road users monitoring report 2007

dto
Dublin Transportation Office

Road User Monitoring Report 2007

Dublin Transportation Office

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Executive Summary

In 2003, the Dublin Transportation Office (DTO) set up a Road User Monitoring Group, consisting of representatives of the DTO, Greater Dublin Area (GDA) local authorities and National Roads Authority. The purpose of the Group is to monitor the performance of the DTO Strategy as it relates to road users.

The first report of this Group, Road User Monitoring Report 2004 was published in September 2004. The 2004 report was intended to be the first in a series of annual Road User Monitoring Reports to be produced by the Group. This report, Road User Monitoring Report 2006 is the fourth of these reports.

The purpose of the report is to provide the DTO, and other transport agencies and local authorities in the Greater Dublin Area (GDA) with an overview of the findings to date, in relation to:

- Trends in road use by pedestrians, cyclists, cars, taxis, goods vehicles and buses
- Conditions currently experienced by road users in the GDA, including journey times and speeds
- Facilities for road users, including:
  - Parking
  - Travel information
  - Pedestrian crossing facilities
  - Cycle lanes and cycle parking facilities
- Road traffic accident casualties
- Environmental pollution attributable to road traffic

The Report provides a summary of facilities for buses and bus use, as monitored by the DTO on an annual basis and reported on in detail for each corridor in DTO Quality Bus Corridor (QBC) Monitoring Report (http://www.dto.ie/web2006/qbcmon.htm).

As this is the fourth Road User Monitoring Report, much of the information within it can be compared with data from 2004-2006, allowing for changes in conditions to be monitored between these years. Where historic survey data is available for certain indicators, comparisons are made between these data sets. Data indicators where no new information has become available are excluded from this report, but can be viewed in the 2004 and 2005 Reports (http://www.dto.ie/web2006/roadmon.htm).

It is hoped that the Report will be of use primarily to local authority engineers, planners and managers. It is also aimed at those organisations involved in implementing road improvements, such as the National Roads Authority and those involved in policy development such as the DTO; the Department of Transport; the Department of the Environment, Heritage and Local Government.

It is intended that where certain indicators are identified in this report as performing poorly, that measures to improve this performance can be identified and implemented. This identification and implementation of these remedial measures is primarily the responsibility of local authorities.

The report may be used to inform policy development by local authorities, the DTO and the Department of Transport.

Main Findings

The Report uses the most recent data available for each of the agreed indicators relating to the performance of the various road based transport modes. Generally this data relates to 2006 however for some indicators the most recent data relates to 2007, and, where available, this data is used.

The report examines journeys to work and education, by mode of travel in the GDA. 2006 Census data is compared to 2002 census data, and trends in transport use are identified. Amongst the findings, a large increase in those travelling to work in the GDA (16%). The largest mode increase in these trips was train journeys, at over 2%. Cycling and getting the bus to education has declined.

An analysis of NRA traffic counter data and supplemental traffic surveys, organised by DTO, also provide information on the:

- Profile of traffic flows on radial roads at the M50 boundary between (G3_M50_Cordon_Flows)
- Variation of traffic flows on national roads by day of week (G3_National_Roads_Traffic_Flows_By_Day)
- Variation of traffic flows on national roads by month of year (G3_National_Roads_Traffic_Flows_By_Month)
- Variation of weekday peak traffic flows on national roads by month of year (G3_National_Roads_Peak_Var_By_Month)

Average daily traffic flows on National primary Roads were 7% higher than 2004 and 4% higher than 2005 (G3_National_Roads_Traffic_Flows).

Substantial increases in weekday traffic flows were experienced in the 3-hour period before 07:00hrs over the 2-year period between 2004 and 2006 on the M50 and on national radial roads (M4 and M7). Traffic flows grew by an average of 3% between 2004 and 2005 and by 7% between 2005 and 2006. The largest increase recorded was on the M4 which experienced traffic growth of 17% between 2005 and 2006.

Inbound traffic flows, in the morning peak (07:00-09:59hrs) along the canal cordon, reduced by 15% between 1997-2006. Between 2005 and 2006, however, flows have increased by 2%.
(G3_Canal_Cordon_Traffic_Flows)

Average car journey times in the AM peak, across a variety of origins and destinations within Dublin, were recorded at 12.27kph.

Cyclists
Across the canal cordon, cycle flows during the morning peak increased by 20% between 2004 and 2006. This increase was echoed by DTO city centre cycle counts in November 2006 which recorded a 6% rise on 2004 figures
(C2_Canal_Cordon_Cycle_Flows).

Pedestrians
The maximum waiting time across a single junction arm measured at the 23 junctions surveyed in the city council area was 4:03 minutes. There has been no significant improvement in pedestrian waiting times since surveys were first undertaken in 2004. (P6_Pedestrian_Wait_Times).

Bus
The Quality Bus Corridor (QBC) monitoring exercise, organised by the DTO recorded:
A decrease in A.M. peak inbound speeds of 6% in 2006. However, outbound P.M peak speeds increased by 2.3% on speeds recorded in 2006.
(B3_QBC_Bus_Speeds). Detailed information relating to QBC monitoring is contained in the forthcoming QBC Monitoring Report.

Accidents
The number of personal injury accidents across the GDA fell by 12% between 2002 than 2005. The number of fatalities on roads in the GDA decreased by 7% between 2004 and 2005, while the number injured increased by 15% over this time. Over the 7-year period over which this data is available (1998 – 2005), the annual number of fatalities fell by 30% and the number injured by 44%. (G10_Accident_Data)

Air Quality
Environmental air quality, as monitored by the EPA, indicates that nearly all of the values were within the Stage 2 annual limits of 20 µg/m_3 (to be achieved by 2010). Similarly, values of NO_2, CO, C_6H_6 were compliant with EU directives.
(G11_Environmental_Emissions)

Miscellaneous Data
Data relating to certain performance indicators is currently either unavailable, or not available in a consistent manner across the different local authority areas. Major data deficiencies include:

- Cycle infrastructure - data on length and type of cycle lanes.
- Car and bicycle parking facilities.
- Pedestrian crossing facilities.
- Taxi rank facilities.

1. Introduction

1.1 Background

The Dublin Transportation Office set up a Road User Monitoring Group in May of 2003. The purpose of the Road User Monitoring Group is to monitor the performance of the DTO Strategy against the objectives for each class of road user, as set out in *A Platform for Change.* The initial work of the Monitoring Group was to identify the DTO strategy objectives as they relate to road users. It then agreed appropriate performance indicators and measures for these objectives. The Monitoring Group consists of representatives of all the Greater Dublin Area local authorities, the NRA and the DTO.

The work of the Road User Monitoring Group focuses on road transport modes, other than Luas – i.e. pedestrians, cyclists, taxis, road freight, car and motorcycle traffic. The Report also includes a summary of Quality Bus Corridor (QBC) monitoring results, which is undertaken by the DTO on an annual basis.

Road user monitoring work examines:

a) The facilities available for these modes, and
b) Use of these facilities

The first Road User Monitoring Report was published in September 2004. The 2007 monitoring report generally encompasses survey data for monitoring purposes collected by the DTO, NRA, local authorities and other agencies over the past 12 months or so. The report also includes older data, most of which is included in the 2004, 2005 and 2006 Reports, to identify trends.

Any new data indicators in this report will form the benchmark against which future years monitoring can be measured. The intention is that the surveys presented in this report will be repeated on a regular basis (annually, bi-annually etc.), in order to determine trends in performance and usage of the road network over time.

It is intended that additional indicators will be reported upon as the data becomes available.

1.2 Purpose of the Report

The purpose of the Report is to monitor conditions experienced by the various road users, i.e. existence of facilities and use of the facilities. A benchmark already exists for data indicators reported in the 2004, 2005 and 2006 Reports, and where possible, comparisons are made with this benchmark data. In addition, where historic data is available for certain other indicators relating to road usage and conditions, comparisons are made between these data sets.

The report is aimed at local authority engineers, planners and managers. It is also aimed at those organisations involved in implementing road improvements, such as the National Roads Authority and those involved in

policy development such as the Department of Transport and the Department of the Environment, Heritage and Local Government.

It is hoped that where performance under a certain indicator is identified in the report as poor, that this will be used in aiding local authority decision making and thereby facilitating the prioritisation of appropriate improvements. The report may also be used as a tool in policy development.

1.3 Structure of the Report

Section 2 sets out the DTO Strategy Objectives and Agreed Performance Indicators. It also sets out the survey data collected for monitoring purposes over the last year or so.

General traffic indicators are included in ***Section 3***, cycling indicators in ***Section 4***, pedestrian indicators in ***Section 5***, taxi indicators in ***Section 6***, car parking related indicators in ***Section 7*** and bus indicators in ***Section 8***. The conclusions/ main findings of this monitoring report are included in ***Section 9***.

2. DTO Strategy Objectives and Agreed Performance Indicators

2.1 DTO Strategy Objectives

In the vision statement of the current DTO Strategy contained in *A Platform for Change, 2000 – 2016*, the following objectives (inter-alia) are set out, under the "Quality of Life" heading:

- Reducing travel times and congestion;
- Ameliorating the direct environmental effects of transport – noise severance, air pollution and greenhouse gas emissions;
- Promoting cycling and walking as safe, sustainable and healthy means of transport;
- Improving transport safety.

More specific objectives for road users are also set out in *A Platform for Change.* The Road User Monitoring Group developed indicators to measure how Dublin is performing under the objectives set out below for the various road users.

- ***Car/ taxi/ other road vehicles (Ref: P10, P63, P64 A Platform for Change)***

  - Reduce junction overloads on distributor road network
  - Reduce car delays associated with congestion, particularly in sensitive areas
  - Encourage freight traffic away from sensitive areas
  - Continue to expand on-street parking controls
  - Provide better information for road users
  - Reduce taxi journey times relative to the car, where this does not impact unduly on bus services
  - Provide sufficient taxi services to meet demand, especially where alternative public transport services are unavailable
  - Reduce accidents and accident rate
  - Ameliorate air pollution/ greenhouse gas emissions (car/ taxi/ truck fuel consumption etc)

- ***Cycling (Ref: P63 A Platform for Change)***

  - Continue to develop the strategic cycle network
  - Provision of recreational cycle facilities
  - Cycle links to public transport and key destinations
  - Adequate cycle parking facilities [at public transport and key destinations]
  - Increase proportion of short trips (up to 6km) made by bicycle
  - Reduce accidents and accident rate

- ***Pedestrians (Ref: P63 A Platform for Change)***

  - Pedestrians are attracted to use pedestrian facilities
  - Potential walking speeds of 5kph including junction delays

- Good walk links to public transport and key destinations
- Reduced waiting times and crossing distances at junctions
- Level crossing for pedestrians across junctions and accesses
- Additional pedestrian crossing facilities, including pedestrian refuges
- Wide footpaths where pedestrian flows are high
- Footpaths cleared of unnecessary street furniture
- Improved surface quality
- Pedestrian facilities suitable for mobility impaired and disabled persons
- Reduce accidents and accident rate

2.2 Agreed Performance Indicators

The Monitoring Group agreed performance indicators in June 2003. Subsequently some indicators have been modified slightly, or incorporated into other indicators. The list of performance indicators is set out below.

➢ *General Traffic*

Indicator Code	Indicator
G1	% of trips to work and school by walk, cycle, bus and car
G2	% of shopping trips by walk, cycle, bus and car
G3	Traffic flow on roads crossing M50 cordon, Canal cordon and at selected sites
G4	Traffic flow by vehicle type crossing M50 cordon, Canal cordon and at selected sites
G5	Average motor vehicle speed
G6	Reliability of journey times (for motor vehicles)
G7	Proportion of traffic signals operating as intended by LAs (traffic loops functioning, pedestrian buttons functioning etc)
G8	Percentage of time that roads are congested
G9	Number and length of roads with weight/ height/ width restrictions
G10	Road Accident Statistics: No. of personal injury road accidents, no. of road accident casualties by casualty type and by road user type
G11	Environmental emissions attributable to road traffic (NO_2, PM_{10}, CO and VOC)
G12	Number of locations where road traffic noise levels exceed agreed standards
G13	Availability of roadside traveller information (including real time)
G14	Car user satisfaction

- ***Cycle***

Indicator Code	Indicator
C1	Cycle modal share of journeys under 2 miles and under 4 miles
C2	Cycle flow on roads crossing M50 cordon, Canal cordon and at selected points
C3	Length of cycle network
C4	Cycle network features: e.g. number of cycle advance lanes, cycle crossing facilities
C5	Number of cycle parking spaces at selected sites
C6	Usage of cycle parking spaces
C7	Cyclist satisfaction

- ***Pedestrians***

Indicator Code	Indicator
P1	Walk modal share for journeys under 2 miles and under 4 miles
P2	Number of pedestrians crossing Canal cordon
P3	Number of pelican crossings/ zebra crossings
P4	Number of signalised junctions with pedestrian signal facilities on every arm/ some arm/ no arms
P6	Average maximum wait time at signalised crossings (both at, and away from junctions)
P7	Pedestrian satisfaction

- ***Taxi***

Indicator Code	Indicator
T1	Number of licensed taxis
T2	Number of taxi ranks
T3	Average wait time for taxis
T4	Average taxi occupancy
T5	Taxi user satisfaction

- ***Parking***

Indicator Code	Indicator
PK1	Number of short stay (3hr or less) on-street car parking spaces
PK2	% of built up area where controlled on-street parking applies
PK3	Number of public off-street spaces
PK4	Number of dedicated disabled parking bays

The following indicators are used in monitoring of the QBC network, as undertaken by DTO in November each year:

- ***Bus***

Indicator Code	Indicator
B1	% of bus lanes by Quality Bus Corridor
B2	% of signalised junctions prioritised for buses
B3	Bus speeds for each Quality Bus Corridor
B4	Bus modal share for each Quality Bus Corridor
B5	No. of bus users crossing Canal cordon and at selected other locations

2.3 Monitoring Surveys

A set of surveys to supplement available data was carried out in November 2006. The surveys comprised of journey time surveys; classified link counts at the Metropolitan Area cordon, Outer (M50) cordon, Outer Orbital roads; classified junction turning counts at Town Centre junctions with supplemental cycle counts; City Centre cycle counts; pedestrian facility and wait time surveys at various town/ city centre junctions; city centre cycle facility and usage surveys and a Household Travel Survey. Dublin City Council was responsible for organising an Inner (Canal) Cordon survey in November 2006.

Note:
For the purposes of the surveying work carried out by the DTO, Light Goods Vehicles (LGVs) are defined as having 4 wheels or less. Heavy Goods Vehicles (HGVs) are defined as having more than 4 wheels.

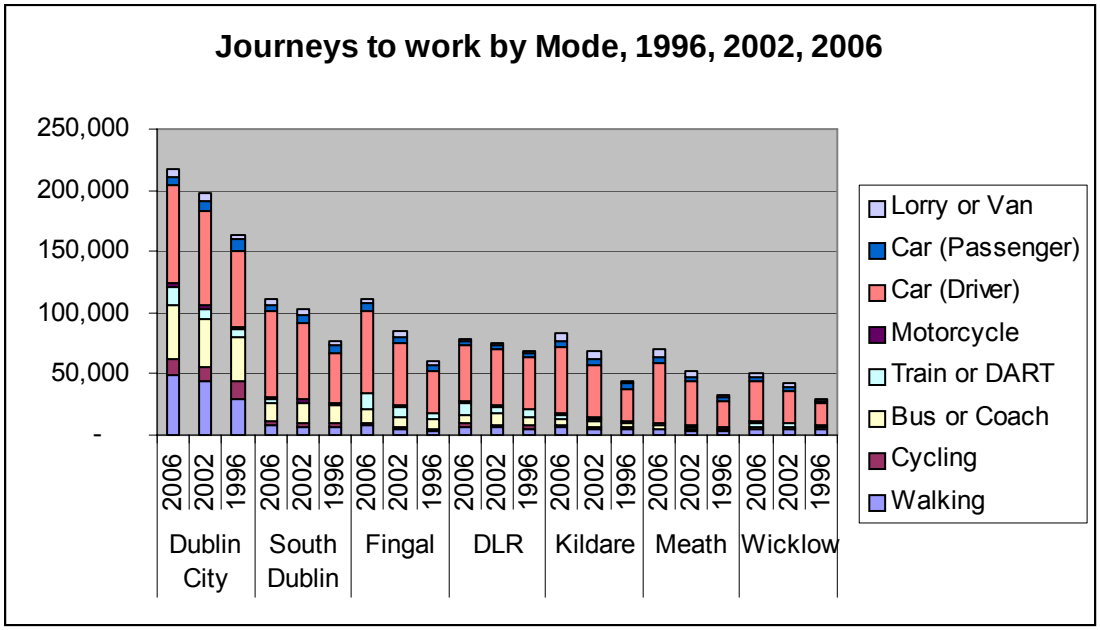
3. General Traffic Indicators

G1 (A/B): Percentage of trips to work/education by walk, cycle, bus and car

These indicators, using Census 1996 and 2002 data were included in the 2004 Road User Monitoring Report. The current report utilises 2006 Census result and compares with 2002 data.

Figure 3.1a presents the numbers of trips by local authority origin by mode for 2006, 2002 and 1996.

