GATEWAY LAND CORPORATION PTY LTD

TRAFFIC REPORT FOR BATHURST INTERMODAL TERMINAL PROPOSED MODIFICATIONS TO CONCEPT APPROVAL

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TABLE OF CONTENTS

1. INTRODUCTION

1.1 Colston Budd Hunt and Kafes Pty Ltd has been commissioned by Gateway Land Corporation Pty Ltd to prepare a report examining the traffic implications of proposed modifications to the Concept Plan Approval for the Bathurst intermodal terminal.

1.2 Concept Plan Approval 05_0047 has been granted for the site which includes:

- an intermodal terminal and warehousing facilities (some 47,275m^2);
- terminal support facilities (some 2,865m^2);
- mixed bulky goods/highway based uses and a service station (some 11,770m^2); and
- vehicular access from Great Western Highway in three locations, including a signalised intersection at Ashworth Drive.

1.3 The proposed modifications include:

- minor reduction in the area of the intermodal terminal and warehousing facilities (to some 46,240m^2);
- reduction in the area of the terminal support facilities (to some 2,080m^2);
- modifications to the lot layout for the bulky goods/highway based uses and changing two of these lots to fast food uses (approved area of 11,770m^2 would be unchanged);
- reconfiguring the internal road circulation and layout; and

- changing the eastern access point on Great Western Highway to left in/left out, compared to the approved left out only.

1.4 The implications of the proposed modifications are assessed in the following chapter.

2. IMPLICATIONS OF PROPOSED MODIFICATIONS TO CONCEPT APPROVAL

2.1 Our assessment of the implications of the proposed modifications is set down through the following sections:

- site location and existing road network;
- approved development;
- proposed modifications;
- parking provision;
- access, servicing and internal layout;
- traffic generation and effects; and
- summary.

Site Location and Existing Road Network

2.2 The site is located on the southern side of the Great Western Highway at Kelso, east of Bathurst. It is largely vacant. Vehicular access is provided from Great Western Highway. The site has some 900 metres frontage to Great Western Highway, and is shown in Figure 1.

2.3 There is a motel and bulky goods developments north of the site, on the northern side of the Great Western Highway. Further to the north, accessed from Ashworth Drive, there is a new residential subdivision. Other land use in the vicinity of the site is largely commercial or industrial along the highway. The Bathurst town centre is some four kilometres west of the site. The Great Western Railway bounds the southern side of the site.

2.4 The road network in the vicinity of the site includes Great Western Highway and Ashworth Drive. Great Western Highway provides a major connection through New South Wales, connecting Sydney with Katoomba, Lithgow and Bathurst. In the vicinity of the site it provides for one traffic lane in each direction with sealed shoulders. There is a 60 kilometre per hour speed limit along the western part of the site and an 80 kilometre per hour speed limit along the eastern part of the site. There is a bus stop for westbound buses west of the site.

2.5 Ashworth Drive intersects Great Western Highway approximately half way along the site frontage. The intersection of Ashworth Drive with the highway is an unsignalised t-intersection. There is a left turn slip lane on the highway for turns into Ashworth Drive, and an auxiliary lane for westbound traffic on the highway to overtake a vehicle turning right into Ashworth Drive. Ashworth Drive provides for one traffic lane and one parking lane in each direction, clear of intersections. It provides access to a bulky goods development, the motel and residential development further north. There is a bus stop for southbound services near the highway.

Approved Development

2.6 Concept Plan Approval 05_0047 has been granted for the site which includes:

- an intermodal terminal and warehousing facilities (some 47,275m^2);
- terminal support facilities (some 2,865m^2);
- mixed bulky goods/highway based uses and a service station (some 11,770m^2); and
- vehicular access from Great Western Highway in three locations, including a signalised intersection at Ashworth Drive.

Proposed Modifications

2.7 The proposed modifications include:

- minor reduction in the area of the intermodal terminal and warehousing facilities (to some 46,240m^2);
- reduction in the area of the terminal support facilities (to some 2,080m^2);
- modifications to the lot layout for the bulky goods/highway based uses and changing two of these lots to fast food uses (approved area of 11,770m^2 would be unchanged);
- reconfiguring the internal road circulation and layout; and
- changing the eastern access point on Great Western Highway to left in/left out, compared to the approved left out only.

