PRESWAND PTY LTD

TRANSPORT REPORT FOR PROPOSED RESIDENTIAL MIXED USE DEVELOPMENT, 387-403 MACQUARIE STREET, LIVERPOOL

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1. INTRODUCTION

1.1 Colston Budd Hunt and Kafes Pty Ltd has been commissioned by Preswand Pty Ltd to assess the transport implications of a proposed residential mixed use development at 387-403 Macquarie Street, Liverpool. The site location is shown in Figure 1.

1.2 The site is on the corner of Macquarie Street and Castlereagh Street and is occupied by retail and bulky goods uses. It is proposed to demolish the existing building on the site and construct a new development comprising 168 residential apartments and 784m^2 ground floor commercial space, with vehicular access from Norfolk Serviceway.

1.3 This report assesses the transport implications of the proposed development through the following chapters:

- Chapter 2 - describing the existing conditions; and
- Chapter 3 - assessing the implications of the proposed development.

2. EXISTING CONDITIONS

Site Location and Road Network

2.1 The site is at 387-403 Macquarie Street at Liverpool, as shown in Figure 1. It is occupied by retail and bulky goods development. Vehicular access to the site is provided via two driveways from Castlereagh Street. Surrounding land use includes other commercial and retail development in Liverpool. There is residential development further to the east and west.

2.2 Macquarie Street connects the Hume Highway, south-west of the site, with the Liverpool CBD to the north-east. In the vicinity of the site, Macquarie Street splits from Terminus Street at a signalised intersection. Terminus Street connects to Newbridge Road to the east.

2.3 Adjacent the site, there is a median in Macquarie Street which separates it from the Terminus Street traffic lanes. Traffic in Macquarie Street is therefore one-way east/northbound adjacent to the site, providing two to three traffic lanes and a small area of on-street parking south of the site.

2.4 Castlereagh Street intersects Macquarie Street at an unsignalised, priority controlled t-intersection. Turns at the intersection are limited to left in/left out by the median in Macquarie Street. Castlereagh Street provides for one traffic lane and one parking lane in each direction, clear of intersections. It provides access to commercial and retail development in the Liverpool CBD.

2.5 Norfolk Serviceway connects Memorial Avenue in the north with Short Street in the south. It provides access to the rear of properties fronting Macquarie Street and Norfolk Street. It provides for two-way traffic with parking permitted on the western side, clear of intersections. Norfolk Serviceway has unsignalised intersections with Castlereagh Street and Short Street.

2.6 Short Street is south of the site. It runs west from Macquarie Street and connects to Norfolk Street at its western end. It provides for one traffic lane and one parking lane in each direction, clear of intersections, and provides access to commercial properties.

Traffic Flows

2.7 Traffic generated by the proposed development would have its greatest effects during weekday morning and afternoon peak periods when it combines with commuter traffic. In order to gauge traffic conditions, counts were undertaken during weekday morning and afternoon peak periods at the following intersections:

- Macquarie Street/Castlereagh Street;
- Castlereagh Street/Norfolk Serviceway; and
- Short Street/Norfolk Serviceway.

2.8 The results of the surveys are shown in Figures 2 and 3, and summarised in Table 2.1. One-way flows on Macquarie Street adjacent to the site were some 400 to 700 vehicles per hour during the surveyed morning and afternoon peak periods. Castlereagh Street carried lower flows of some 100 to 200 vehicles per hour two-way. Short Street and Norfolk Serviceway generally carried less than 100 vehicles per hour two-way.

Table 2.1: Existing two-way (sum of both directions) peak hour traffic flows			
Road	**Location**	**AM peak hour**	**PM peak hour**
Macquarie Street[1]	North of Castlereagh Street	655	370
	South of Castlereagh Street	705	375
Castlereagh Street	West of Macquarie Street	100	95
	West of Norfolk Serviceway	95	165
Short Street	East of Norfolk Serviceway	55	55
	West of Norfolk Serviceway	40	55
Norfolk Serviceway	North of Castlereagh Street	35	105
	South of Castlereagh Street	35	85
	North of Short Street	35	35

[1]One-way northbound flows

2.9 The site was observed to generate some 20 and 45 vehicles per hour two-way during the weekday morning and afternoon peak hours respectively.

Intersection Operations

2.10 The capacity of the road network is largely determined by the capacity of its intersections to cater for peak period traffic flows. The surveyed intersections shown in Figures 2 and 3 have been analysed using the SIDRA program.