Figure 3.1a: 2006 journeys to work by journey origin [1]



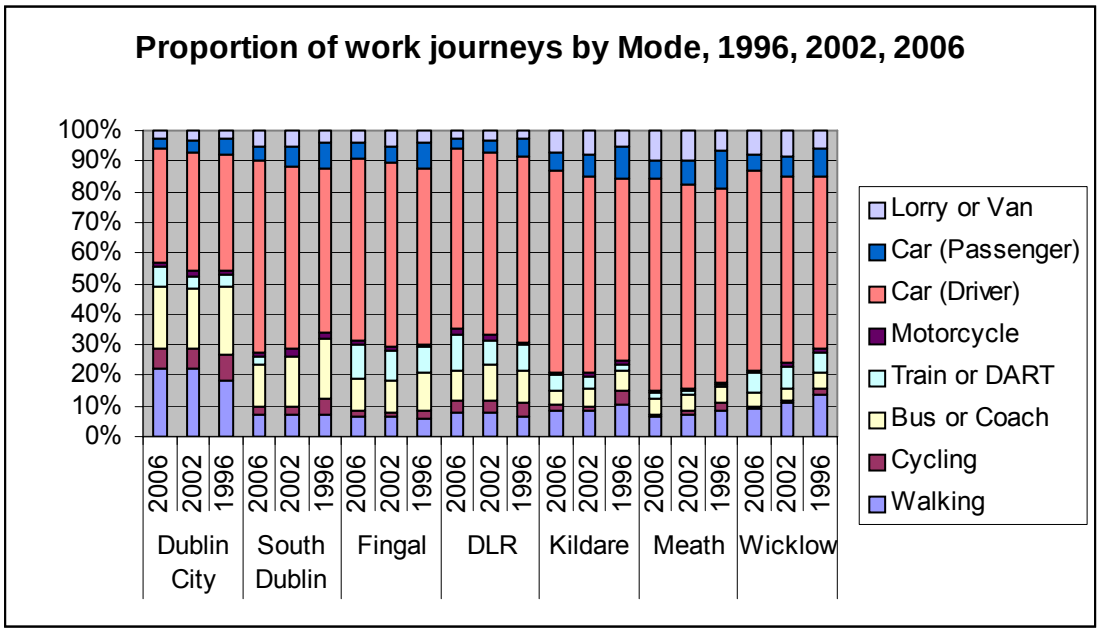
Overall numbers of GDA residents travelling to work in 2006 are up by 100,000 (16%) relative to 2002 levels. Some 59,029 extra residents of Dublin City and County are travelling to work, and over 40,978 extra residents of Kildare Meath and Wicklow are travelling to work. There has been an increase in every GDA local authority. The biggest numerical increases (in order of size) have been in Fingal, Dublin City, South Dublin, Kildare and Meath.

The overall numbers of GDA residents travelling to work as car drivers, on foot, cycling, on a train, or on bus have all increased. The numbers using a motorcycle to travel to work or travelling to work as a car passenger have declined.

[1] *CSO: From Census 2006. Persons at work, aged 15 years and over, usually resident (and present in their usual residence on Census night) in each county, classified by means of travel to work. Excludes none/not stated/working from home.*

Figure 3.1b presents the proportion of trips by mode by local authority origin for 2006, 2002 and 1996.

Figure 3.1b: Journeys to work by trip origin, by mode percentage share [2]



Over 22% of Dublin City residents walk to work. Only 6.7% of Fingal residents walk to work, with a similar proportion walking to work in South Dublin (6.9%) and Meath (6.4%). The proportion in Dun Laoghaire Rathdown is a little higher, at 8.1%.

Bus use is highest in Dublin City, with 20.2% of residents using the bus to get to work. Bus use is also high in South Dublin, with 13.9% using it to get to work. The proportions using the bus to travel to work in Dun Laoghaire Rathdown and Fingal are 12.2% and 11.4% respectively.

Train use to work is highest in Fingal and Dun Laoghaire Rathdown. It is lowest in South Dublin and Meath, where rail coverage is poor, and stations along rail lines are infrequent.

Overall, cycling and walking to work combined is highest in Dublin City (28.6%) and lowest in Fingal and Meath (8%). Public transport use to work (bus and rail combined) is highest in Dublin City (27.3%) and lowest in Meath (7%).

Car use to work is lowest in Dublin City (40%). Car use to work is over 60% in every other GDA local authority, and is over 70% in Wicklow, Meath and Kildare.

[2] *CSO Census 2006 and Census 2002. Persons at work aged 15 years and over, usually resident (and present in their usual residence on census night) in each county, classified by means of travel to work. Excludes none/not stated/working from home*

G1 (B): Percentage of trips to education by walk, cycle, bus or car

Figure 3.2a presents the journeys to education by mode and county journey origin.

Overall numbers of GDA students travelling to education in 2006 are up by 18,207 (5.8%) relative to 2002 levels. Some 9,383 extra students in Dublin City and County are travelling to education, and over 8,824 extra residents of Kildare Meath and Wicklow are travelling to work.

The overall numbers of GDA students travelling to work by foot, by train and by car have increased. The numbers cycling and getting a bus have declined.

Figure 3.2a: 2006 mode share for journeys to education by journey origin [3]

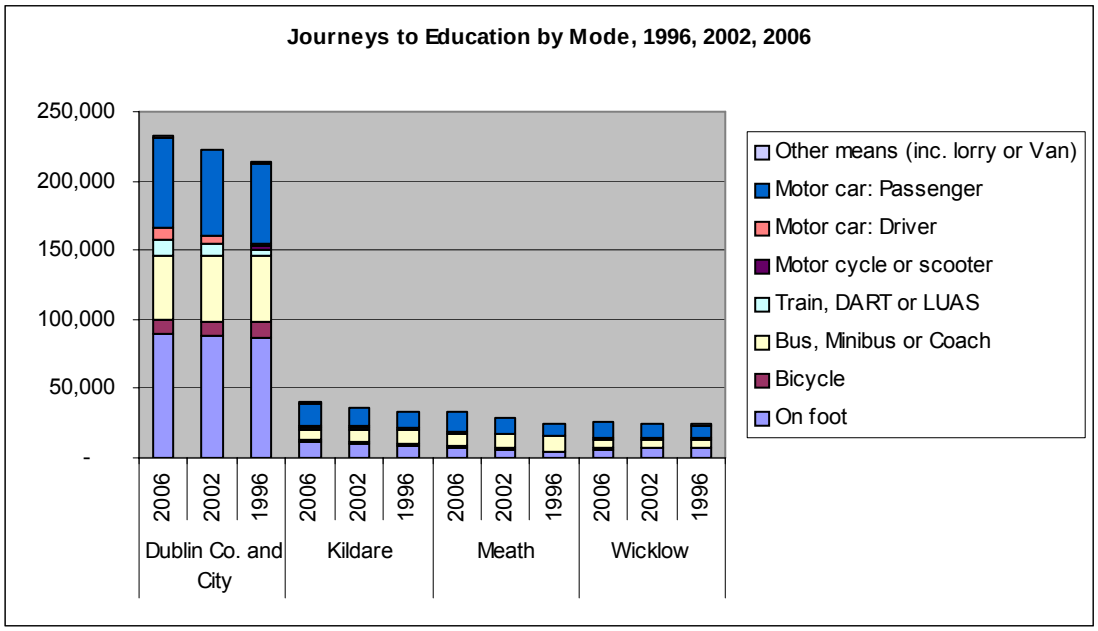
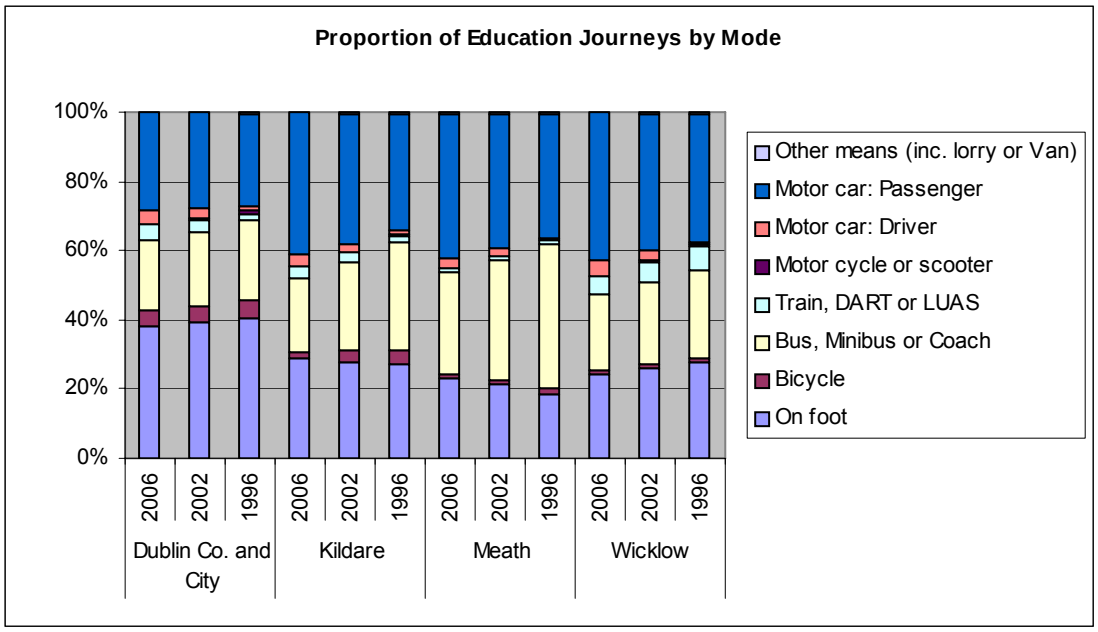


Figure 3.2b presents the proportion of education trips by mode and county of origin for 2006, 2002 and 1996.

[3] *CSO Census 2006: Students aged 5 years and over, usually resident (and present in their usual residence on census night) in each county, classified by means of travel to school or college. Excludes not stated/none/at home*

Figure 3.2b:Changes in journeys to education by trip origin, and change in % share, 2006 relative to 2002 [4]



A little over one third (34.6%) of GDA students travel to school or college on foot, and 3.4% cycle to education. Some 32.2% are driven to school. Just less than one in four (21.3%) get the bus, while 4.4% use the train.

Some 38.4% of students in the Dublin City and County region travel to school or College on foot, compared to 29% in Kildare, 23 % in Meath and 25% in Wicklow. One in five Dublin City and County students get the bus to school or college. The percentage share in Kildare (21%) and Wicklow (22%) are broadly similar. In Meath, the proportion is somewhat higher, at 29%. Some 28.2% of students get a lift in a car in the Dublin Region, compared to over 40% in the Mid East region.

Cycling to school is most popular in Dublin City and County (4.3% of students are cyclists). It is least popular in Wicklow and Meath (1%).

Since 2002, the share of GDA education trips made on foot has increased by 3.9%. The share of trips made by cycling has declined by 9.5%, while the percentage share getting the bus has fallen by 3.2%. There has been a 10.5% increase in share of trips by students getting a lift to education, and a 59.7% increase in mode share for car drivers to education.

[4] *CSO Census 2006 and Census 2002. Students aged 5 years and over, usually resident (and present in their usual residence on census night) in each county, classified by means of travel to school or college. Excludes none/not stated/ at home*

G2: Percentage of shopping trips by walk, cycle, bus and car

Data on this indicator was provided in the 2006 report. No additional data on this indicator has been published in the interim.

A little over one third (34.6%) of GDA students travel to school or college on foot, and 3.4% cycle to education. Some 32.2% are driven to school. Just less than one in four (21.3%) get the bus, while 4.4% use the train.

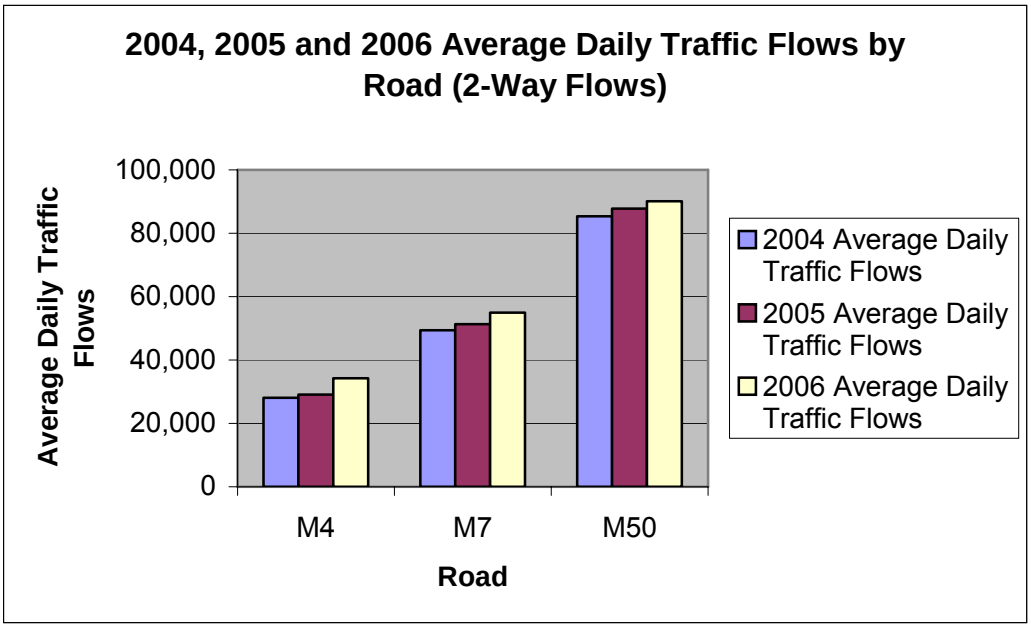
Some 38.4% of students in the Dublin City and County region travel to school or College on foot, compared to 29% in Kildare, 23 % in Meath and 25% in Wicklow. One in five Dublin City and County students get the bus to school or college. The percentage share in Kildare (21%) and Wicklow (22%) are broadly similar. In Meath, the proportion is somewhat higher, at 29%. Some 28.2% of students get a lift in a car in the Dublin Region, compared to over 40% in the Mid East region.

Cycling to school is most popular in Dublin City and County (4.3% of students are cyclists). It is least popular in Wicklow and Meath (1%).

G3: (A) Traffic flow on national primary roads

Figure 3.3 presents average daily traffic flow variations over a three-year period between 2004 and 2006. The graph above demonstrates a significant increase in daily traffic flows over this period. Of the three roads examined, traffic flows grew by an average of 3% between 2004 and 2005 and by 7% between 2005 and 2006. The largest increase recorded was on the M4 which experienced traffic growth of 17% between 2005 and 2006.

Figure 3.3: 2004, 2005 and 2008 average daily traffic flows (national primary roads) [5]



[5] *Source: NRA Website, http://www.nra.ie/Transportation/TrafficDataCollection/TrafficCounterData/*

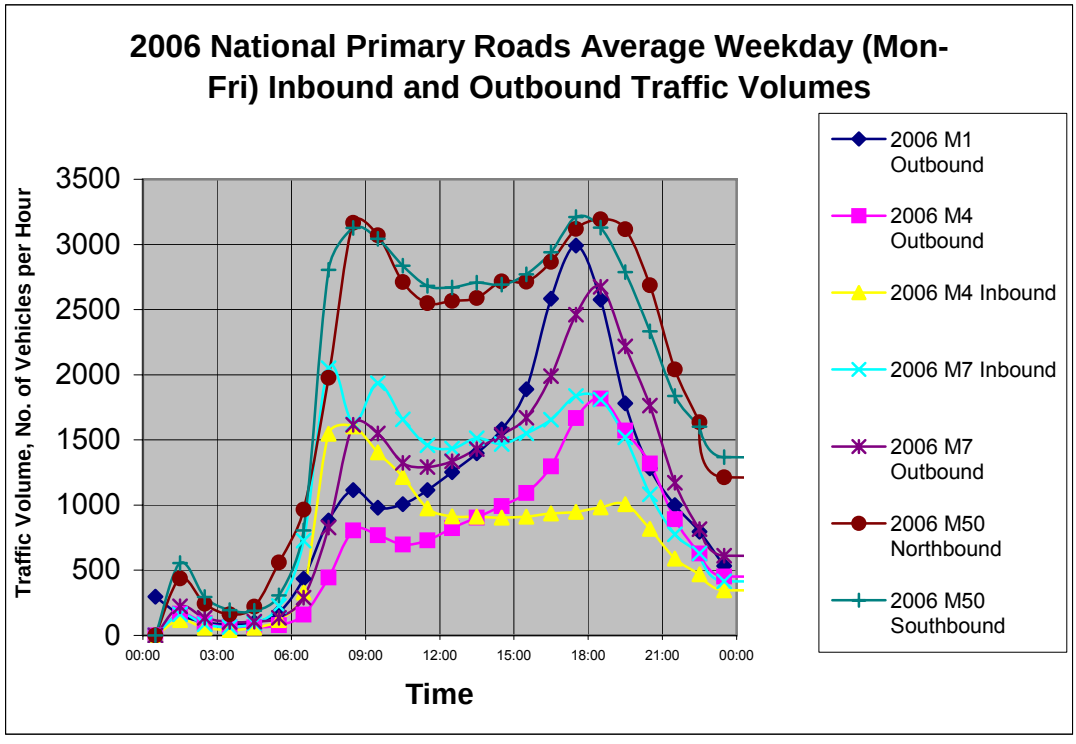
Figures 3.4 presents weekday inbound and outbound traffic flow variations by time of day in 2006 at the following survey points on the national primary road network:

1) M1: Balbriggan South (NRA site M01-17) {northbound only as southbound traffic counters not fully operational throughout 2005}
2) M4: Maynooth West (NRA site M04-34)
3) M7: Naas Bypass (NRA site M07-36)
4) M50: Blanchardstown Toll Area (NRA site M50-20)

As can be seen from ***Figure 3.1***, inbound weekday flows on all roads on all roads peak between 07.00 and 08.00hrs then drop significantly before increasing again in the evening period. This figure also demonstrates a minor peak in outbound flows in the a.m. period between 08.00 and 09.00hrs, with a much larger peak in the evening between 17.00 and 18.00hrs.