Parking Provision

2.8 Bathurst Regional Council's Off-Street Car Parking Code includes the following parking requirements for development:

- general business (retail shops) – one space per 35m^2 GFA;
- motor showrooms – one space per 95m^2 display area plus one space per employee;
- service stations – one space per employee plus 10 spaces;
- warehouses – one space per 300m^2; and
- no rates for fast food although refreshment rooms are the higher of one space per 50m^2 or one space per six seats.

2.9 By comparison, the RTA's "Guide to Traffic Generating Developments" suggests the following parking requirements:

- bulky goods – one space per 53m^2 GLA;
- motor showrooms – one space per 133m^2 site area;
- service stations – five spaces per 100m^2 of convenience store plus parking for employees;
- warehouses – one space per 300m^2 GFA; and
- fast food with internal and external seating and drive through – one space per three seats (internal plus external).

2.10 Parking will be provided in accordance with Council and/or RTA rates, subject to tenant requirements to be determined at the time that applications are lodged for individual buildings.

Access, Servicing and Internal Layout

2.11 Vehicular access from the signalised intersection on Great Western Highway at Ashworth Drive is not proposed to change. A right turn bay and left turn lane will be provided on Great Western Highway to facilitate turns into the site at this access point. Access from the western end of the site, via a left in/left out arrangement, will also be retained.

2.12 Near the eastern end of the site, the approved point of access on Great Western Highway is proposed to be modified to left in/left out, compared to the approved left out only. This will provide better access to lots on the eastern side of the site.

2.13 Deceleration lane lengths will be provided in accordance with Austroads "Guide to Traffic Practice" (Part 5 – Intersections at Grade).

2.14 Inside the site, roads will be dedicated to Council and will generally be provided with 22 metre reserves, including 13 metre carriageways with 4.5 metre verges on each side. These widths are identified for industrial roads in Council's engineering guidelines.

2.15 The amended concept plan includes roundabouts and turning circles are proposed to be provided in a number of internal locations to facilitate circulation and access to individual sites. These will be designed to accommodate turning and circulation by semi trailers and b-doubles which will service the development.

2.16 Access locations to individual lots from roads within the development will be finalised at the time that applications are made for individual buildings. The amended concept plan includes rights of carriageway to serve a number of the internal lots, including lots 1 (bulky goods), A, B, C, D, E, G (warehousing) and IMT.A (intermodal terminal lot).

2.17 Similarly, internal circulation and layout for each lot will be determined at the time that applications are made for the development of each lot. However, internal layouts for each lot will provide parking and service vehicle areas designed in accordance with the Australian Standard for Parking Facilities (Part 1: Off-street car parking and Part 2: Off-street commercial vehicle facilities), AS 2890.1:2004 and AS 2890.2 – 2002, with respect to access driveway widths, parking space dimensions, aisle widths and loading and manoeuvring areas.

Traffic Generation and Effects

2.18 The traffic report[1] submitted with the Environmental Assessment for the Concept Plan Approval assessed a traffic generation of some 200 vehicles per hour two-way during weekday morning and afternoon peak hours. This was based on:

- some 170 vehicles per hour two-way for the highway frontage uses (11,250m^2, including bulky goods and warehousing);
- some 30 vehicles per hour two-way for the warehousing and freight terminal (50,140m^2 including 47,275m^2 warehousing and 2,865m^2 freight terminal building); and
- minor traffic for the service station (520m^2).

2.19 Traffic generated by the proposed modifications (the fast food outlets) will have its greatest effects during weekday afternoon and Saturday lunchtime peak periods when it combines with retail and commuter traffic. In order to gauge traffic conditions, counts were undertaken during Friday afternoon and Saturday periods at the intersection of Great Western Highway with Ashworth Drive.

