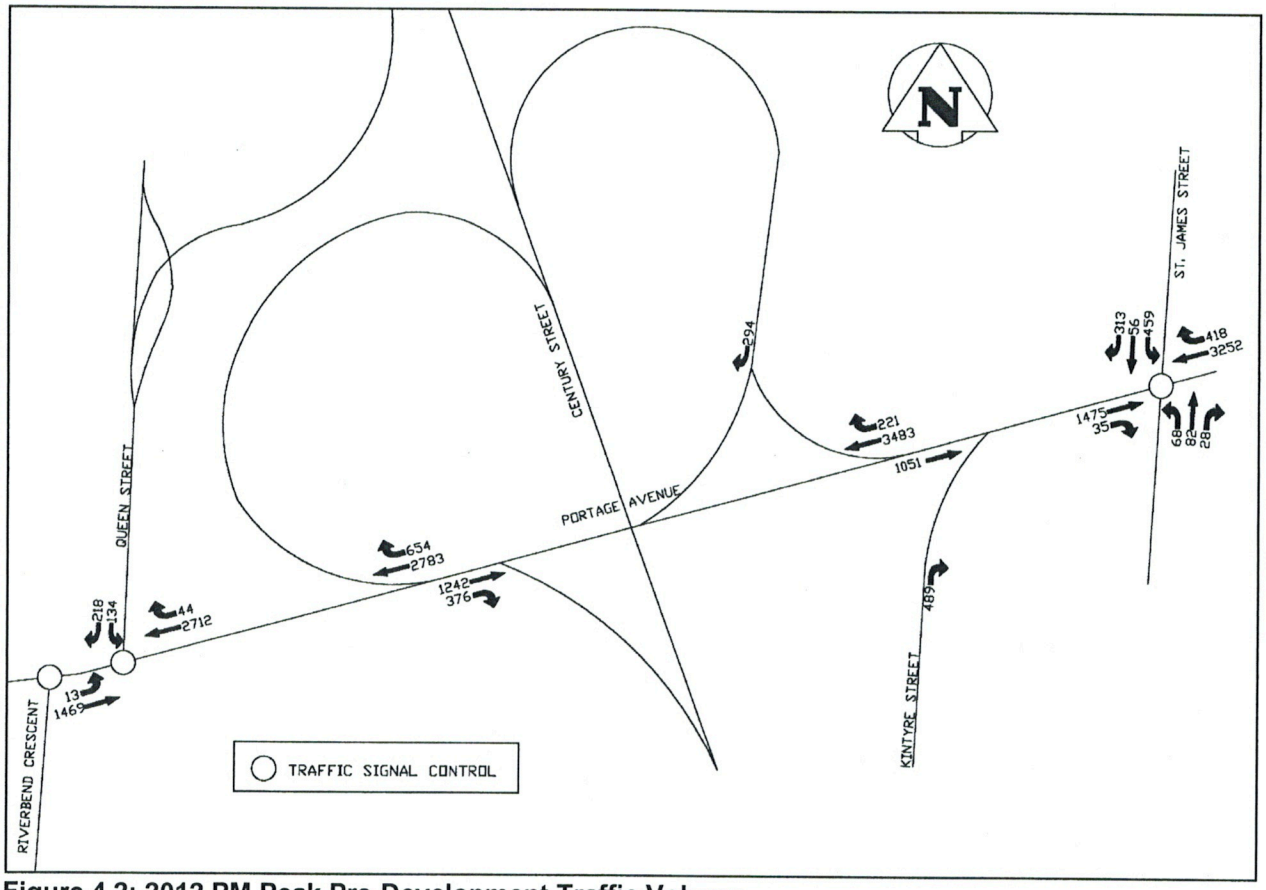

Figure 4.2: 2012 PM Peak Pre-Development Traffic Volume

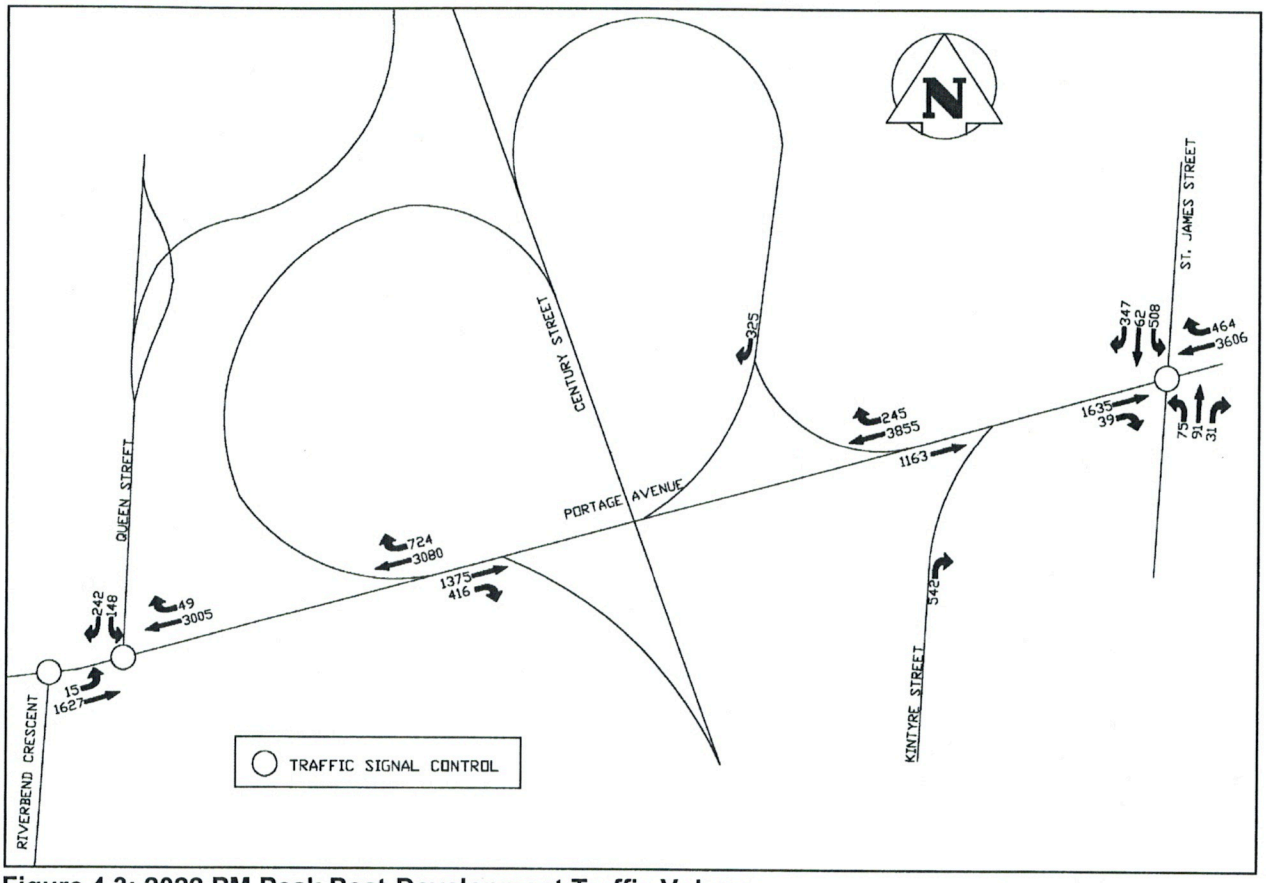

Figure 4.3: 2022 PM Peak Post-Development Traffic Volume

5.0 DEVELOPMENT TRIP GENERATION

5.1 TRIP GENERATION

Based on information provided by Winnipeg Fire Paramedic Service (WFPS), the number of employees at the proposed Core Fire Hall will be approximately 15 per shift. Emergency staff work 10 to 14 hour shifts with start and end times that typically do not coincide with peak traffic on the adjacent streets. Because of the low number of employee trips during peak periods, it was assumed that employee generated traffic would not significantly impact traffic operations during the AM and PM peak. Similarly, deliveries to the fire hall will likely be infrequent and can be scheduled to avoid peak traffic periods on the adjacent streets.

However, with the proposed emergency activated signals emergency response during peak traffic periods will disrupt traffic operations on Portage Avenue. Similarly, emergency vehicle return trips will impact operations on the westbound to southbound loop ramp during congested traffic periods. The number of fire related emergency dispatches in 2010 responded to by the existing Station 11 fire hall on Berry Street was provided by WFPS and is listed in Table 5.1 and illustrated in Figure 5.1.

Table 4.1: 2010 Responses from Station 11 – All Fire Calls

Unit	NW (North of Assiniboine River and west of Route 90)	NE (North of Assiniboine River and east of Route 90)	South (South of Assiniboine River)	Total Dispatches
E11	390	409	307	1,106
R11	820	357	511	1,688
Station 11 Total	**1,210**	**766**	**818**	**2,794**

In discussions with WFPS, based on projected needs over the life of the new Core Fire Hall it is expected that the response rate for both fire and medical emergencies could increase to as much as 6,000 – 7,000 per year. Since these calls are random throughout the day it is difficult to determine how many are likely to occur during peak traffic periods.