Flows on the M50 in both directions demonstrate 2 distinct peaks. The a.m. peak in both directions between 07.00 and 08.00hrs. The p.m. peak occurs southbound between 16.00 and 17.00hrs and in the northbound direction between 17.00 and 18.00.

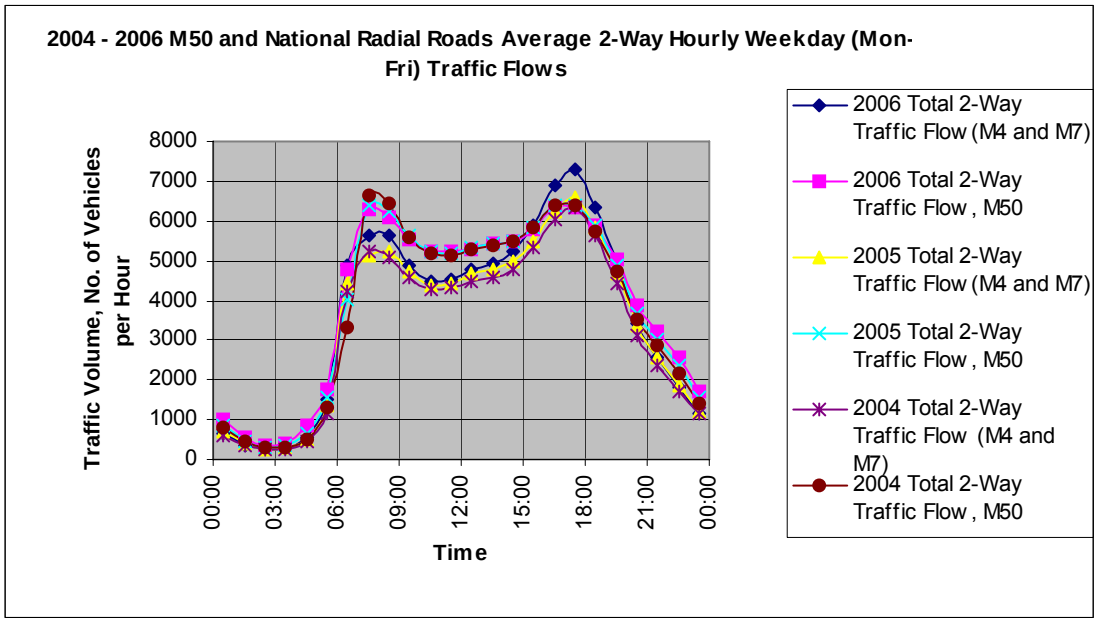
Figure 3.4: 2006 weekday traffic flows variations by time of day (national primary roads) [6]



Traffic weekday flows on national primary roads by hour of the day were compared to 2004 and 2005 flows and this is illustrated in ***Figure 3.5.*** The highest hourly increases on radial roads were experienced between 06:00 and 07:00hrs, where increases of 12% were recorded between 2005 and 2006. Overall flows in 2006 were 4% higher than those recode in 2005 and 7% higher than those recorded in 2004.

[6] *Source: NRA Website, http://www.nra.ie/Transportation/TrafficDataCollection/TrafficCounterData/*

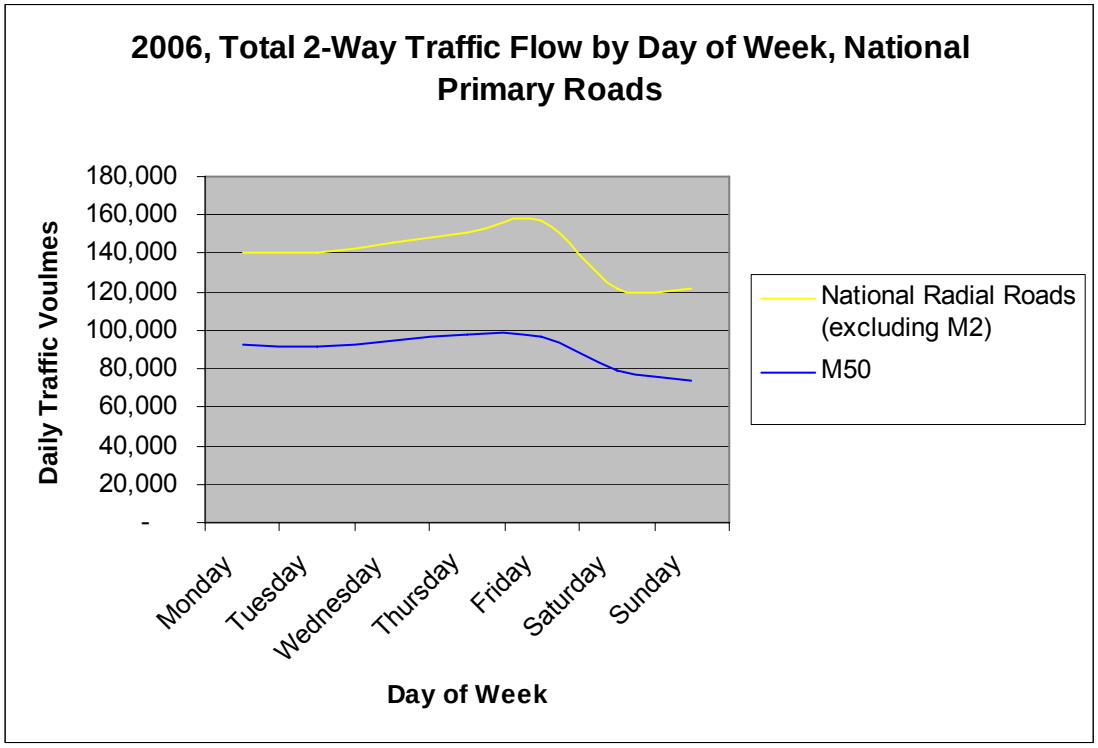
Figure 3.5: 2004, 2005 and 2006 2-way weekday traffic flows variations by time of day (national primary roads) [7]



[7] *Source: NRA Website, http://www.nra.ie/Transportation/TrafficDataCollection/TrafficCounterData/*

Figure 3.6 presents traffic flow variations by day of the week at the same survey point on the national primary road network listed above. The corresponding flows from the previous 2 years are also illustrated.

Figure 3.6: 2006 traffic flows variations by day of week (national primary roads) [8]



As can be seen from ***Figure 3.6***, the highest flow was recorded on Thursday which was 8% above the average. The lowest flows were recorded on Sunday, at 21% below average.

[8] *Source: NRA Website,* *http://www.nra.ie/Transportation/TrafficDataCollection/TrafficCounterData/*

Figure 3.7: 2005 and 2006 traffic flows variations by month of the year (national primary roads) [9]

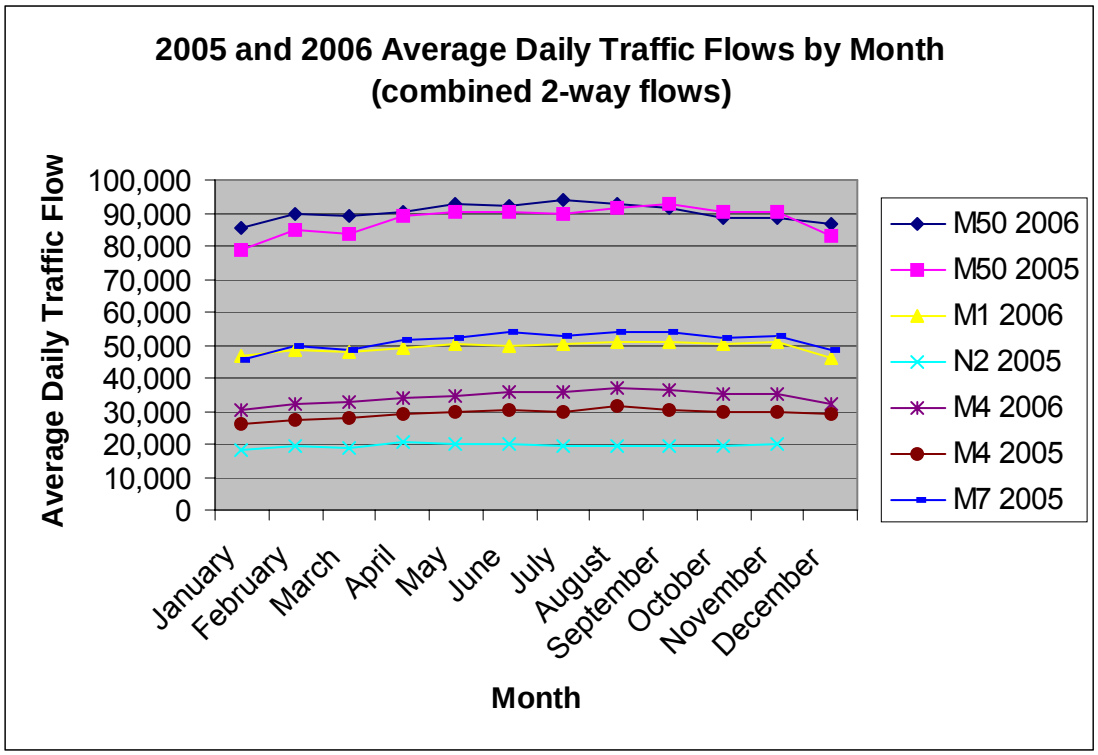


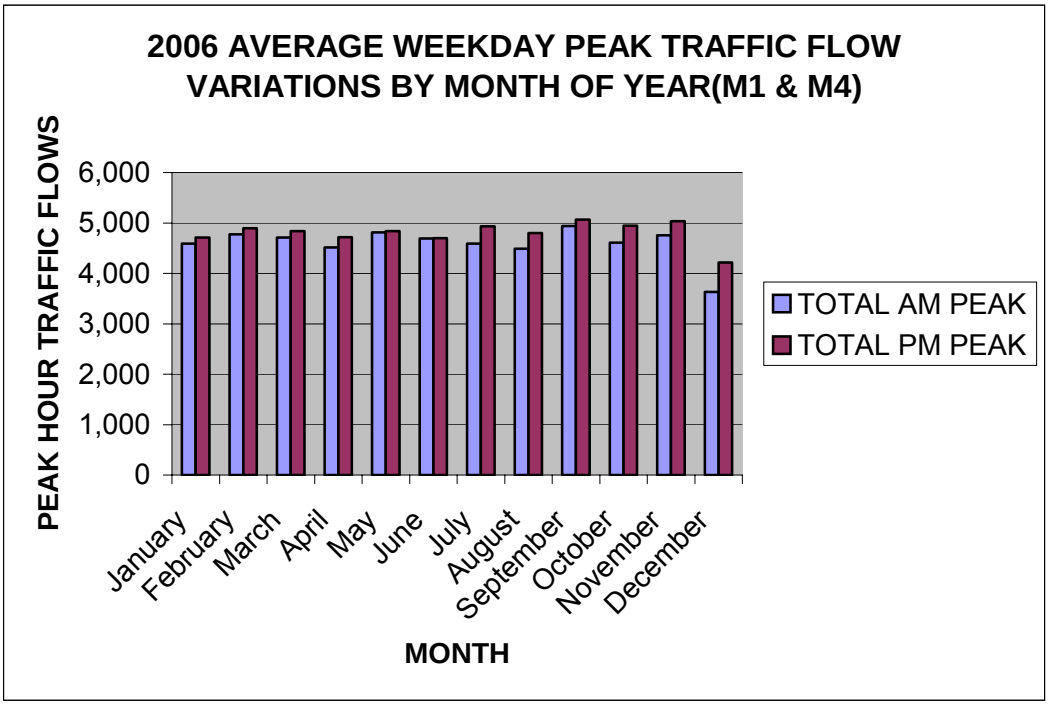
Figure 3.7 presents traffic flow variations by month of the year in 2005 and 2006 at the same survey points on the national primary road network listed above.

Typical flows on the national radial roads approaching Dublin are experienced in March. Flows on the national radial roads peak in August (5% above average) however not all roads experience peaks during the same months. For example flows on the M50 peaked in July (4% above average). In general the lowest daily traffic flows are experienced in January (9% below average).

[9] *Source: NRA Website,* *http://www.nra.ie/Transportation/TrafficDataCollection/TrafficCounterData/*

Figure 3.8 presents variations in weekday peak traffic flows by month of year in 2006 on national primary radial roads approaching Dublin (M1 & M4). Average flows on these roads are experienced in June. Highest flows are experienced in September, when flows were 6.4% above typical/ average flows. Lowest flows were recorded in December, when flows were 16.5% below the average.

Figure 3.8: 2005 and 2006 traffic flows variations by month of the year (national primary roads) [10]



[10] *Source: NRA Website,* *http://www.nra.ie/Transportation/TrafficDataCollection/TrafficCounterData/*

The monthly variation of weekday peak traffic flows on the M50 was analysed. This is illustrated in ***Figure 3.9.***

Figure 3.9: 2006 weekday peak hour traffic flow variations by month of year (M50) [11]

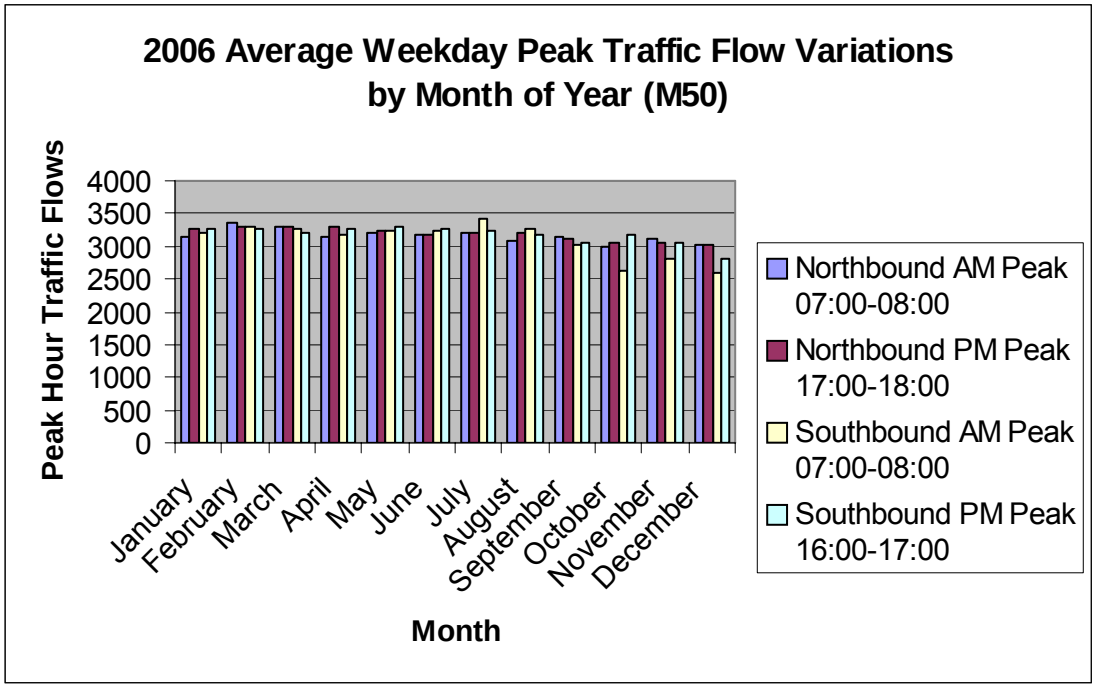


Figure 3.9 illustrates the variation of peak hour flows by month of the year in 2006 on the M50. Typical/ average flows were experienced in August, with monthly flows peaking in February (5% above typical/ average flows). Lowest monthly flows were experienced in December (9.2% below typical/ average flows).

The highest a.m. flows northbound occurred in February while the highest a.m. southbound flows occurred in July.

The lowest a.m. flows occurred in a northbound direction in October while in a southbound direction the lowest a.m. flow occurred in December.

The highest p.m. flows northbound occurred in February and southbound in January.

[11] *Source: NRA Website,* *http://www.nra.ie/Transportation/TrafficDataCollection/TrafficCounterData/*

G3: (B) Traffic flow on roads crossing M50 Cordon

The M50 cordon count, organised by the DTO in November 2006, counted 2-way traffic flows on all roads crossing the M50 on a single Tuesday, Wednesday or Thursday weekday between 07:00 and 19:00hrs.