2.20 The results of the surveys are shown in Figures 2 and 3 and summarised in Table 2.1. Great Western Highway carried some 1,100 to 1,300 vehicles per hour two-way during the Friday afternoon and Saturday lunchtime peak hours. Ashworth Drive, during the same peak hours, carried lower flows of less than 200 vehicles per hour two-way.

[1] Traffic and Parking Report for the Central West Regional Road/Rail Freight Terminal at Great Western Highway, Kelso, Bathurst. Prepared for Mellor Gray by GSA Planning Pty Ltd, January 2006.

Table 2.1: Existing two-way (sum of both directions) peak hour traffic flows			
Road	**Location**	**Friday afternoon**	**Saturday lunchtime**
Great Western Highway	East of Ashworth Drive	1,160	1,085
	West of Ashworth Drive	1,260	1,175
Ashworth Drive	North of Great Western Highway	150	130

2.21 The RTA guidelines indicate design traffic generation rates for fast food restaurants of some 100 (for a KFC) to 180 (for a McDonald's) vehicles per hour two-way during weekday afternoon peak periods. While final uses are unknown at this stage, we have adopted 280 vehicles per hour two-way for the two fast food uses, for both the weekday afternoon and Saturday. Some 35 to 50 per cent of fast food traffic would be passing trade.

2.22 We have adopted 200 vehicles per hour two-way for the highway frontage uses, warehousing and freight terminal (for both the Friday and Saturday), as assessed in the previous traffic report for the approved development on the site. The minor reductions in warehouse area (some 1,035m^2) and terminal support facilities (some 785m^2) would not result in a significant change in traffic generation, compared to that previously assessed.

2.23 Based on 35 to 50 per cent of fast food traffic being passing trade, the net increase would be some 140 to 180 vehicles per hour two-way during the weekday afternoon and Saturday peak hours respectively. We have used 160 vehicles per hour. Making an allowance of some 20 vehicles reduction for the approved uses that are being replaced by the two fast food restaurants, the additional traffic generation would be some 140 vehicles per hour, compared to the approved development.

2.24 The additional traffic has been assigned to the road network, as shown in Figures 4 and 5, and summarised in Table 2.2.

Table 2.2: Two-way peak hour traffic flows

Road	Location	Friday afternoon		Saturday lunchtime	
		Existing including approved concept plan	Plus proposed modifications	Existing including approved concept plan	Plus proposed modifications
Great Western Highway	East of Ashworth Drive	1,240	-15	1,165	-15
	West of Ashworth Drive	1,370	+55	1,285	+55
Ashworth Drive	North of Great Western Highway	160	+10	140	+10

2.25 The capacity of the road network is largely determined by the capacity of its intersections to cater for peak period traffic flows. The intersections shown in Figures 4 and 5 have been analysed using the SIDRA program.

2.26 SIDRA simulates the operations of intersections to provide a number of performance measures. The most useful measure provided is average delay per vehicle expressed in seconds per vehicle.

2.27 Based on average delay per vehicle, SIDRA estimates the following levels of service (LOS):

- For traffic signals, the average delay per vehicle in seconds is calculated as delay/(all vehicles), for roundabouts the average delay per vehicle in seconds is selected for the movement with the highest average delay per vehicle, equivalent to the following LOS:

0 to 14	=	"A"	Good
15 to 28	=	"B"	Good with minimal delays and spare capacity
29 to 42	=	"C"	Satisfactory with spare capacity
43 to 56	=	"D"	Operating near capacity
57 to 70	=	"E"	At capacity and incidents will cause excessive delays. Roundabouts require other control mode.
>70	=	"F"	Unsatisfactory and requires additional capacity

- For give way and stop signs, the average delay per vehicle in seconds is selected from the movement with the highest average delay per vehicle, equivalent to following LOS:

0 to 14	=	"A"	Good
15 to 28	=	"B"	Acceptable delays and spare capacity
29 to 42	=	"C"	Satisfactory but accident study required
43 to 56	=	"D"	Near capacity and accident study required
57 to 70	=	"E"	At capacity and requires other control mode
>70	=	"F"	Unsatisfactory and requires other control mode

2.28 It should be noted that for roundabouts, give way and stop signs, in some circumstances, simply examining the highest individual average delay can be misleading. The size of the movement with the highest average delay per vehicle should also be taken into account. Thus, for example, an intersection where all movements are operating at a level of service A, except one which is at level of service E, may not necessarily define the intersection level of service as E if that movement is very small. That is, longer delays to a small number of vehicles may not justify upgrading an intersection unless a safety issue was also involved.