2.11 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.

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

ρ 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"	Satisfactory but 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

ρ 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

2.13 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.

2.14 The SIDRA analysis found that the unsignalised intersection of Macquarie Street with Castlereagh Street is operating with average delays for all movements of less than 15 seconds per vehicle during peak periods. This represents levels of service A/B, a good level of service.

2.15 The unsignalised intersections of Norfolk Serviceway with Castlereagh Street and Short Street are operating with average delays for the highest delayed movements of less than 15 seconds per vehicle during peak periods. This represents level of service A/B, a good level of service.

Public Transport

2.16 The site is adjacent to the Liverpool CBD and within some 10 minutes' walking distance of Liverpool railway station. Liverpool is on the South Line, Cumberland Line, Bankstown Line and Inner West Line. Frequent services are provided in both directions on these lines.

2.17 Bus services to and from Liverpool are provided by a number of operators, including Veolia, Busabout, Interlink and Metroline. Services operate along Hume Highway west of the site and Moore Street to the north. There are dedicated bus lanes on Moore Street.

2.18 Numerous bus services are provided by these operators which provide links to surrounding areas. The site therefore has good access to public transport services.

3. IMPLICATIONS OF PROPOSED DEVELOPMENT

3.1 It is proposed to demolish the existing building on the site and construct a new development comprising 168 residential apartments and 784m^2 ground floor commercial space, with vehicular access from Norfolk Serviceway. This chapter assesses the implications of the proposed development through the following sections:

- public transport, walking and cycling;
- parking provision;
- access and internal layout;
- traffic generation and effects; and
- summary.

Public Transport, Walking and Cycling

3.2 As previously discussed, the site is close to services and shops in Liverpool. It is also close to Liverpool station and bus services on Hume Highway and Moore Street which provide links to surrounding areas.

3.3 The proposed development would increase residential densities close to existing public transport services. To support accessibility for cyclists, appropriate bicycle parking will be included in the development.

3.4 The proposed development is therefore consistent with government objectives and the planning principles of:

(a) improving accessibility to employment and services by walking, cycling, and public transport;

(b) improving the choice of transport and reducing dependence solely on cars for travel purposes;

(c) moderating growth in the demand for travel and the distances travelled, especially by car; and

(d) supporting the efficient and viable operation of public transport services.

Parking Provision

3.5 Clause 7.3 of the Liverpool LEP 2008 and Part 4.3 of the Liverpool Development Control Plan 2008 includes the following minimum car parking requirements for development within Liverpool CBD:

- one car parking space per 200m^2 ground floor GFA;
- one car parking space per 100m^2 non-ground floor retail GFA;
- one car parking space per 150m^2 non-ground floor non-retail GFA;
- one space per apartment with one or two bedrooms;
- 1.5 spaces per apartment with three or more bedrooms; and
- one space per 10 apartments for visitors.

3.6 With 43 one bedroom, 115 two bedroom, 10 three bedroom apartments and 784m^2 ground floor GFA proposed, the development would require a minimum of 194 spaces (173 resident, 17 visitor spaces and four commercial spaces).

3.7 The proposed on-site parking provision is 207 spaces which satisfies this requirement. Appropriate disabled and bicycle parking will be provided within the development.

Access and Internal Layout

3.8 Vehicular access to the development is proposed to be provided from Norfolk Serviceway, at the southern end of the site.

3.9 The driveway would be a minimum of six metres wide to accommodate two-way traffic, in accordance with the Australian Standard for Parking Facilities (Part 1: Off-street car parking), AS 2890.1:2004.

3.10 Within the building, ramps will connect the parking levels. The ramps will be provided with appropriate grades and transitions, in accordance with AS 2890.1:2004, to prevent vehicles scraping.

3.11 A loading bay will be provided, accessed from Norfolk Serviceway. The bay will provide for garbage collection and deliveries, and will cater for rigid trucks to reverse into the site from the serviceway and exit in a forward direction.

3.12 Parking will be provided in three basement parking levels. Spaces will be a minimum of 5.4 metres long by 2.4 metres wide (for residents/tenants) and 2.5 metres wide (for visitors), with 5.8 metre wide circulation aisles and columns set back 750 mm from the front of spaces. Spaces with adjacent obstructions will be 0.3 metres wider. Disabled spaces will be 2.4 metres wide, with a 2.4 metre wide adjacent area for wheelchairs. Height clearance will be a minimum of 2.2 metres, with 2.5 metres above disabled spaces. These dimensions are considered appropriate, being in accordance with AS 2890.1:2004.