Figure 3.10: November 2006 Weekday peak traffic flow variations (roads crossing M50), 7am-7pm [12]

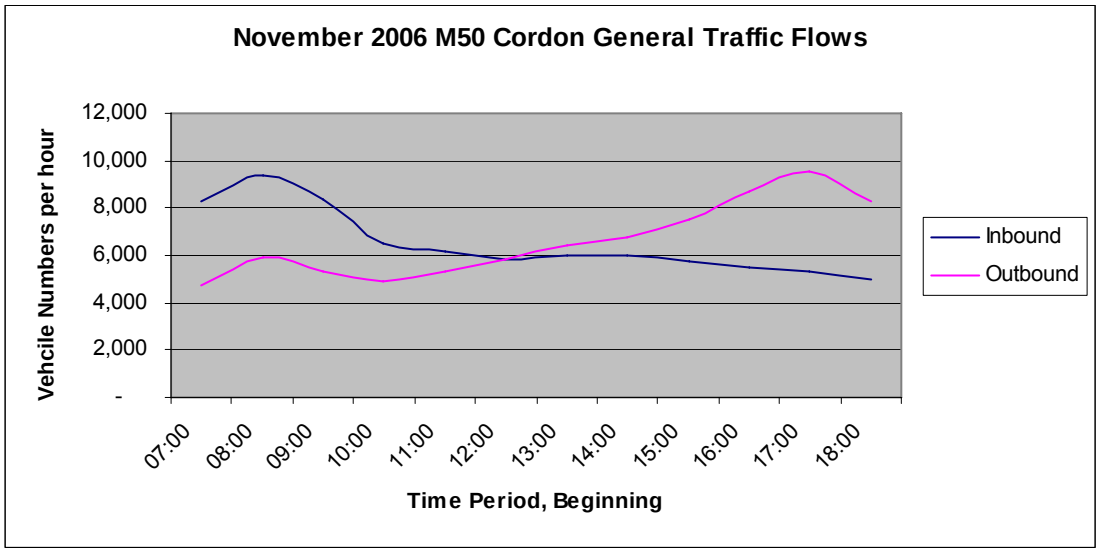


Figure 3.10 shows traffic flow variation across the sample of M50 cordon crossing points between 07.00 and 19.00hrs. Inbound traffic flows across the M50 are at their highest between 08.00 and 09.00hrs. During this period, recorded crossings exceed the average, (over the 12-hour period, 07.00 - 19.00hrs) by 44%.

Outbound flows across the M50 Cordon crossing points demonstrate 2 peaks, a small one in the a.m. period between 08.00 and 09.00hrs, which declines after 09.00hrs. It then begins to rise at 11.00hrs and does so steadily until it reaches a more significant peak between 17.00 and 18.00hrs. During this peak, recorded crossings exceed the average (over the 12-hour period, 07.00 - 19.00hrs) by 45%.

[12] *DTO November 2006 surveys*

Figure 3.11: November 2006 traffic flow variations (junctions in town centre areas, 7am-7pm [13]

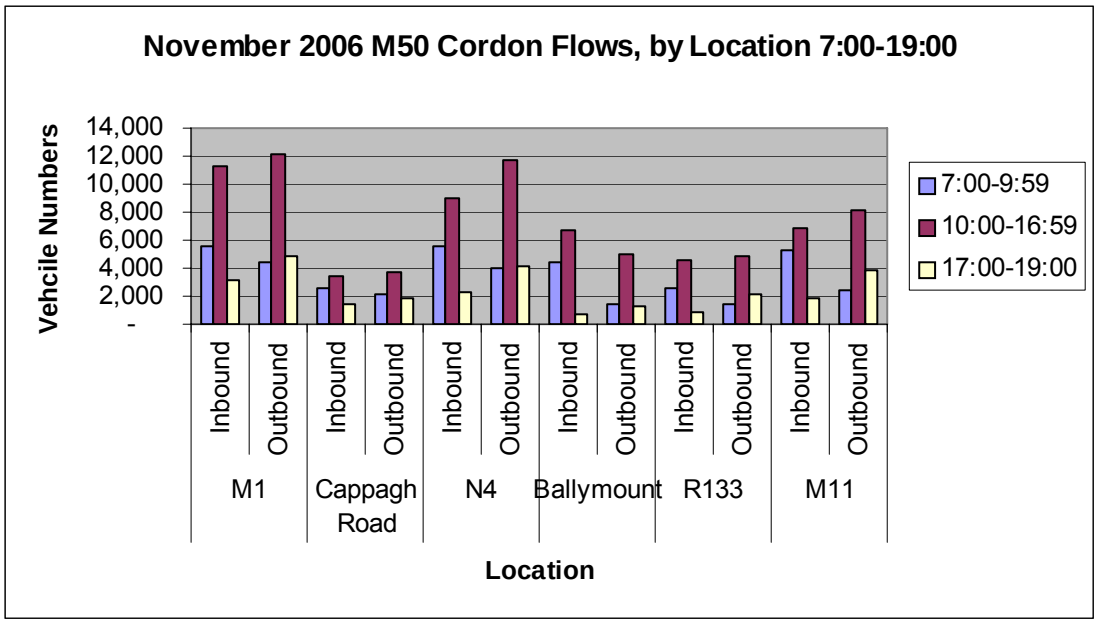


Figure 3.11 displays traffic volumes on a sample of roads crossing the M50 Cordon between 07.00 and 19.00hrs in November 2006. In the a.m. period inbound traffic on all routes is greater than it is in the p.m. period outbound.

The middle period (10.00hrs – 16.59hrs) shows the greatest variation with some roads such as the M11's inbound traffic varying little between the a.m. period and the longer middle period. Other roads, such as the M1 show a considerable increase in both inbound and outbound traffic during the middle period when compared to the a.m. and p.m. periods.

G3: (C) Traffic flow on roads crossing City Centre Canal Cordon

Dublin City Council organises a Canal cordon count in November of each year. All roads crossing the Royal Canal and Grand Canal as well as other roads approaching the city centre from the west are surveyed. The count is undertaken over a 12-hour period on two separate weekdays (Tuesday, Wednesday or Thursday)

Figure 3.12 presents inbound traffic flow variations by an hourly period between 07:00 and 10:00hrs, for the surveyed roads at the Canal Cordon. The graph is based on the average flow over 2 days across all canal cordon crossing points. Flows of the following modes are included: Car/LGV, HGV, Dublin Bus, Other Bus, Taxi and Motor Cycle. Count site locations are illustrated in ***Appendix A.***

[13] *DTO November 2006 surveys*

Figure 3.12: November 1997- 2006 3-hour AM weekday peak traffic flow variations (roads crossing Canal Cordon)

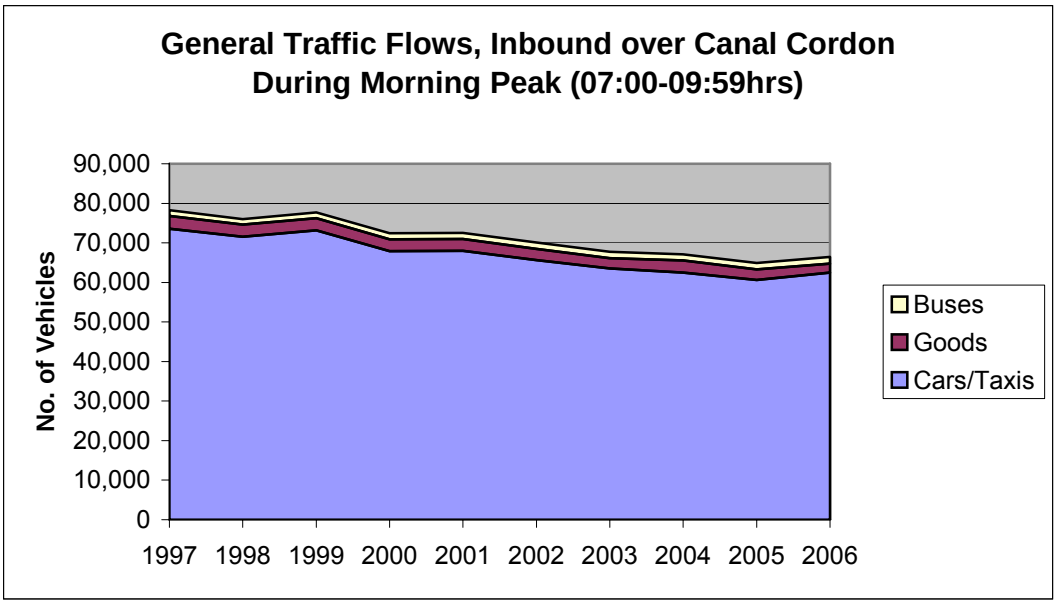


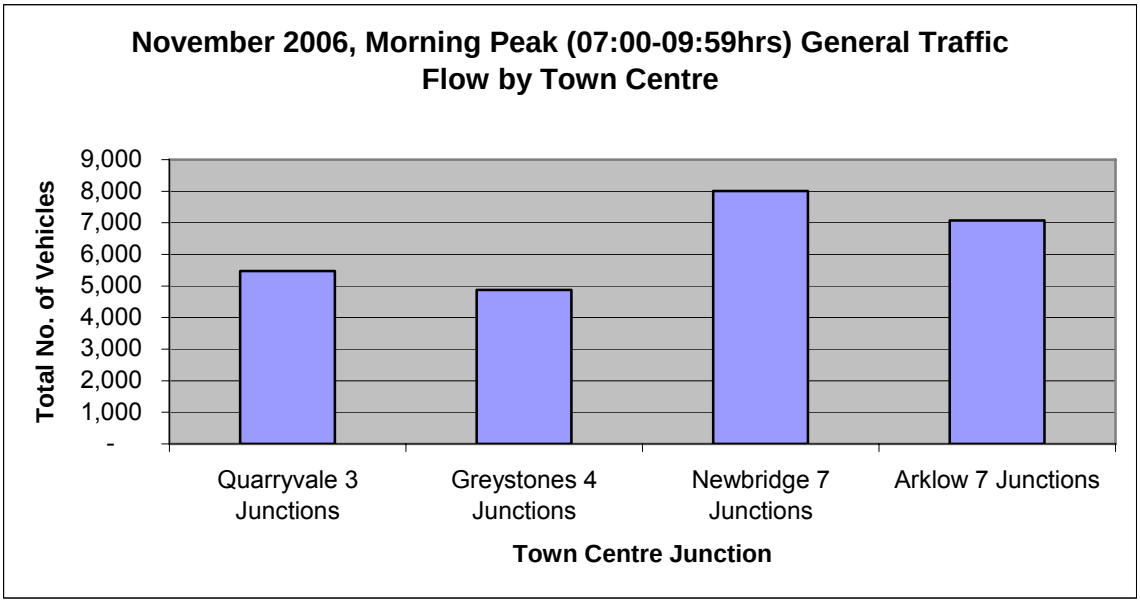
Figure 3.12 illustrates the variation in inbound morning peak (07:00-09:59hrs) traffic flows along the canal cordon between 1997-2006. During this period, flows have reduced by 15%. Between 2005 and 2006, however, flows have increased by 2%.

G3: (D) Traffic flow on roads in town centre areas

Junction counts of traffic in and approaching town centres were organised by the DTO and were carried out in November 2006. The counts were carried out on a single Tuesday, Wednesday or Thursday weekday between 07:00 and 10:00hrs in and approaching the following centres in the Metropolitan Area of Dublin as defined by the Regional Planning Guidelines; Quarryvale, Greystones, Newbridge and Arklow.

Figure 3.14 presents traffic counts at junctions in and approaching town centres in by half-hour period in 2003 and 2005. Flows of the following modes are included: Car, LGV, HGV, Dublin Bus, Other Bus, Taxi and Motor Cycle. Count site locations are illustrated in ***Appendix A***.

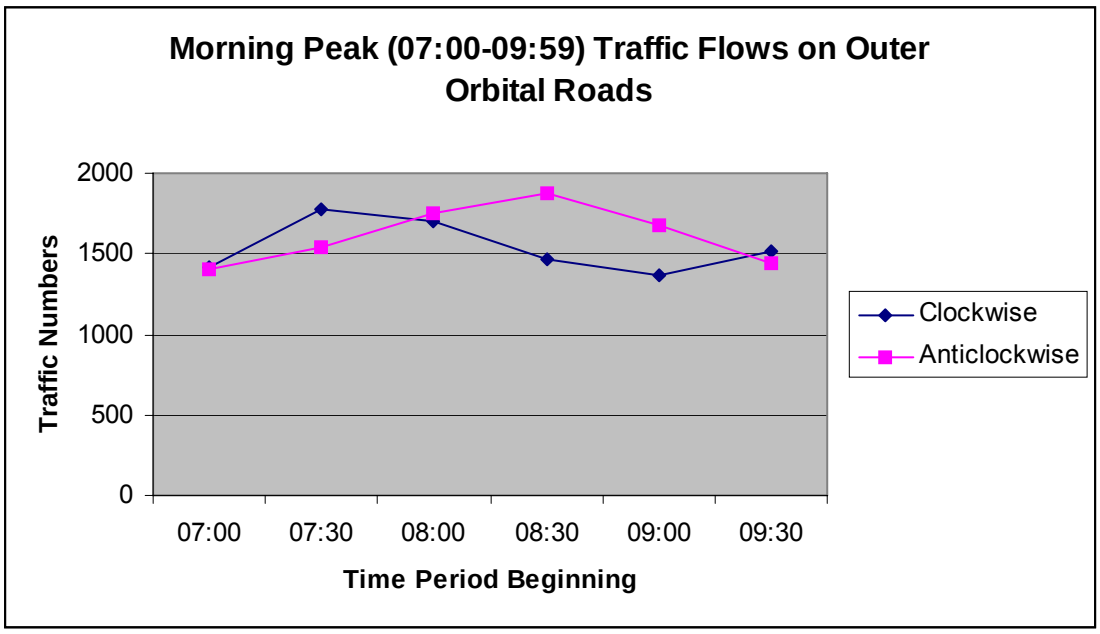
Figure 3.14: November 2006 3-hour AM weekday peak traffic flow in town centres



G3: (E) Traffic flow on roads in town centre areas

DTO organised a traffic counts on outer orbital roads in November 2006, which counted 2-way traffic flows on a number of orbital roads on a single Tuesday, Wednesday or Thursday weekday morning between 07:00 and 10:00hrs. The roads surveyed were Kilshane Road (west of N2), R121 (west of N2), R121 (at Westmanstown), R121 (at Passifyoucan), R113 (south of N7).

Figure 3.16: November 2006 3-hour AM weekday peak traffic flow variations (orbital roads) [14]



[14] *DTO November 2006 surveys*

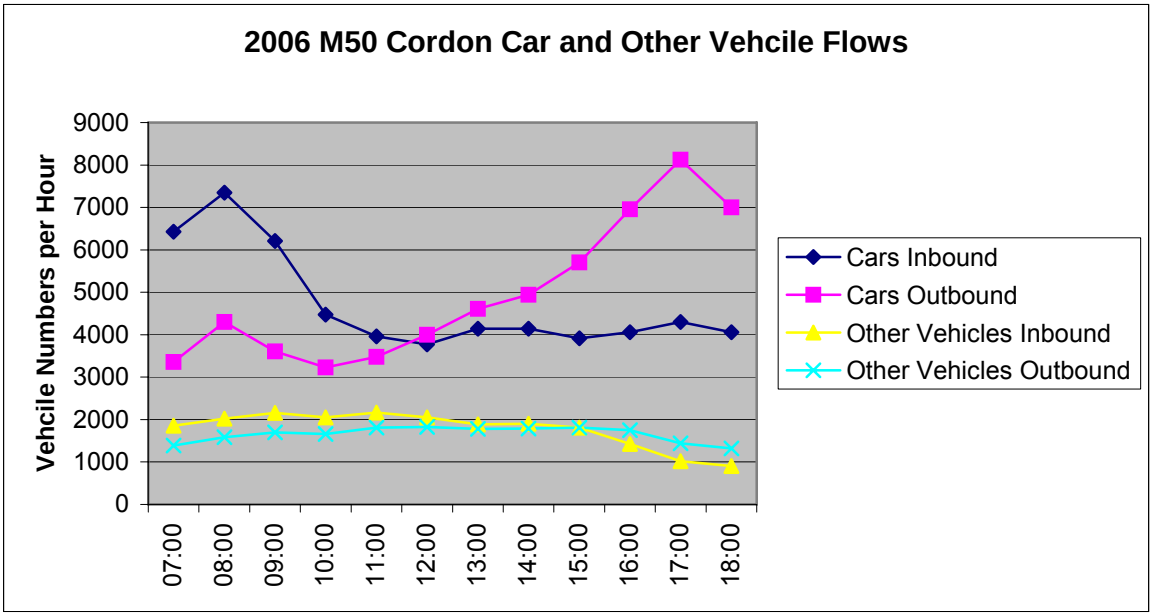
Figure 3.16 presents traffic flow variations for each hour in the time period between 07:00 and 10:00hrs, for the surveyed outer orbital roads. As can be seen peak flows are experienced at different times in each direction. In the case of clockwise traffic flows, the peak is experienced between 07.30 and 08:00hrs. For anticlockwise flows, the peak is experienced in the half hour period between 08:30 and 09:00hrs.

In total, 9,252 clockwise vehicle movements and 9,687 anticlockwise movements were counted on these roads. Highest 2-way traffic flows on the sample of outer orbital roads were experienced on the R113 (Belgard Road), where 5,433 vehicles were counted during the 3-hour survey period.

G4: (A) Traffic flows by vehicle type crossing M50 cordon

The November 2006 DTO M50 cordon count, classified vehicles on roads crossing the M50 by vehicle type according to the following categories: Car, LGV, HGV, Dublin Bus, Other Bus, Taxi, Motor Cycle (& Pedal Cycle). The surveys were two-way (inbound and outbound) on a single Tuesday, Wednesday, or Thursday weekday between 07.00 and 19.00hrs. A sample of roads crossing the M50 were surveyed (3 national roads and 3 non-national roads)

Figure 3.17: November 2006 weekday traffic flow variations of Cars (roads crossing M50) [15]



As can be seen, the majority of 2-way vehicular flows across the sample M50 roads surveyed in the 07:00 to 19:00 time period relates to cars (73%). Car flows peak inbound at 08.00hrs and outbound around 17.00hrs.

Other vehicles inbound are relatively stagnant until approximately 12.00hrs where they begin to decline. Other vehicles outbound show a slow increase from the a.m. period to a peak around 13.00 where they then begin a slow decline.