2.29 As previously discussed, the intersection of Great Western Highway with Ashworth Drive has been approved for signalisation. The analysis found that with signalisation and the additional traffic from the proposed modifications, the intersection would operate with average delays of less than 35 seconds per vehicle during the Friday afternoon and Saturday peak hours. This represents level of service C, a satisfactory level of service.

2.30 The left in/left out site access points on Great Western Highway near the eastern and western ends of the site would operate with average delays for the highest delayed movement of less than 15 seconds per vehicle during peak periods. This represents level of service A/B, a good level of service.

2.31 Therefore, with the approved signalisation of the intersection of Great Western Highway with Ashworth Drive, and the proposed left in/left out at the eastern site access, the road network will be able to cater for the additional traffic from the proposed modifications.

Summary

2.32 In summary, the main points relating to the traffic implications of the proposed modifications are as follows:

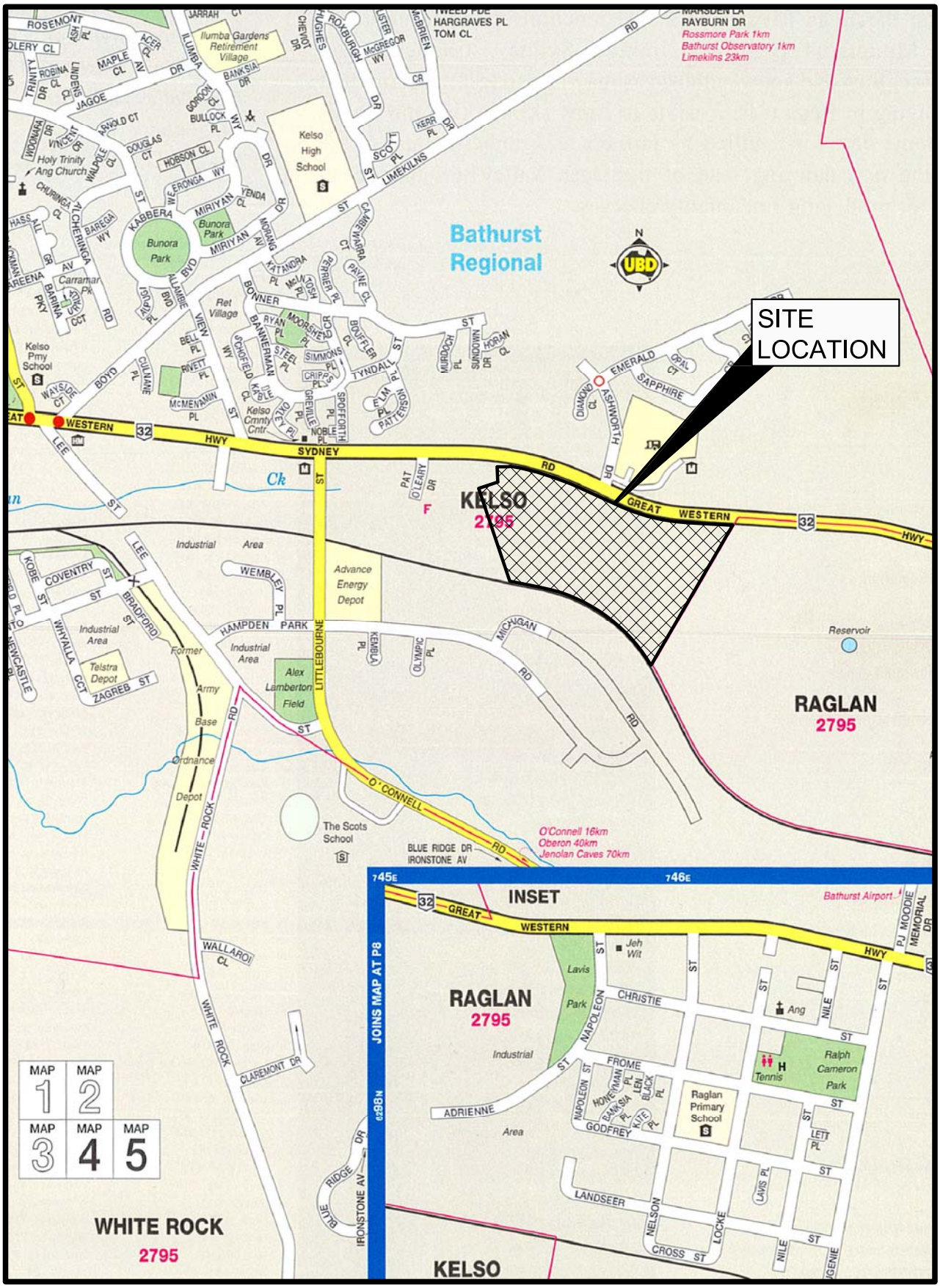
i) parking will be provided in accordance with appropriate Council and/or RTA rates at the time that applications are lodged for individual buildings;