Traffic Generation and Effects

3.13 Traffic generated by the proposed development will have its greatest effects during morning and afternoon peak periods when it combines with commuter traffic. RMS surveys of traffic generation indicate that high density residential flat buildings in CBDs generate 0.19 and 0.15 vehicles per hour per apartment (two-way) during weekday morning and afternoon peak hours. Commercial developments generate 1.6 and 1.2 vehicles per hour per 100m^2 two-way during morning and afternoon peak hours peak hours respectively.

3.14 On this basis, the proposed development would generate some 40 to 50 vehicles per hour two-way during weekday peak hours. This is a low generation.

3.15 As noted in Chapter 2, the site generated some 20 and 45 vehicles per hour two-way during the surveyed weekday morning and afternoon peak hours. Therefore, the increase in traffic generation would be some five to 20 vehicles per hour two-way at peak times.

3.16 Such a low traffic generation would not have noticeable effects on the operation of the surrounding road network. Intersections would continue to operate at their existing good levels of service, with similar average delays per vehicle.

Summary

3.17 In summary, the main points relating to the transport implications of the proposed development are as follows:

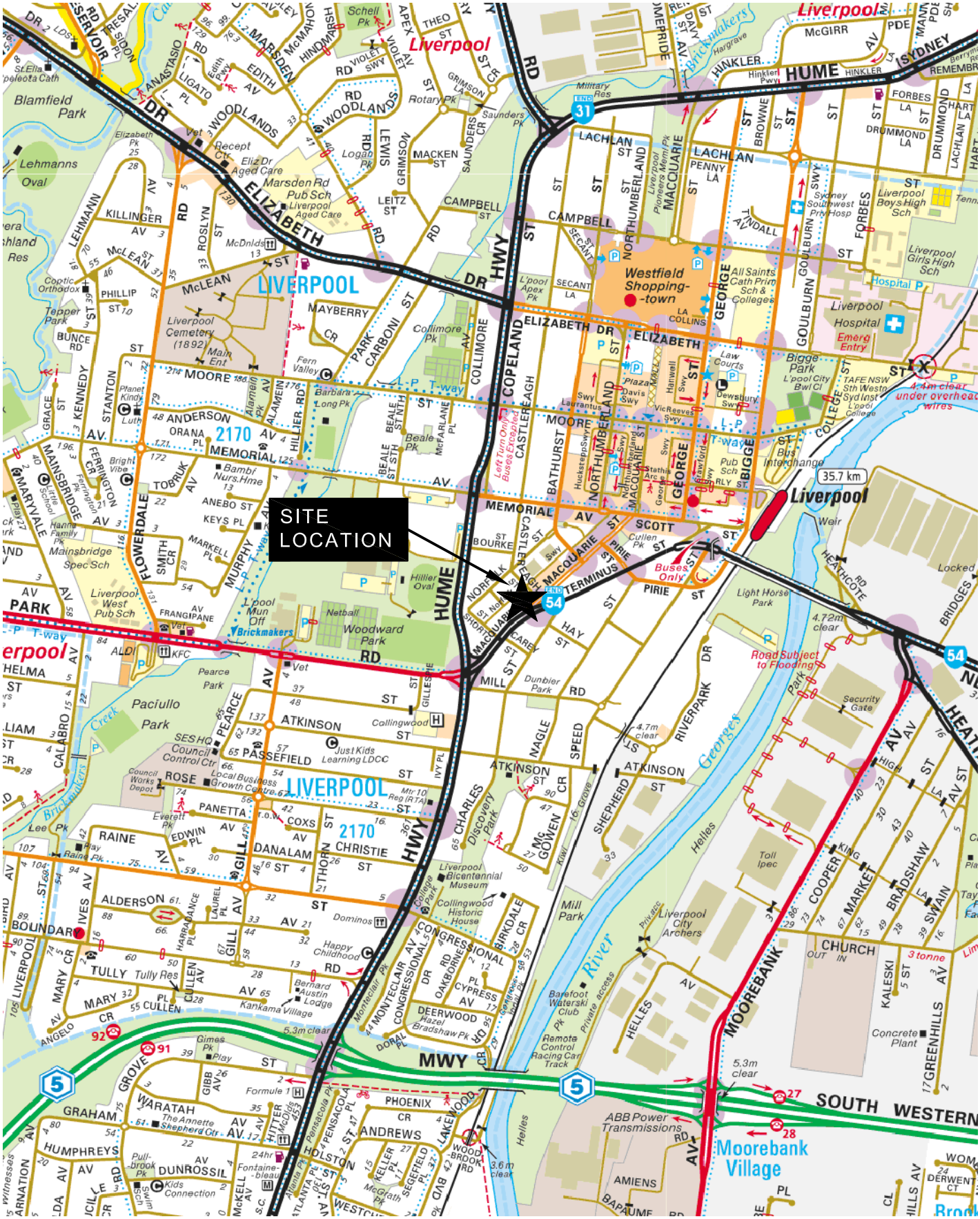
i) the proposed development would increase residential densities close to good public transport services and services and facilities in Liverpool;