15 *DTO November 2006 surveys*

Figure 3.18: November 2006 weekday traffic flow variations of Other Vehicles (roads crossing M50) [16]

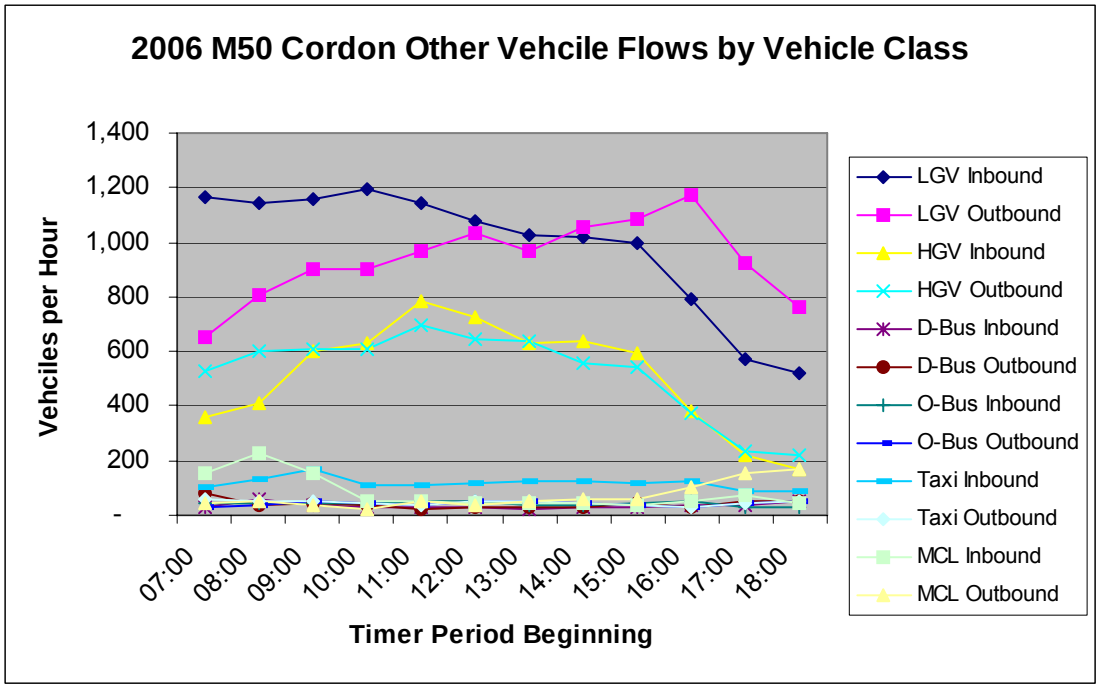


Figure 3.18 illustrates M50 cordon other vehicles by vehicle class. The above graph shows that excluding cars, LGVs are the most common vehicles. They peak inbound at 10.00hrs and decline slowly thereafter. In general there is a steady growth in inbound LGVs from 07.00 until 13.00hrs where there is an increase in their growth. They continue to grow until 16.00hrs after which there is a sharp decline.

The graph shows a significant number of HGVs. They peak inbound around 11.00hrs after a steady growth. There is then a slow decline until 15.00hrs after which the decline becomes more rapid. Outbound HGVs follow a similar pattern.

The remainder of the other categorised vehicles represent a minority when compared to the LGVs, HGVs and cars. Motorcyclists inbound peak at 08.00hrs and decline thereafter. Motorcyclists outbound reach their peak at 18.00hrs prior to which they do not fluctuate much. Taxis inbound peak at 09.00hrs and then decline.

G4: (B) Traffic flows by vehicle type crossing City Centre Canal Cordon

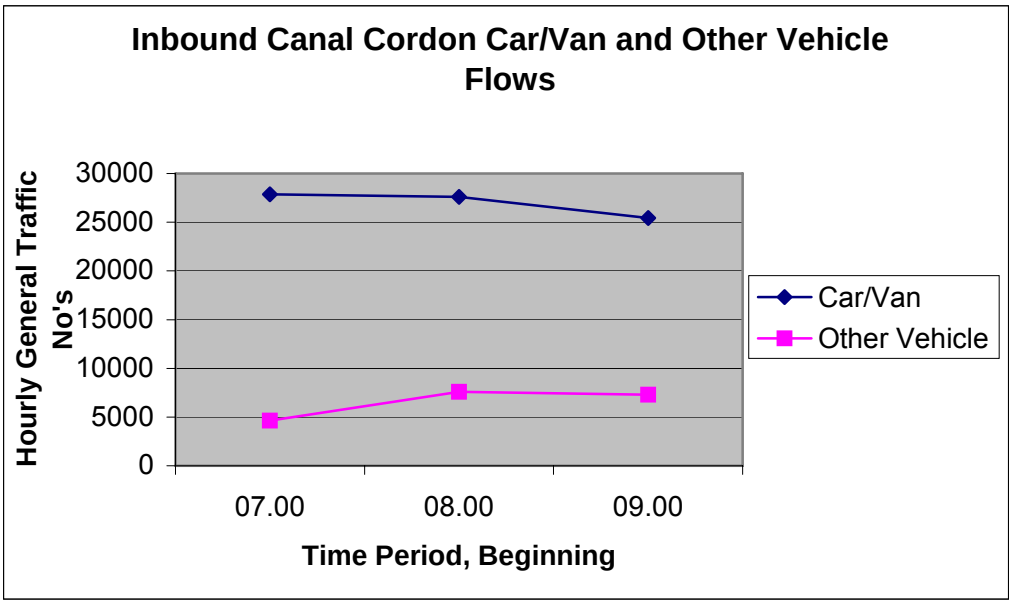
The Canal cordon count organised by Dublin City Council in November of each year, classifies vehicles according to the following categories: Car/Van, Artic Lorry, Rigid Lorry, Dublin Bus, Other Bus, Taxi, Motor Cycle (Pedal Cycle & Pedestrians). All roads crossing the Royal Canal and Grand Canal as well as other roads approaching the city centre from the west are surveyed. The count is undertaken over a 12-hour period on two separate weekdays (Tuesday, Wednesday or Thursday).

Figure 3.19 present inbound traffic flow variations by vehicle class between 07:00 and 10:00hrs, for the surveyed roads crossing the City Centre Canal cordon. HGVs

16 *DTO November 2006 surveys*

include Artic and Rigid Lorry classifications. Count site locations are illustrated in ***Appendix A***.

Figure 3.19: 2007 AM weekday peak traffic flow variations of Cars/Vans and Other Vehicles (roads crossing City Centre Canal cordon)



As can be seen from ***Figure 3.19*** the majority of vehicular flows across the Canal Cordon relate to Cars/Vans. These reach their peak at 07:00hrs and decline slowly thereafter. In contrast 'other vehicles' numbers increase slightly after 07:00hrs.

Figure 3.20: 2007 AM weekday peak Other Vehicle flow variations by vehicle class (roads crossing City Centre Canal cordon)

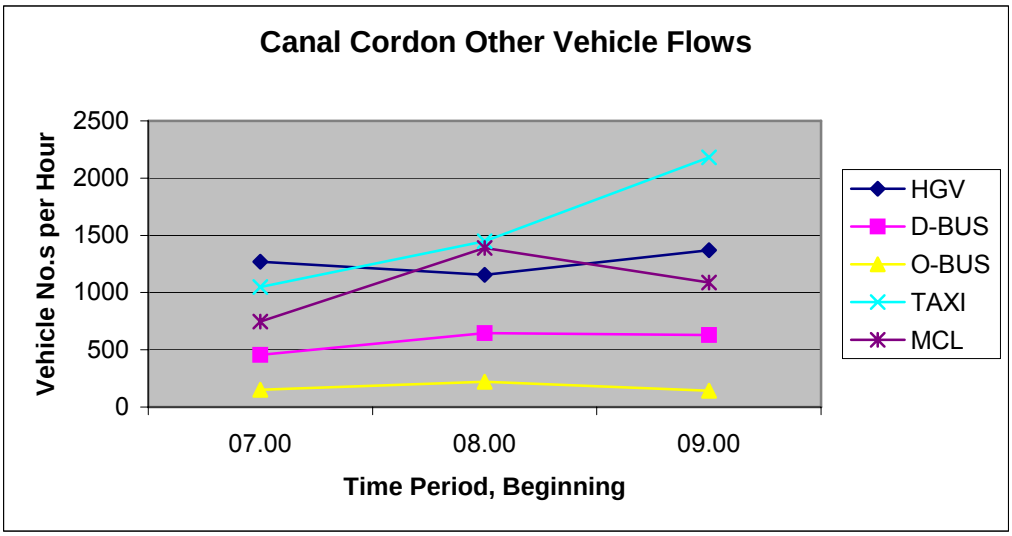


Figure 3.18 displays flows across the canal cordon by other vehicles (excluding Cars/vans). The graph illustrates that during the early morning period that HGVs are the most prominent vehicle crossing the Canal. As the morning develops we can see a steady increase in the number of Taxis crossing the Canal. They continue to increase from 07.00hrs throughout the morning. The fewest of the vehicles examined

to cross the canal were buses. These included two categories Dublin Bus (D-Bus) and Other Bus (O-Bus)

G5/ G6: Average car speeds and journey times/ Reliability of car journey times

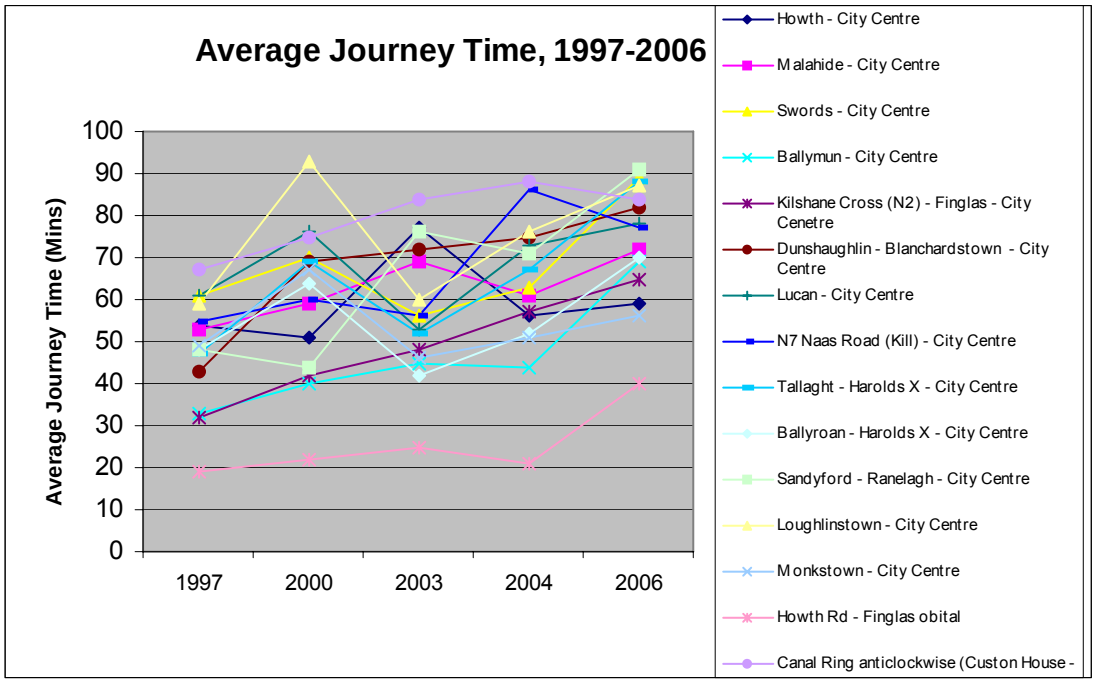
In November 2006, the DTO commissioned surveys to measure average journey times along 16 radial and 5 orbital routes within the GDA for AM Peak journeys.

Figure 3.19: 2006 AM weekday peak Other Vehicle flow variations by vehicle class (roads crossing City Centre Canal cordon)

Average car journey times in the AM peak were recorded across a variety of origins and destinations within Dublin. The results are illustrated in **Figure 3.19** (above). The average journey speed recorded was 12.4kph.

This speed represents a decline of 34% from the speed of 18.63kph recorded in 1997 (see figure 3.20, below).

Figure 3.20: 2007 AM weekday peak Other Vehicle flow variations by vehicle class (roads crossing City Centre Canal cordon)



G8: Percentage of time that roads are congested

Data on this indicator is not available at present. It is proposed that in future years, data will be collected for key sections of road, possibly in the City Council area initially, making use of vehicle tracking data provided by the NRA. Some work would be required to convert the vehicle tracking data output from the NRA into a suitable format for this report.

G9: Number and length of roads with weight/ height/ width restrictions

Local authorities were requested to supply data on the number of roads with weight/ height/ width restrictions in their jurisdictions. At the time of writing this draft report, no local authorities have provided this data.

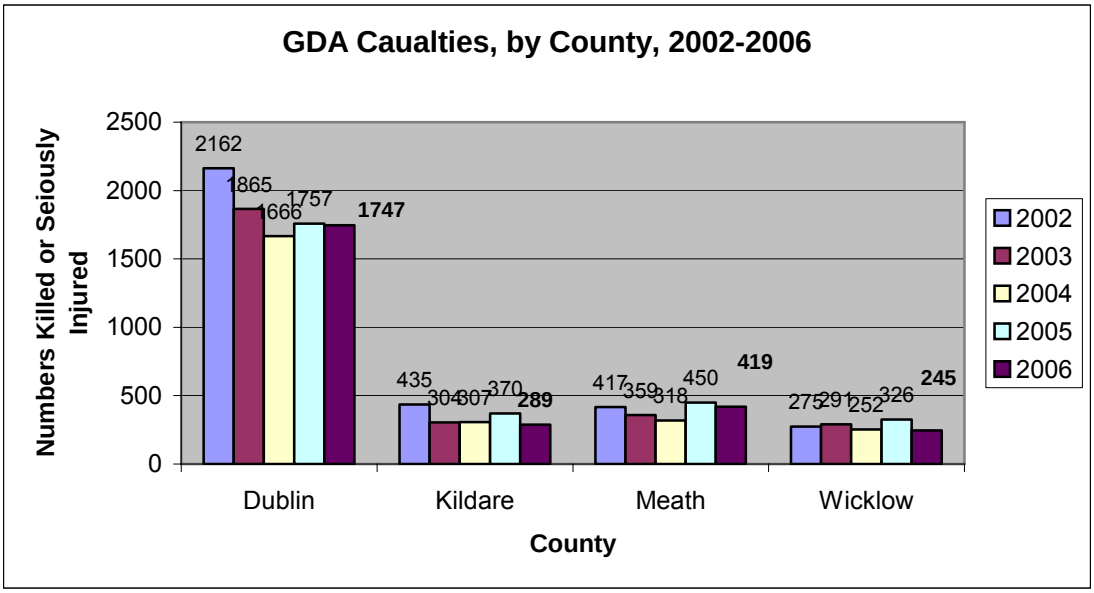
G10: (A) Number of personal injury road accidents

Until recently, the National Roads Authority (NRA) collated information on personal injury accidents (accidents involving injuries or death of those involved) from accident report forms, which are completed by An Garda Siochana. This information has been collected for many years, and is reported by the NRA in their annual publication Road Collision Facts Ireland. The most recent version of this report is the Road Collision Facts Ireland, 2006. The collation of accident data is now a function of the Road Safety Authority (RSA).

Figure 3.21 presents the number of accidents in which injuries were reported, for each local authority, in the 5 most recent years for which accident data is available: 2002 - 2006.

As can be seen from this graph, the number of personal injury accidents across the GDA fell by 18% between 2002 than 2006.

Figure 3.21: Numbers of road users killed or injured by local authority, 2002 - 2006[17]



G10: (B) Number of road accident casualties by casualty type

Until recently, the NRA has collated information on casualty types (killed or injured) for each personal injury accident, taken from accident report forms, which are completed by An Garda Siochana. The collation of accident data is now a function of the Road Safety Authority (RSA). ***Table 3.1*** presents the number of casualties, for each county in the GDA, in the 8 most recent years for which accident data is available: 1998 - 2006. It is proposed that in future years the RSA will provide disaggregated data by local authority area, i.e. for the 7 GDA local authorities.

As can be seen from this table, the number of fatalities on roads in the GDA decreased by 3.2% between 2005 and 2006, while the number injured fell by 7.1%

[17] *Road Collision Facts Ireland, 2006*

over this time. Over the 8-year period over which this data is available (1998 – 2006), the annual number of fatalities fell by 31.8% and the number injured by 48.2%.

Table 3.3: 1998 – 2006 number of road accident casualties by GDA local authority [18]

Year	Casuality Type	Dublin	Kildare	Meath	Wicklow	GDA Total	% Annual Change GDA Total	% Fall on 1998 Values, GDA Total
2006	**Killed**	34	23	22	11	90	-3.2%	-31.8%
	Injured	1713	266	397	234	2610	-7.1%	-48.2%
2005	**Killed**	41	14	30	8	93	-7.0%	-29.5%
	Injured	1716	356	420	318	2810	15.0%	-44.2%
2004	**Killed**	45	19	22	14	100	29.9%	-24.2%
	Injured	1621	288	296	238	2443	-10.9%	-51.5%
2003	**Killed**	37	17	14	9	77	-20.6%	-41.7%
	Injured	1828	287	345	282	2742	-14.1%	-45.6%
2002	**Killed**	49	19	18	11	97	-21.1%	-26.5%
	Injured	2113	416	399	264	3192	-15.4%	-36.7%
2001	**Killed**	53	31	26	13	123	1.7%	-6.8%
	Injured	2707	349	416	302	3774	-20.3%	-25.1%
2000	**Killed**	69	18	20	14	121	6.1%	-8.3%
	Injured	3363	518	454	400	4735	3.9%	-6.0%
1999	**Killed**	58	22	19	15	114	-13.6%	-13.6%
	Injured	3304	410	478	364	4558	-9.5%	-9.5%
1998	**Killed**	73	20	19	20	132	-	-
	Injured	3694	490	488	367	5039	-	-

[18] *Road Collision Facts Ireland, 2006*

G10: (B) Number of accident casualties by road user type

Until recently, the NRA has collated information on casualties by road user type for each personal injury accident, taken from accident report forms, which are completed by An Garda Siochana. The collation of accident data is now a function of the Road Safety Authority (RSA). The latest available data is presented in *Road Collision Facts 2006*.