ii) the approved eastern point of access on Great Western Highway is proposed to be modified to left in/left out;

iii) internal roads are proposed to be dedicated to Council;

iv) internal circulation and layout for each lot will be provided in accordance with AS 2890.1:2004 and AS 2890.2 – 2002 at the time that applications are lodged for individual buildings;

v) with the approved signalisation of the main site access at Great Western Highway/Ashworth Drive, and the proposed left in/left out at the eastern site access, the road network will be able to cater for the additional traffic from the proposed modifications.



LOCATION PLAN

1

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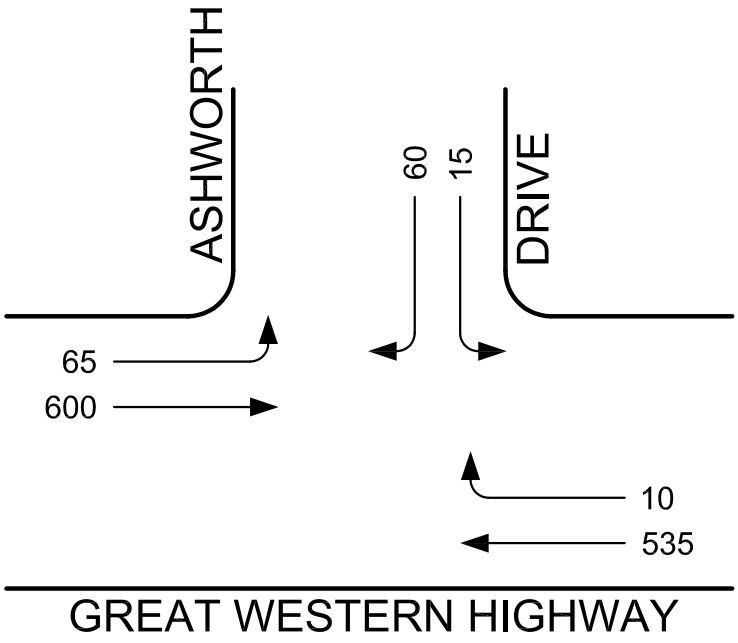