On an average basis with 7,000 dispatches per year we can expect 19 calls per day or 0.8 calls per hour. In order to be conservative, this was increased to a maximum of three (3) calls during the PM peak to gauge the impact of operating the Portage Avenue emergency signal on traffic operations.

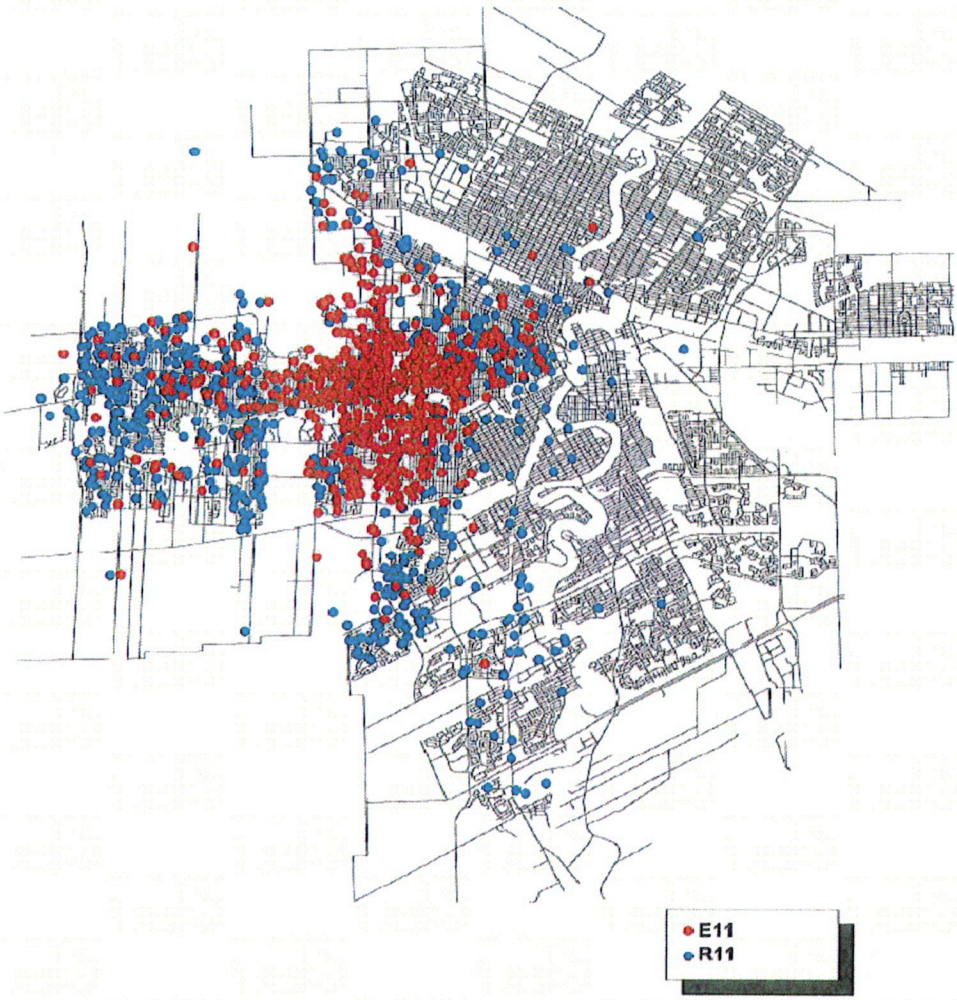

Figure 5.1: 2010 Response from Station 11 – All Fire Calls

5.2 TRIP DIRECTIONAL DISTRIBUTION

The directional distribution of emergency response trips was predicted by analyzing the existing dispatch patterns for the Berry Street fire hall and based on discussions with WFPS. These discussions indicate additional calls to the north River Heights area are anticipated as a result of relocating the existing Grosvenor Fire Hall to Taylor Avenue. The resulting trip distribution is as follows:

- North and west of the proposed site using Portage Avenue, 33%
- North and east of the proposed site using Portage Avenue, 33%
- South of the proposed site using Century Street, 33%

5.3 DESIGN YEAR TRAFFIC VOLUMES

The expected maximum of 3 emergency dispatches during the PM peak hour was added to the 2012 and 2022 pre-development volume using the trip directional distribution listed above to allow analysis of the impact on traffic operations.