ii) the proposed parking provision is appropriate;

iii) access and internal layout will be provided in accordance with AS 2890.1:2004;

iv) the proposed development will have a low traffic generation; and

v) the low traffic generation would not have noticeable effects on the operation of the surrounding road network.



Location Plan

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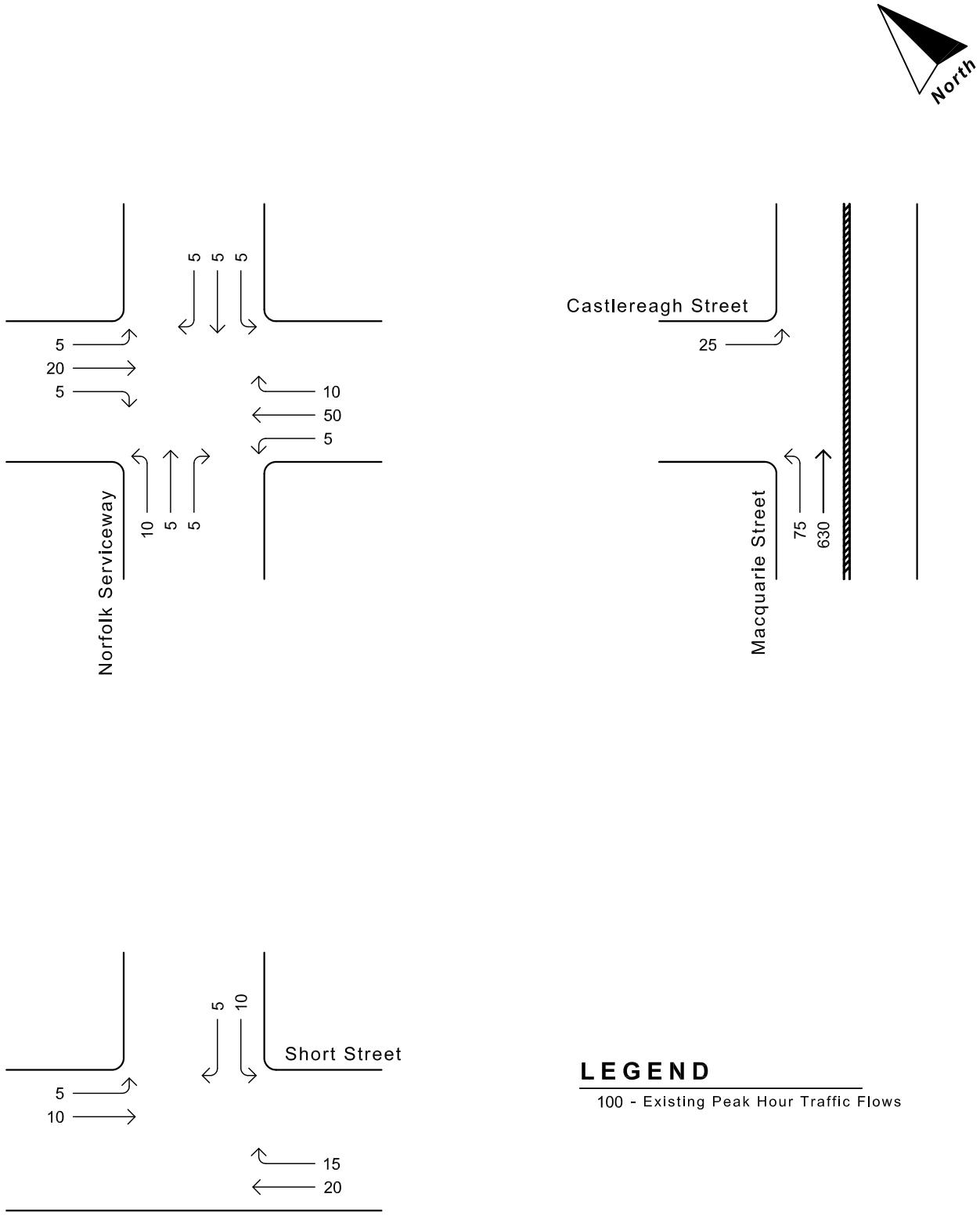
Figure 1