EXISTING FRIDAY AFTERNOON
PEAK HOUR TRAFFIC FLOWS

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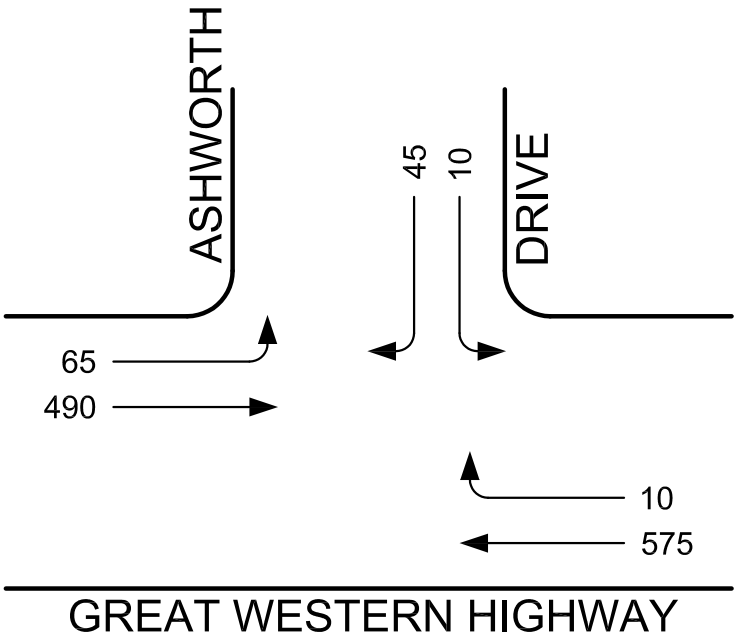

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EXISTING SATURDAY MIDDAY
PEAK HOUR TRAFFIC FLOWS

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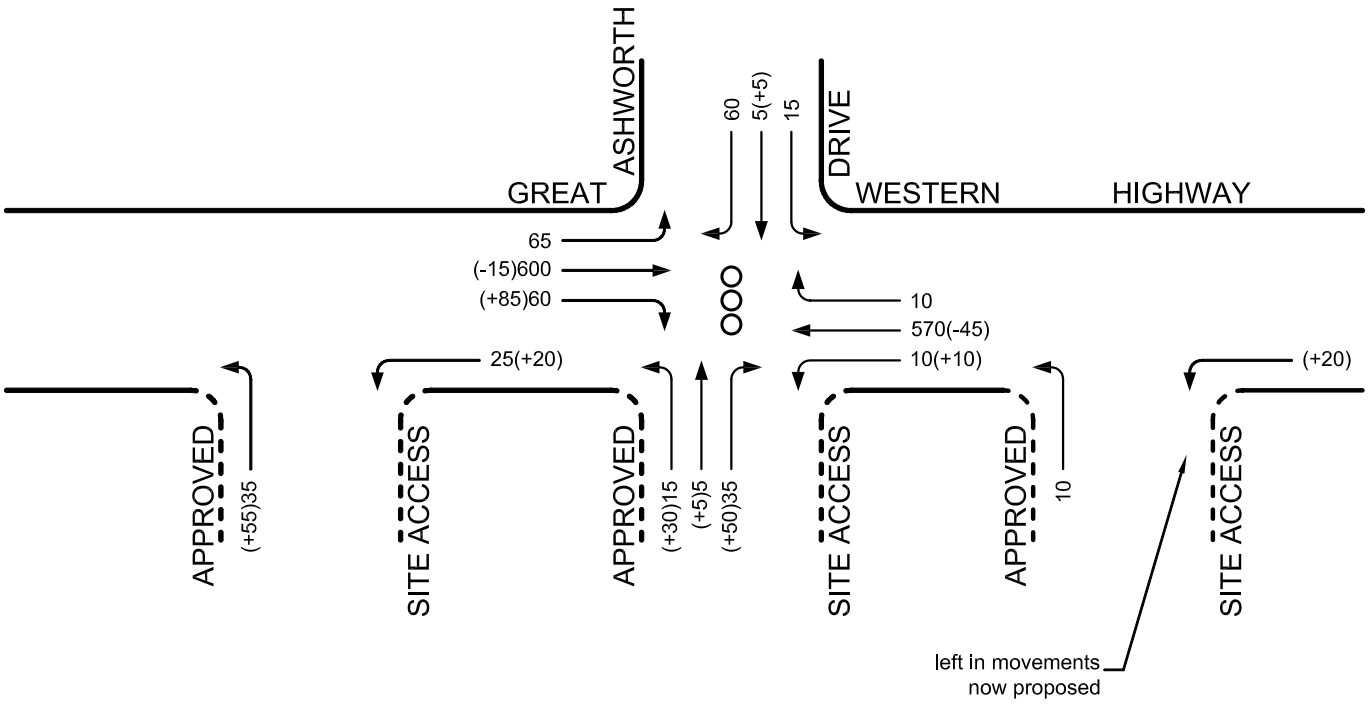