Table 3.4: Numbers of accident casualties in Dublin by road user types 2006 [19]

	Dublin City		Dun Laogharie		Fingal		South Dublin		Total
	Killed	Injured	Killed	Injured	Killed	Injured	Killed	Injured	
Pedestrian	7	227	0	43	1	19	0	47	344
Cyclist	3	86	1	15	1	5	1	4	116
Motorcyclist	4	133	0	19	0	16	0	35	207
Car user	3	386	5	117	4	149	2	206	872
PSV user	0	23	0	2	0	4	0	9	38
Goods vehicles users	0	32	0	4	1	11	0	19	67
Other or unknown	0	58	0	6	1	13	0	10	88
Total	17	945	6	206	8	217	3	330	1732

Road user types are broken out by 'main population centres' which includes data for the Dublin are local authorities. The data shows that the majority of deaths or serious injuries occurred among car users (872). This was followed by pedestrians (344) and motorcyclists (207).

[19] *Road Collision Facts Ireland, 2006*

G11: Environmental emissions attributable to road traffic (NO_2, PM_{10}, CO and VOC)

The Environmental Protection Agency (EPA) and Dublin City Council carry out continuous multi-pollutant ambient air quality monitoring at various locations in the Dublin City area. There are no multi-pollutant monitoring sites in Meath, Kildare or Wicklow as urban areas within these counties do not automatically meet the criteria for the provision of these monitoring sites as specified by EU regulations. There are, however, a number of SO_2 and black smoke sites operated by Local Authorities in Kildare and Wicklow. The EPA also operate 3 mobile air monitoring units which are used to carry out air quality monitoring primarily in larger towns in order to determine whether fixed stations are necessary in these areas (mobile monitoring in these urban areas have indicated that pollutant levels do not require the provision of such sites). The EPA compile air quality monitoring data and produce the results in an annual report, the latest of which is Air Quality in Ireland, 2006.
The multi-pollutant continuous monitoring sites monitor a wide range of emissions: Particulates (PM_{10}), Lead, NO_2, NO_x, SO_2, CO, VOC (Benzene)

The primary source of NO_2, PM_{10}, CO and to some extent VOC is road traffic.

The continuous monitoring sites in the Dublin City area fall into 3 categories, identified by the surrounding land uses: These are:

- City Centre: Wood Quay, College Green, Coleraine Street
- Background Urban: Phoenix Park
- Suburban: Crumlin, Rathmines, Ballyfermot, Marino

Table 3.4: Annual ambient air quality emission values which are directly attributable to road traffic (2003, 2004, 2005 and 2006 values) [20]

Location	City Centre								Suburban											
	Winetavern St				Coleraine St				Marino				Rathmines				Ballyfermot			
Pollutant	2003	2004	2005	2006	2003	2004	2005	2006	2003	2004	2005	2006	2003	2004	2005	2006	2003	2004	2005	2006
PM_{10} (µg /m^3)	26	20	20	19	28	20	20	21	23	14	14	16	23	17	17	19	19	14	15	17
NO_2 (µg /m^3)	38	30	33	35	37	32	28	31					25		22	23	26	23	22	22
CO (mg /m^3)	0.2	0.3	0.2	0.3	0.6	0.9	1.1	0.7												
C_6H_6 (µg /m^3)	1.6	1.3	1.4										1.1		0.5	2.7				

PM_{10}

[20] Source: EPA, Air Quality in Ireland 2006
http://www.epa.ie/downloads/pubs/air/quality/epa_air_quality_report_2006.pdf
Source: EPA, Air Quality in Ireland 2005
http://www.epa.ie/NewsCentre/ReportsPublications/AirQuality/FileUpload,10063,en.pdf
Source: EPA, Ambient Air Quality in Ireland 2004
http://www.epa.ie/NewsCentre/ReportsPublications/AirQuality/FileUpload,8623,en.pdf
Source: EPA, Air Quality and Emissions to Air Report 2003
http://www.epa.ie/NewsCentre/ReportsPublications/AirQuality/FileUpload,6432,en.pdf

Limits defined in Directive 1999/30/EC. Annual Mean limits of 40 μg/m^3 came into effect in 2006. None of the monitoring stations recorded average values in excess of this limit. Over the 3-year period between 2003 and 2006, significant improvements were recorded at most monitoring stations with the greatest improvement occurring at Marino. Only Coleraine St. was not compliant with the Stage 2 annual limits of 20 μg/m^3 (to be achieved by 2010).

NO_2
Hourly and Annual Mean Limits defined in Directive 1999/30/EC. All stations were compliant, (40 μg m^{-3}) with the greatest improvement at Ballyfermot. Limit values come into force in 2010.

Carbon Monoxide (CO)
Limit defined in Directive 2000/69/EC. The limit value of 10 mg/m^3 applies to the maximum daily eight-hour mean concentrations. This limit was not exceeded at any of the fixed sites in 2006. Results were low compared to the limit value. The highest value recorded, at Coleraine St., of 1.1 mg /m^3, is below the lower threshold figure of 5 mg /m^3.

C_6H_6 (Benzene)
Limits defined in Directive 2000/69/EC. Under this directive, the annual mean level should not exceed the Upper Assessment Threshold of 5 μg /m^3. Rathmines recorded a level of 2.7μg/ m^3. This was the only station monitored to exceed the Lower Assessment Threshold of 2 μg/m^3 indicating an in crease in the level of benzene in the atmosphere. C_6H_6 values monitored do not represent an improvement over the 2003 situation.

G12: Number of locations where road traffic noise levels exceeds agreed standards

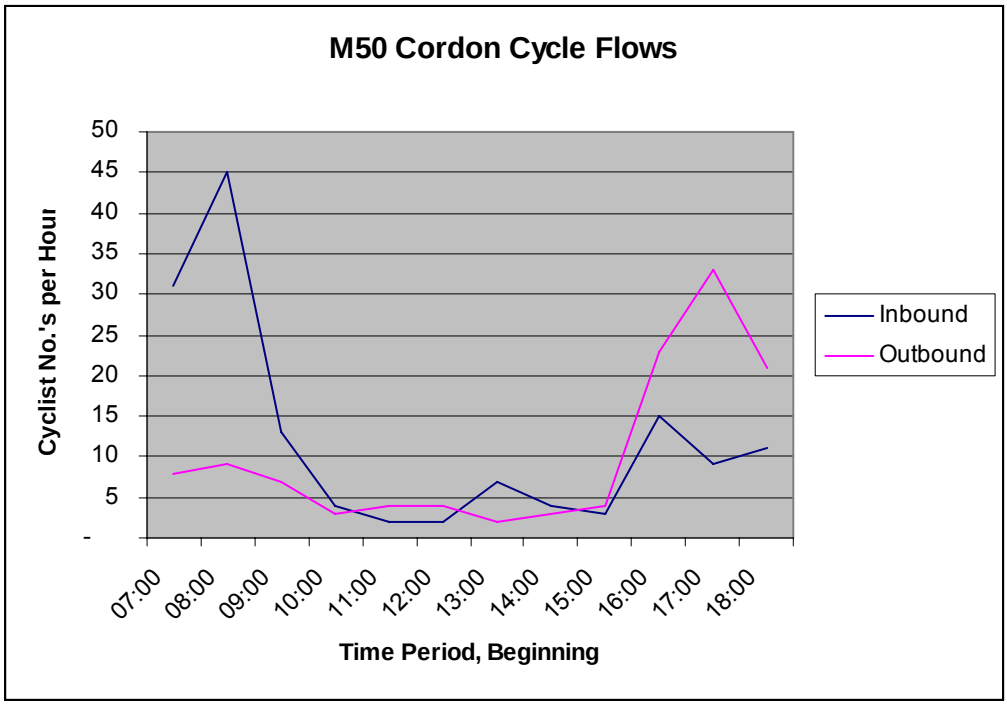
Data on this indicator is not available at present. It is proposed that in future years, data will be collected for sections of road, focusing on those where pedestrian flows are high or where there are large numbers of residences adjacent to the road. In order to monitor this indicator, acceptable noise standards associated with road traffic will need to be agreed. It is expected that local authorities or the NRA would collect noise data.

4. Cycling

C1: (A) Cycle flows across M50 cordon

The M50 cordon count, organised by the DTO in November 2006, counted 2-way cycle flows on a sample of roads crossing the M50 on a single Tuesday, Wednesday or Thursday weekday between 07:00 and 19:00hrs.
Figure 4.1 presents cycle flow variations across a sample of roads crossing the M50. Count site locations are illustrated in ***Appendix A***. In total, 146 inbound and 128 outbound cyclists were counted crossing the M50 Cordon in the 12 hour survey period. The peak periods occurred between 08:00-09:00hrs in the morning and17:00-18:00 in the evening.

Figure 4.1: November 2006 weekday cycle flow variations (all roads crossing M50) [21]



C2: (B) Cycle flows crossing City Centre Canal cordon

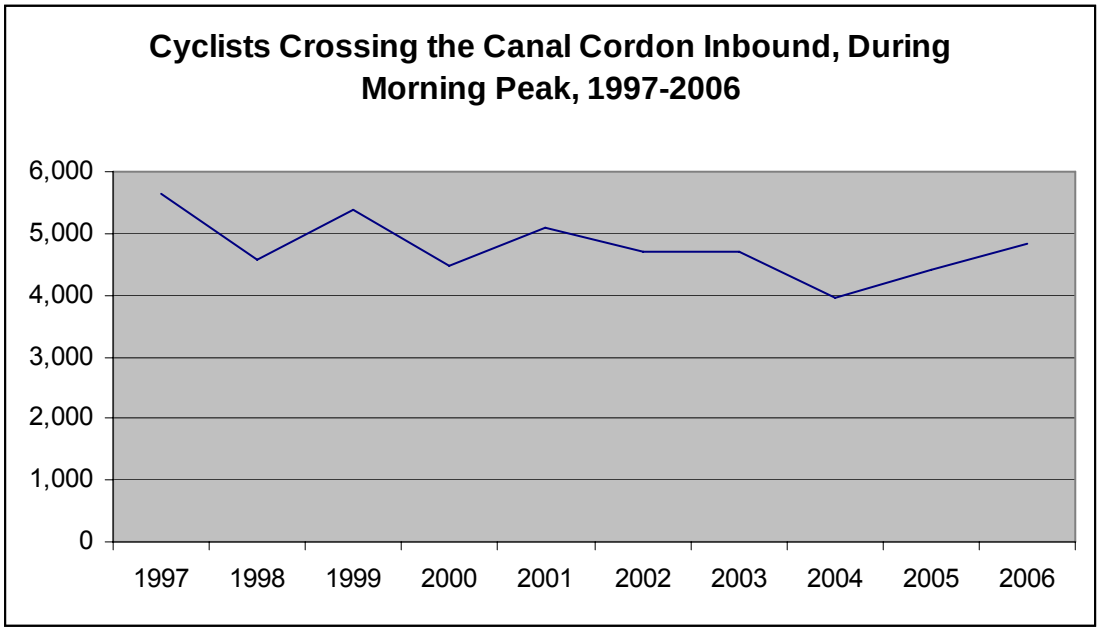
Dublin City Council organises a Canal Cordon count in November of each year. All roads crossing the Royal Canal and Grand Canal as well as other roads approaching the city centre from the west are included in this annual survey. The count is undertaken over a 12-hour period on two separate weekdays (Tuesday, Wednesday or Thursday). Inbound cyclists were surveyed between 07:00 and 16:00hrs each day and outbound cyclists between 16:00 and 19:00hrs.

Figure 4.2 presents inbound cycle flow variations between 07:00 and 10:00hrs in 1997-2007 based on the average flow over 2 days across all canal cordon-crossing points. Count site locations are illustrated in ***Appendix A***.

[21] *Source: DTO November 2006 surveys*

Overall cyclist numbers, during the AM peak, increased by 22% between 2004 and 2006.

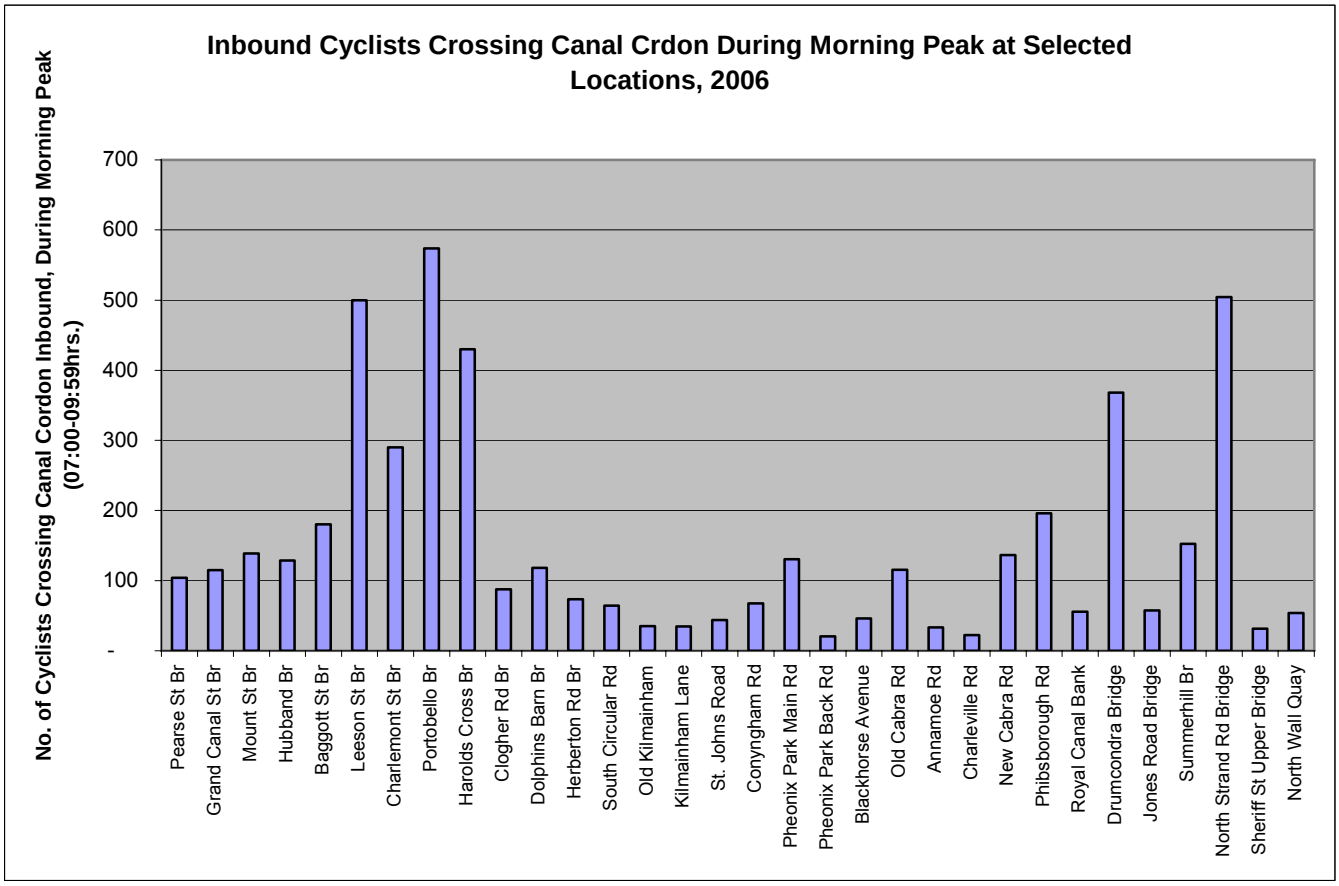
Figure 4.2: November 1997-2006 morning peak weekday cycle flows across the Canal Cordon [22]



[22] *Source: DCC November 2004 and 2006 surveys*

Figure 4.3 illustrates inbound morning peak (07:00-10:00hrs) cycle flows across the Canal cordon by location. On the north side of the city, North Strand Bridge and Drumcondra Bridge are the main corridors for cyclists, with 10% and 7% of overall cycle flows respectively. On the south side, Portobello Bridge and Lesson St. Bridge are the main corridors with a 12% and 10% share respectively.