Existing weekday morning peak hour traffic flows

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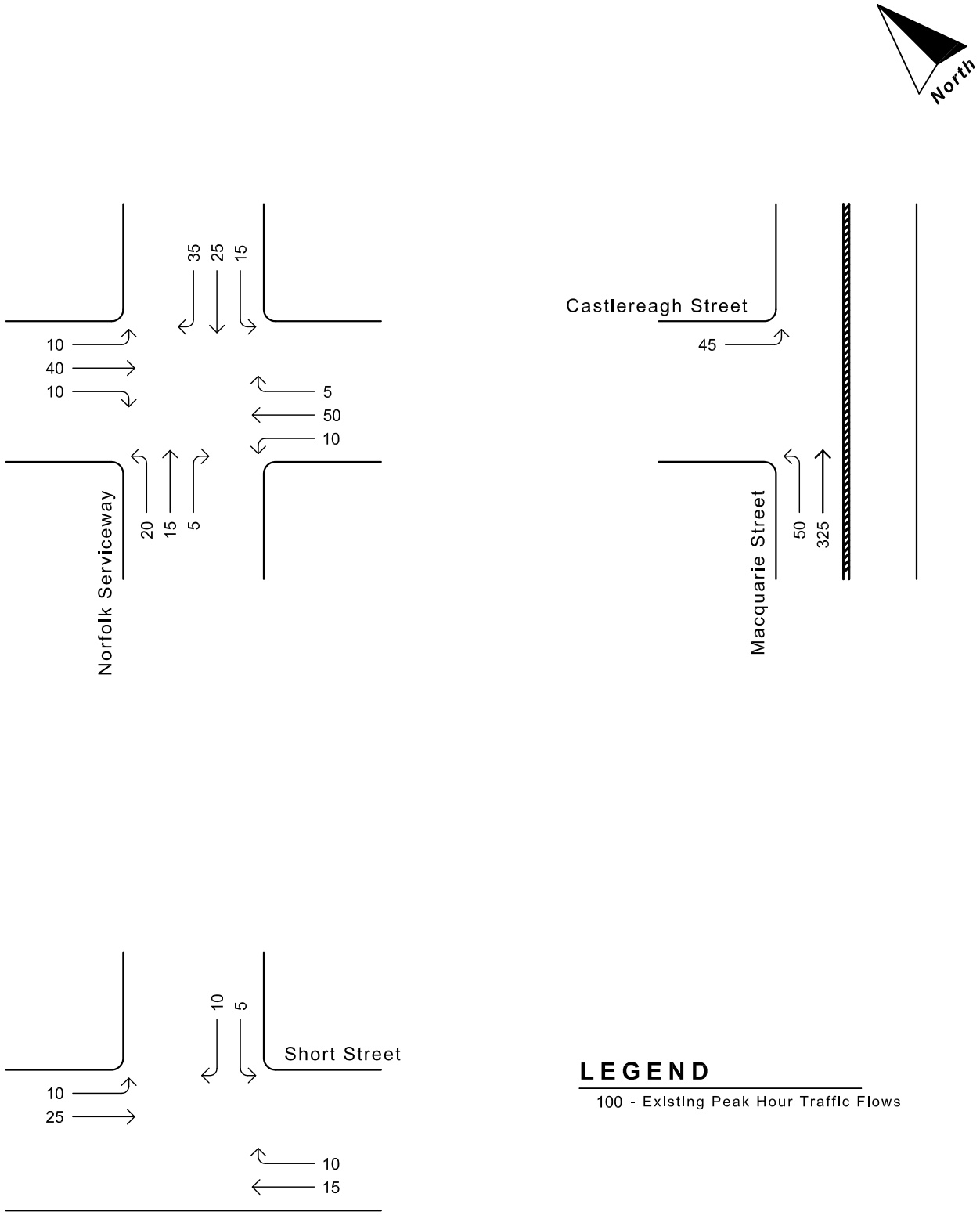
Figure 2



Existing weekday afternoon peak hour traffic flows

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Figure 3