N

LEGEND

100 - Existing Peak Hour Flows including approved concept plan traffic

(+10) - Additional Development Traffic

- Approved Traffic Signals

FRIDAY AFTERNOON PEAK HOUR TRAFFIC FLOWS PLUS DEVELOPMENT TRAFFIC

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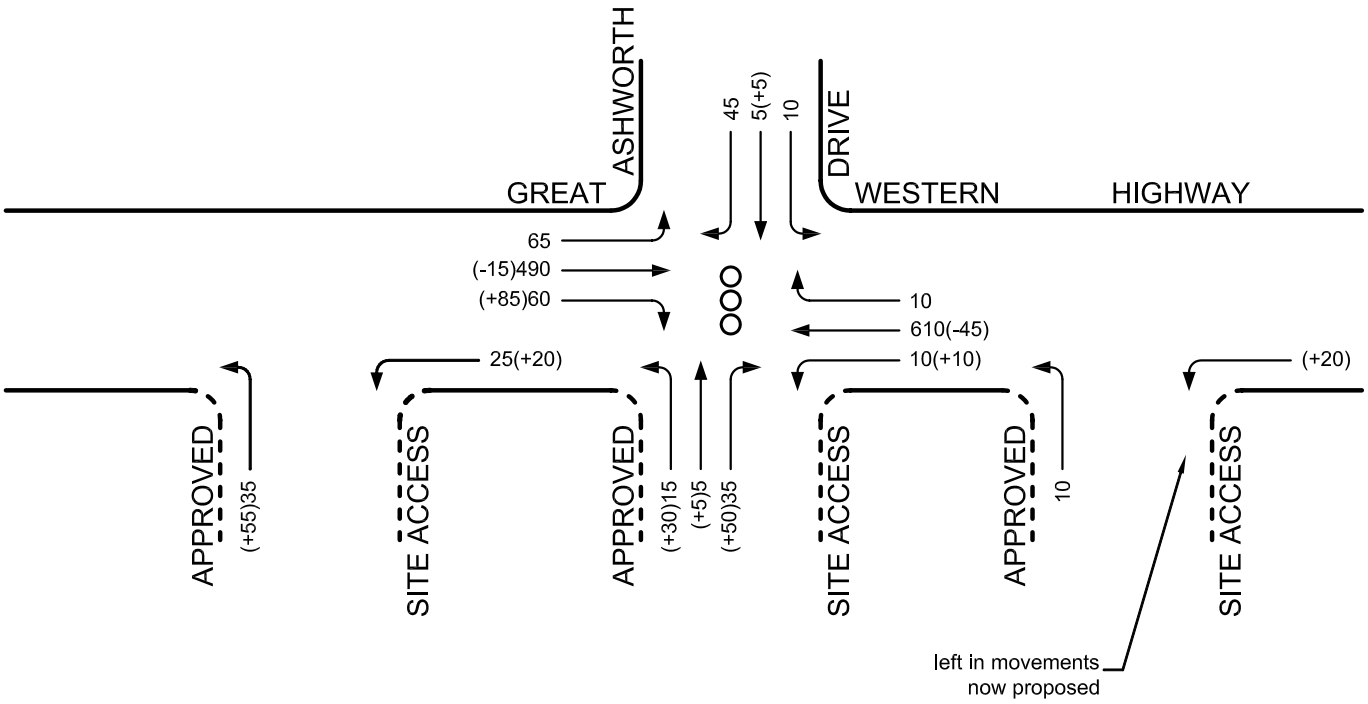
4



LEGEND

100 - Existing Peak Hour Flows including approved concept plan traffic

(+10) - Additional Development Traffic

- Approved Traffic Signals

SATURDAY MIDDAY PEAK HOUR TRAFFIC FLOWS PLUS DEVELOPMENT TRAFFIC

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5