Figure 4.3: November 2003 and 2004 12-hour weekday cycle flows across the Canal Cordon [23]



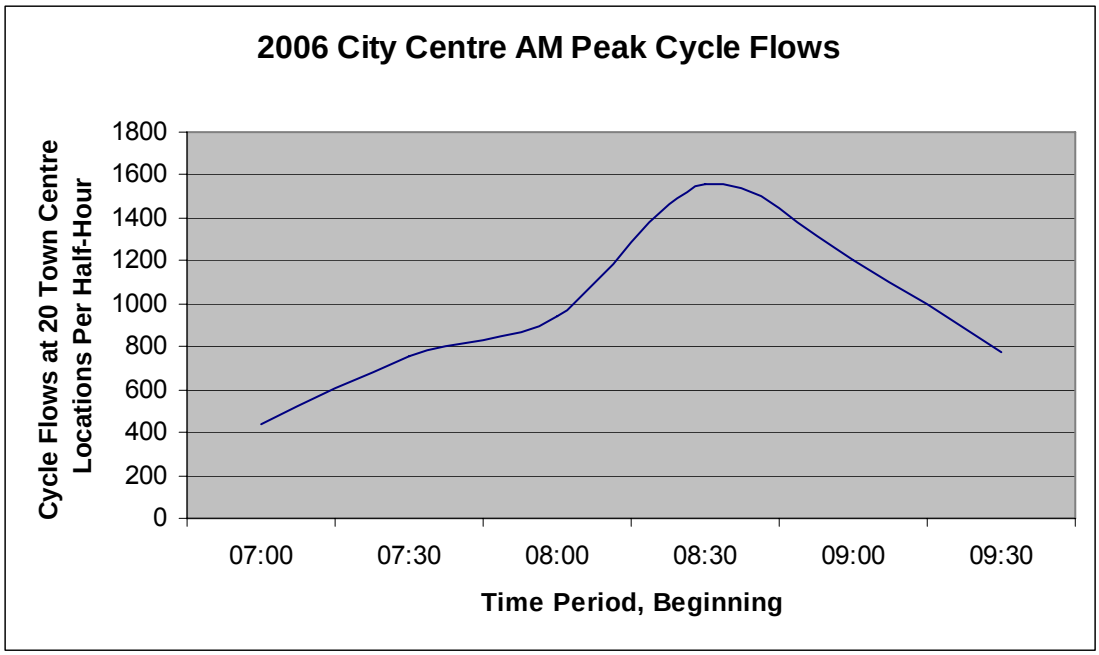
[23] *Source: DCC November2006 survey*

C2: (C) Cycle link counts at City Centre locations

As part of the November 2006 Surveys organised by the DTO, two-way cycle only link counts were undertaken at a total of 20 locations in the city centre. Some or all of these locations were also surveyed in 2003, 2004 and 2005. The cycle counts were undertaken on 5 separate weekdays (either a Tuesday, Wednesday or Thursday) between 07:00 and 10:00hrs. Count site locations are illustrated in ***Appendix A***.

Figure 4.4 illustrates the variation in cycle flows by half-hour time period over the 3-hour survey period (average flows over the 5-day survey period). Two-way cycle flows peak during the half hour period beginning at 08.30hrs.

Figure 4.4: November 2006 AM peak weekday cycle flows at City Centre count locations [24]



[24] *Source: DTO November 2003-2006 surveys*

Figure 4.5: November 2004, and 2006 3-hour AM peak weekday cycle flow comparisons by city centre location [25]

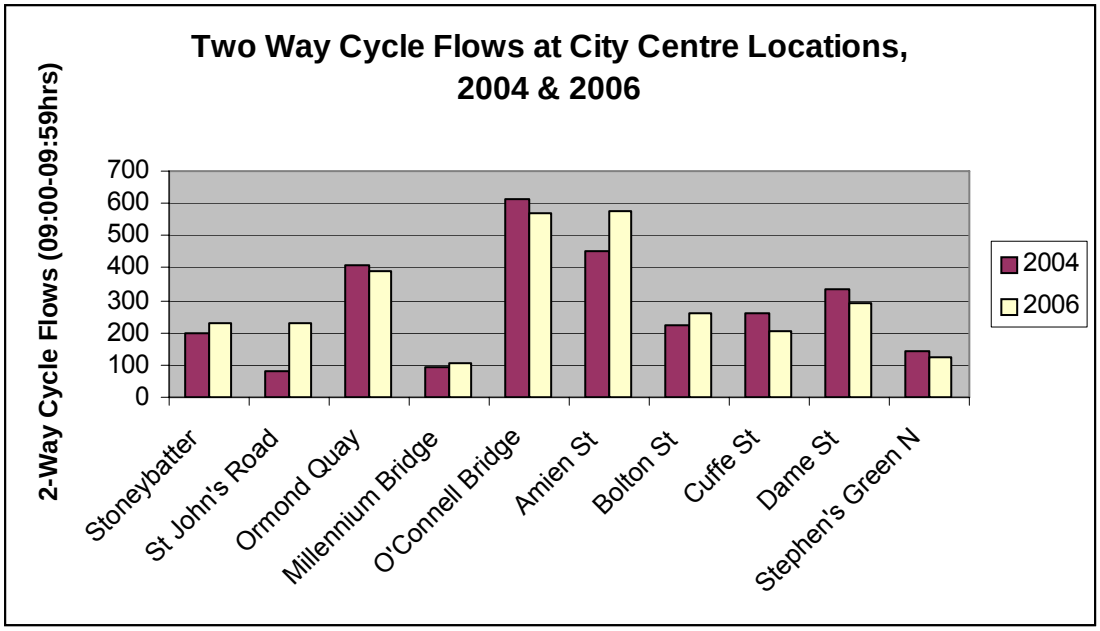


Figure 4.5 illustrates the change in the number of cyclists at a variety of city centre locations between 2004 and 2006. There has been a 6% rise in the number of cyclists recorded over this period. The largest increase occurred on St John's Road (175%) while the largest decrease occurred on Cuffe St (-21%).

[25] *Source: DTO November 2004, 2006 surveys*

Figure 4.6: November 2006 3-hour AM peak weekday cycle flow comparisons by city centre location [26]

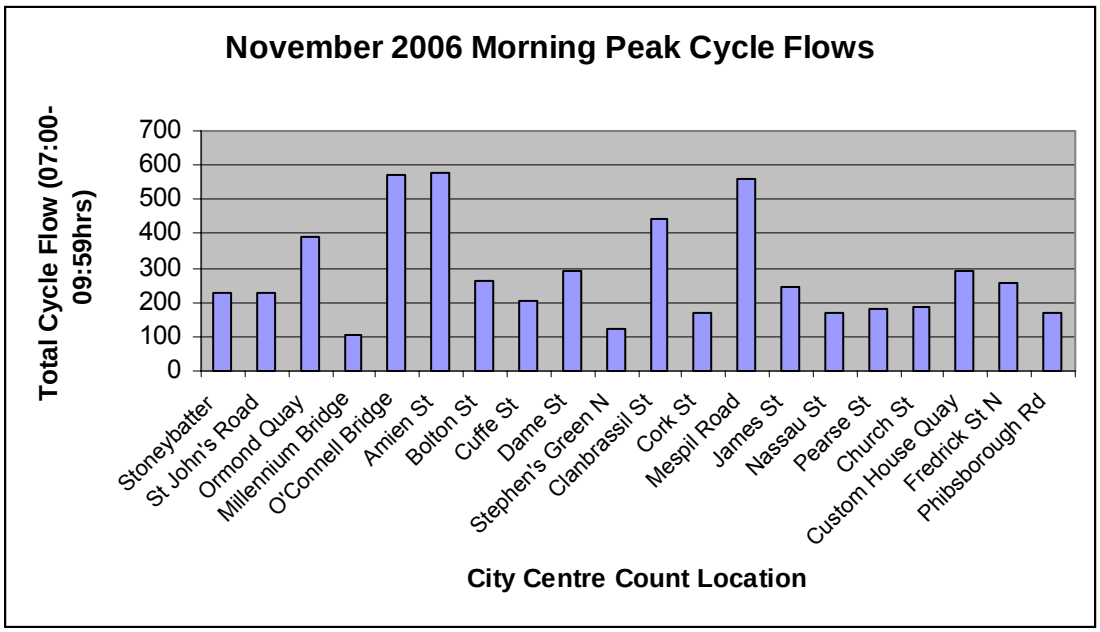


Figure 4.6 presents a view of the a.m. location of cyclists in the city. Of the areas surveyed, O'Connell Bridge and Amiens St on the Northside and Clanbrassil St and Mespil Road on the Southside are the busiest areas for cyclists during this time period.

C2: (D) Cycle flow on roads in town centre areas

Junction cycle counts in and approaching town centres were organised by the DTO and were carried out in November 2006. The counts were carried out on 5 separate weekdays (either a Tuesday, Wednesday or Thursday) between 07:00 and 10:00hrs in and approaching the following centres in the Metropolitan Area of Dublin as defined by the Regional Planning Guidelines; Quarryvale and Greystones.

[26] *Source: DTO November 2006 surveys*

Figure 4.7: November 2003 and 2005 AM weekday peak traffic flow comparisons by Town Centre (Town Centre Junctions) [27]

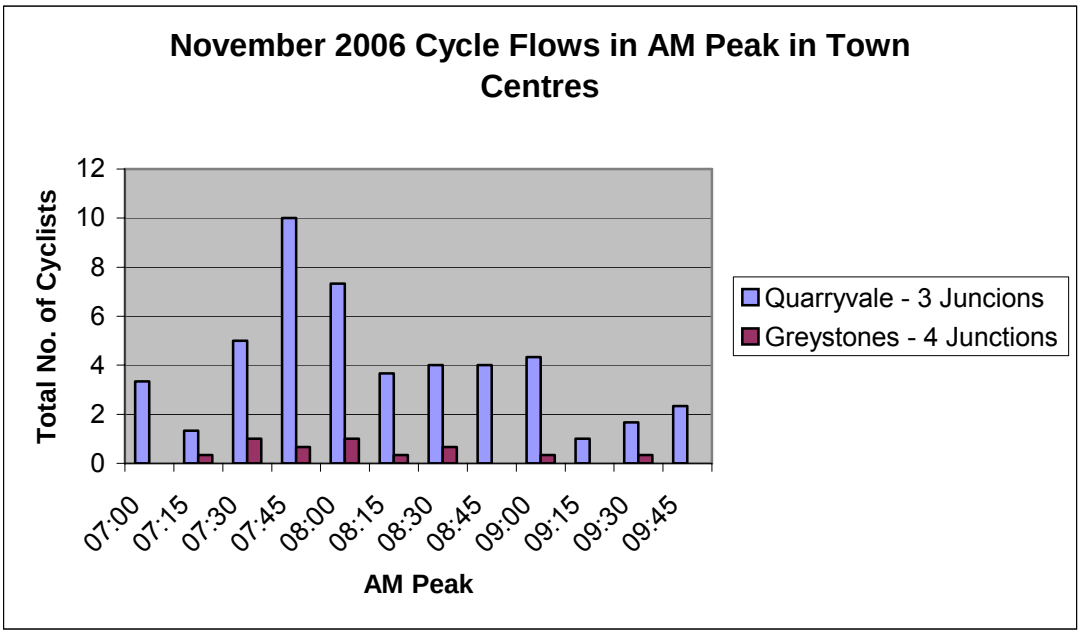


Figure 4.7 presents the number of cyclists at town centre junctions in Quarryvale and Greystones during the a.m. peak (07.00 – 09.59hrs). The peak of number of cyclists for these locations was recorded during the quarter hour time period beginning 07:45hrs.

C3: Length of Cycle Network

The DTO commissioned an audit of cycle facilities in the GDA in summer 2007. The provision of cycle tracks is documented in Table below.

Table 4.1: Cycle track provision in the GDA, 2007

Local Authority	KM Cycle Tracks
Dublin City Council	228
South Dublin County Council	132.3
Fingal County Council	111.8
Dún Laoghaire Rathdown County Council	117.38
Kildare County Council	50
Meath County Council	6.5
Wicklow County Council	29.3

The highest provision of cycle tracks is found in the Dublin area is found in Dublin city Council, at 228km. The lowest provision is in Fingal, at 111.8 km.

Within the Mideast, Kildare County Council has the greatest length of cycle track, at 50km. The least amount is in Meath, at 6.5km.

[27] Source: *DTO November 2006 survey*

C4: Cycle Network Features

The DTO commissioned an audit of cycle facilities in the GDA in summer 2007. This audit revealed 261 stopping areas.

C5: Number of cycle parking spaces at selected sites

Data not available.

C6: Usage of cycle parking spaces

DTO undertook surveys of cycle parking usage (occupancy and turnover) in May/ June 2004. The results of these surveys were included in the 2005 Road User Monitoring Report.

C7: Cyclist satisfaction

Data not available.

5. Pedestrians

P2: Number of pedestrians crossing City Centre Canal Cordon

Dublin City Council organises a Canal cordon count in November of each year. All roads crossing the Royal Canal and Grand Canal as well as other roads approaching the city centre from the west are included in this annual survey. The count is undertaken over a 12-hour period on two separate weekdays (Tuesday, Wednesday or Thursday). Inbound pedestrians were counted between 07:00 and 16:00hrs each day and outbound cyclists between 16:00 and 19:00hrs.

Figure 5.1 presents inbound pedestrian flows, during the morning peak in November. Count site locations are illustrated in ***Appendix A***.

Across all the Canal Cordon crossing points, pedestrian numbers have varied from a low of 15,565 in 1998 to a high, of 18,558 in 2001. Flows in 2006 were 17,114, a 12% increase on 2004.

Figure 5.1: November 1997- 2007 AM Peak inbound pedestrian flow[28]

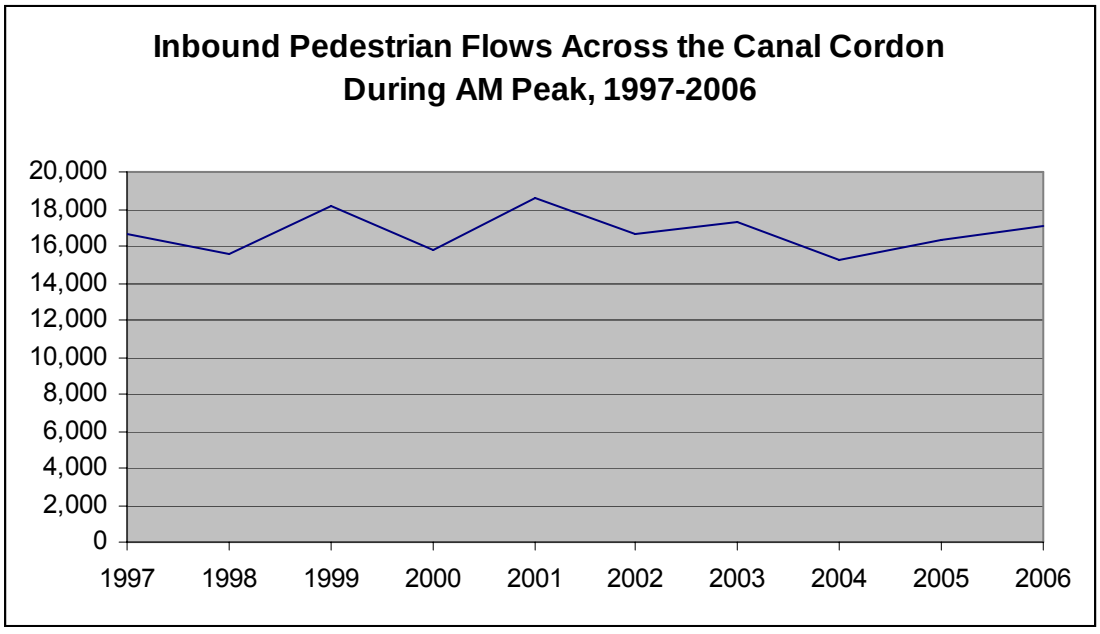
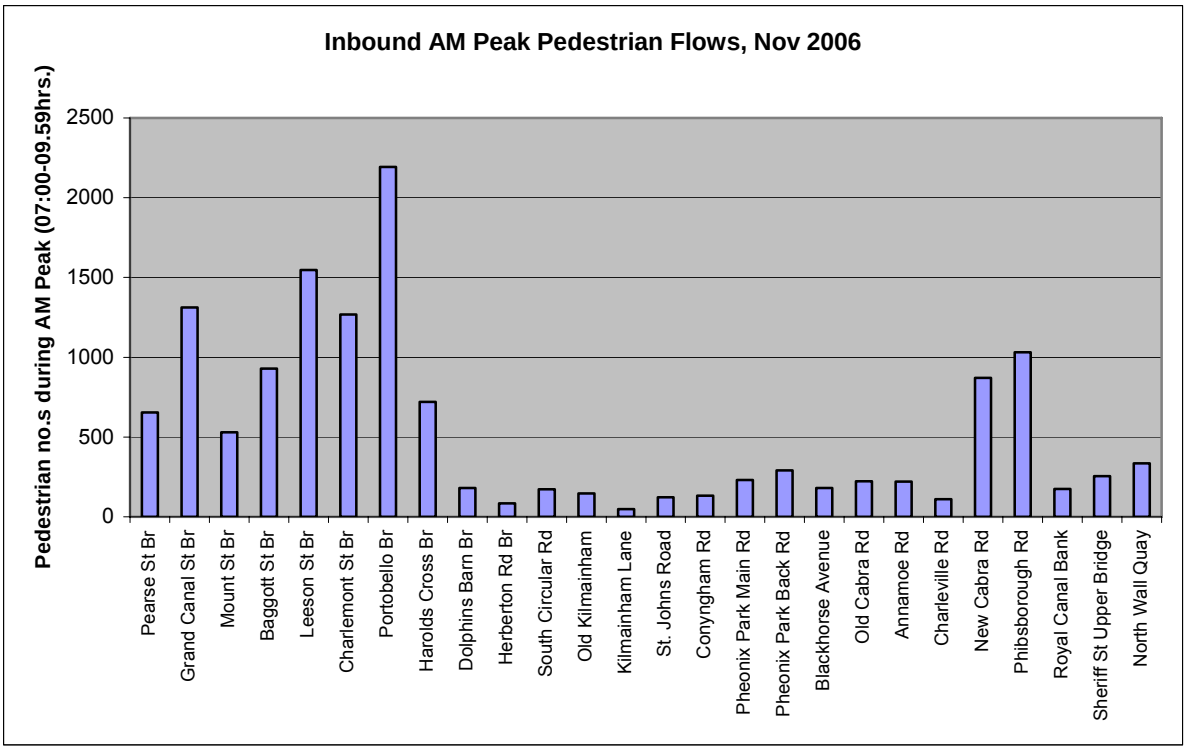


Figure 5.2 breaks down inbound am peak pedestrian flows in 2006 by a selected number of locations. As can be seen, flows over Portobello Bridge make up the highest proportion of overall flows, at 16% or 2,194 pedestrians.

[28] *Source: DCC November 1997-2006 surveys*



P3 : Number of pelican/ zebra crossings

Data not available.

P4 : Number of signalised junctions with pedestrian facilities

Data not available.

P6: (A) Pedestrian facility and waiting time surveys at major junctions in Dublin City Centre

The DTO organised a survey of pedestrian facilities at major city centre junctions in April/ May 2006. These survey locations are presented in a map in ***Appendix A.***

In total, 22 junctions were selected in the City Centre, all of which were junctions between roads of a regional/ regional, regional/ national or national/ national classification. Pedestrian wait time surveys were surveyed at the same time of year in 2004 at all 22 of the junctions surveyed. Pedestrian wait time surveys at 9 of the junctions surveyed in 2006 were also surveyed in 2005.

The surveys checked the existence of various signalised pedestrian crossing facilities across each of the arms of the junction and where signalised pedestrian crossing facilities were present, the maximum waiting times experienced by pedestrians while crossing at the signalised pedestrian crossings was recorded. Surveys were undertaken between 07:00 to 10:00hrs on a Tuesday, Wednesday or Thursdays.

The surveys of maximum pedestrian waiting times were undertaken as follows:

Surveyor waited at the first crossing point for the orange/ red man to appear, pressed pedestrian signals activation button and simultaneously started the stopwatch and waited on that side until the green man appeared. The stopwatch was then stopped and the time shown on the clock recorded. This represented the 'pedestrian waiting time'. This exercise was repeated on 2 separate occasions for all arms in each crossing direction to record 2 sets of waiting times per direction of crossing for each junction arm during the 07:00 to 10:00hrs period.

Where there was an interruption to the crossing (e.g. pedestrian island), and the surveyor was unable to complete the full crossing of the junction arm within the green signal time, then the pedestrian signals activation button was immediately pressed upon reaching the island while simultaneously starting the stopwatch (while waiting on the island) and then stopped as soon as the green man appears. This was repeated in the same manner where more than 2 interruptions to the junction arm crossing were involved. In all situations involving interrupted junction arm crossings the full combined time was recorded to derive the pedestrian waiting time. All sites with such interruptions (pedestrian/ centre islands) were noted.

Table 5.1 shows out the pedestrian facilities present and the maximum waiting time recorded at each junction arm for the surveyed junctions in the City Centre. The average maximum waiting time for each junction (i.e. average of the maximum waiting times in both directions across all signalised junction arms) is also indicated.

Table 5.1: Pedestrian facilities and pedestrian wait time survey results at selected major junctions in the City Centre [29]

Location No.	Junction (City Centres)	No. of arms	No. of arms with dropped kerb	No. of arms with ped. signals present	No. of arms with audible signals present	No. of arms with tactile paving present	No. of arms with ped. gaurdrails	Are all Junction Crossing Movements feasible with Ped Crossing Facilities?	Maximum Waiting Time across a Single Junction Arm	Average Maximum Waiting Time across all Signalised Junction Arms
1	Leeson St Lower/ Earlsfort Terrace *	4	4	4	0	4	0	Yes	02:23	01:52
2	North Circular Rd/ Old Cabra Rd*	4	4	4	4	4	2	Yes	02:08	01:50
3	Westmorland St/ College St*	3	3	3	3	3	0	Yes	02:07	01:53
4	Dame St/ South Great Georges St*	3	3	3	3	3	0	Yes	01:59	01:56
5	High St/ Nicholas St*	4	4	3	2	4	2	Yes	04:03	02:35
6	Parnell Rd/ Crumlin Rd*	4	3	3	3	3	2	Yes	03:06	02:18
7	Parnell St/ Gardiner St Lower *	4	4	2	2	3	1	No	02:08	01:30
8	Amiens St/ Seville Place*	4	2	1	0	1	1	No	01:55	01:55
9	Dorset St Lower/ Gardiner St Upper*	4	3	3	3	3	3	Yes	03:20	02:10
10	North Strand Row/ Poplar Row	4	3	2	2	2	0	No	03:58	01:54
11	Church St/ King St North	4	4	4	2	4	2	Yes	03:15	02:05
12	Dorset St Upper/ Granby Row	4	4	2	2	2	0	No	01:58	01:23
13	Parnell St/ O'Connell St	4	4	4	3	4	1	Yes	03:26	02:13

[29] *Source: DTO July/ August 2007 Surveys*

14	Custom House Quay/ Tara St Bridge	4	4	4	4	4	1	Yes	02:08	01:57
15	Thomas St/ Bridgefoot St	4	2	2	2	2	1	No	03:18	02:20
16	Aston Quay/ D'Olier St	5	5	5	4	4	4	Yes	03:02	02:07
17	Pearse St/ Macken St	4	3	1	1	1	0	No	01:58	01:54
18	Westland Row/ Lincoln Place	3	3	3	0	3	0	Yes	03:31	02:28
19	Cuffe St/ Wexford St	4	4	4	3	4	0	Yes	02:45	02:02
20	St. Stephens Green / Dawson St	3	3	3	3	0	0	Yes	01:30	01:23
21	South Circular Rd/ Clanbrassil St	4	4	2	2	2	0	No	01:54	01:54
22	Pembroke Rd/ Northumberland Rd	4	3	3	2	3	2	No	02:25	01:57

	Total no. of arms	***Total no. with dropped kerb***	***Total no. with ped. signals***	***Total no. with audible signals***	***Total no. with tactile paving***	***Total no. with ped. gaurdrails***	***Total no. with all movements feasible:***	***Maximum Value:***	***Average Value:***
	85	89%	76%	58%	74%	26%	64%	04:03	01:59

As can be seen from the above table, 76 or 89% of the junction arms surveyed had dropped kerbs, 50/ 85 or 58% had audible signals present, 63/ 85 or 74% had tactile paving in place.

65/ 85 or 76% of the junction arms surveyed had signalised pedestrian crossing facilities present. It was possible to make crossings (either directly or indirectly) of the full junction at 14/ 20 or 70% of the junctions surveyed.

The maximum waiting time across a single junction arm measured at the 22 junctions surveyed was 4:03 minutes, recorded at the junction of High Street/ Nicholas Street. This time was measured in a westbound direction across the Nicholas Street arm of the junction. This represents the maximum actual waiting time that could be experienced by a pedestrian (i.e. if the pedestrian arrived at the junction just as the pedestrian green man turned orange/ red) while crossing any of the signalised junction arms surveyed.

The average maximum waiting time (average of the maximum waiting times in both directions across all signalised junction arms) across the sample of 22 major junctions was 1:59 minutes. This represents a slight increase over the corresponding 2006 value of 1:55 minutes.

Table 5.2 provides a comparison between the 2004, 2005, 2006 and 2007 pedestrian wait time survey results for the 9 major junctions surveyed in all 3 years. As can be seen from this table, maximum pedestrian wait times at junction arm increased at 6 of the 9 junctions surveyed between 2004 and 2007. Maximum waiting times across all signalised junction arms increased at 8 of the 9 junctions surveyed between 2004 and 2007.

Table 5.2: 2004-2007 pedestrian wait time comparison at selected major junctions in the City Centre [30]

Location No.	Junction (City Centres)	2007 Maximum Waiting Time across a Single Junction Arm	2006 Maximum Waiting Time across a Single Junction Arm	2005 Maximum Waiting Time across a Single Junction Arm	2004 Maximum Waiting Time across a Single Junction Arm	2004 - 2007 Difference Max Waiting Time across a Single Junction Arm
1	Leeson St./ Earlsfort Terrace/ St. Stephens Green	02:23	02:20	02:19	02:02	(00:21)
2	North Circular Rd/ Old Cabra Rd./ Prussia St.	02:08	02:18	01:42	01:52	(00:16)
3	College St. / Westmoreland St.	02:07	02:31	02:46	02:38	00:31
4	Dame St/ South Great Georges St	01:59	01:54	01:58	01:54	(00:05)
5	High St/ Winetavern St./ Christ Church	04:03	03:59	04:22	04:13	00:10
6	Crumlin Rd./ Dolphin Rd./ Parnell Rd.	03:06	03:06	03:01	01:50	(1:16)
7	Parnell St/ Gardiner St Lower	02:08	01:54	01:54	01:51	(00:17)
8	Amiens St./ Portland Row	01:55	01:53	01:53	01:52	(00:03)
9	Dorset St./ Gardiner St.	03:20	03:12	03:13	02:01	(01:19)
		2007 Max Value	***2006 Max Value***	***2005 Max Value***	***2004 Max Value***	***Max Value***
		04:03.0	03:59.0	04:22.0	04:13.0	0:10

P6: (C) Pedestrian wait time at junctions in outer town centre areas

The DTO organised a survey of pedestrian facility and pedestrian waiting times at major junctions in outer town centres in November 2006.

Surveys were undertaken between 07:00 to 10:00hrs on a single Tuesday, Wednesday or Thursdays, using the same survey methodology as described in P6 (A) above.

Table 5.3 illustrates the results of the pedestrian facility surveys at the town centre junctions surveyed. Of the 26 junctions surveyed, 12 of the junctions in November 2006 had signalised pedestrian facilities on all arms of the junction.

[30] *Source: DTO July/ August 2007 Surveys*

Table 5.1: Pedestrian facilities and pedestrian wait time survey results at selected urban centres [31]

Location	Location No.	Junction	No. of junction arms	No. of junction arms with signalised ped. crossing facilities	All junction crossing movements feasible with ped. crossing facilities?	No. of arms with dropped kerb	No. of arms with audible signals	No. of arms with tactile paving	Maximum Waiting Time across a Single Junction Arm
Quarryvale	1	Coldcut Road / South entrance to Liffey Valley S.C.	5	5	Yes	2	1	2	02:39
Greystones	2 & 3	R761/R762 (2 Junctions, all arms)	7	0	No	0	0	0	n/a
Newbridge	4 & 5	R416/R445/ R445 Junctions (2 junctions all arms)	7	7	Yes	2	1	2	04:40
Arklow	6 & 7	N11 / R750, N11/R747 (all junction arms)	7	0	No	0	0	0	n/a
			26	46%		15%	8%	15%	

[31] *Source: DTO July/ August 2007 Surveys*

6. Taxi

T1: Number of licensed taxis

Data not available.

T2: Number of taxi ranks

Data not available.

T3: Average wait time for taxis

Data not available.

T4: Average taxi occupancy

Data not available.

T5: Taxi user satisfaction

Data not available.

7. Parking

PK1: No. of short stay (3hrs or less) on-street car parking spaces by L.A. area

Data not available.

PK2: % of built up area where controlled on-street car parking applies by L.A. area

Data not available.

PK3: No. of public off-street spaces by L.A. area

Data not available.

PK4: No. of dedicated disabled parking spaces by L.A. area

Data not available.

8. Bus

B1: % of bus lanes by Quality Bus Corridor

Monitoring of Quality Bus Corridors is organised by the DTO and undertaken in November of each year. The results of this monitoring exercise are reported on in detail for each corridor on an annual basis. The latest report, providing detailed results of this monitoring programme can be viewed on the DTO website at http://www.dto.ie/web2006/qbcmon.htm.

Table 8.1 outlines the percentage of bus lanes available for inbound and outbound directions in 2004, 2005 and 2006. As can be seen from this table, the infrastructure associated with twelve QBCs was monitored in November 2004, 2005 and 2006. These are illustrated in ***Appendix B***. Additional 'pre-QBC' schemes were also monitored, but these do not form part of this report.

In 2006, there were 113km of bus lanes along the 217km one-way length of QBCs monitored. This represents 60% of bus lanes in the GDA. The corridors with the highest and lowest percentage of bus lanes are highlighted in red and blue in ***Table 8.1***, and are Stillorgan and North Clondalkin, with two-way bus lane provisions of 87% and 28% respectively.

Of the 11 QBC's monitored in all 3 years (2004, 2005 and 2006), i.e. excluding Bray and Howth, the percentage of bus lane, at 53% of the overall QBC length, remained unchanged between 2005 and 2006.

Table 8.1: November 2004, 2005 and 2006 percentage bus lane for each QBC

QBC No.	Quality Bus Corridor	Section of QBC monitored	Direction	Corridor Distance (m)	2004		2005		2006	
					Bus Lane Distance (m)	% Bus Lane	Bus Lane Distance (m)	% Bus Lane	Bus Lane Distance (m)	% Bus Lane
1	Malahide	Clare Hall to Talbot St	In	8,313	5,870	71%	5,870	71%	5,870	71%
		Talbot St to Clare Hall	Out	8,673	5,510	64%	5,510	64%	5,510	64%
		Total both directions		16,986	11,380	67%	11,380	67%	11,380	67%
2	Swords	Main St, Swords to O'Connell St	In	14,161	10,019	71%	10,019	71%	10,019	71%
		Lower Abbey St to Main St, Swords	Out	14,077	5,776	41%	5,776	41%	5,776	41%
		Total both directions		28,238	15,795	56%	15,795	56%	15,795	56%
3	Finglas	Finglas Rd at Main St to Parnell Sq East	In	5,272	4,088	78%	4,088	78%	4,088	78%
		Parnell St to Finglas Road at Main St	Out	5,077	2,214	44%	2,214	44%	2,214	44%
		Total both directions		10,349	6,302	61%	6,302	61%	6,302	61%
4	Ballymun	Civic Centre, Ballymun to O'Connell St, via Whitworth Rd	In	6,316	4,562	72%	4,562	72%	4,562	72%
		O'Connell St to Civic Centre via Whitworth Road	Out	6,729	2,410	36%	2,792	41%	2,792	41%
		Total both directions		13,045	6,972	53%	7,354	56%	7,354	56%
5	Blanchardstown	River Rd to Ormond Quay	In	8,495	5,352	63%	5,352	63%	5,352	63%
		Merchants Quay to River Rd	Out	8,387	1,882	22%	2,191	26%	2,191	26%
		Total both directions		16,882	7,234	43%	7,543	45%	7,543	45%
6	Lucan	N4 at Foxhunter pub to Bachelors Walk via Chapelizod By-Pass	In	11,397	8,579	75%	8,579	75%	8,579	75%
		Wellington Quay to Foxhunter pub via Chapelizod By-Pass	Out	11,162	6,031	54%	6,031	54%	6,031	54%
		Total both directions		22,559	14,610	65%	14,610	65%	14,610	65%
7	North Clondalkin	Coldcut Road to Westmoreland St	In	8,926	2,639	30%	2,639	30%	2,639	30%
		Aston Quay to Coldcut Road	Out	8,944	2,278	25%	2,278	25%	2,278	25%
		Total both directions		17,870	4,917	28%	4,917	28%	4,917	28%
8	Tallaght	Main St, Tallaght to Westmoreland St	In	10,903	5,260	48%	5,260	48%	5,260	48%
		Eden Quay to Main St, Tallaght	Out	11,760	1,586	13%	1,586	13%	1,586	13%
		Total both directions		22,663	6,846	30%	6,846	30%	6,846	30%
9	Rathfarnham	Oakdown Rd to Westmoreland St	In	8,195	4,733	58%	4,733	58%	4,733	58%
		College Green to Nutgrove Avenue Bus Terminus	Out	8,609	1,784	21%	1,784	21%	2,083	24%
		Total both directions		16,804	6,517	39%	6,517	39%	6,816	41%

Table 8.1 contd. : November 2004, 2005 and 2006 percentage bus lane for each QBC

QBC No.	Quality Bus Corridor	Section of QBC monitored	Direction	Corridor Distance (m)	2004		2005		2006	
					Bus Lane Distance (m)	% Bus Lane	Bus Lane Distance (m)	% Bus Lane	Bus Lane Distance (m)	% Bus Lane
10	Stillorgan	N11 at Foxrock Church to Leeson St	In	9,185	8,088	88%	8,088	88%	8,088	88%
		Leeson St to N11 at Foxrock Church	Out	9,156	7,843	86%	7,843	86%	7,843	86%
		Total both directions		18,341	15,931	87%	15,931	87%	15,931	87%
11	Bray	Main St, Bray to N11 at Foxrock Church	In	9,525	4,898	51%	4,898	51%	4,898	51%
		N11 at Foxrock Church to Main St, Bray	Out	9,476	4,991	53%	4,991	53%	4,991	53%
		Total both directions		19,001	9,889	52%	9,889	52%	9,889	52%
12	Clontarf	Clontarf Rd at Bus Garage to Fairview	In	2,743	2,743	100%	2,743	100%	2,743	100%
		Fairview to Clontarf Rd at Bus Garage	Out	2,889	0	0%	0	0%	0	0%
		Total both directions		5,632	2,743	49%	2,743	49%	2,743	49%
13	Howth Road	Raheny to Fairview	In	4,154	0	0%	2,339	56%	2,339	56%
		Fairview to Raheny	Out	4,348	0	0%	122	3%	122	3%
		Total both directions		8,502	0	0%	2,461	29%	2,461	29%
Total for all QBCs				**216,872**	**109,136**	**50%**	**112,288**	**52%**	**112,587**	**52%**
Total for all QBCs (excl. Bray and Howth)				**189,369**	**99,247**	**52%**	**99,938**	**53%**	**100,237**	**53%**

B2: % of signalised junctions prioritised for buses

As part of the QBC monitoring programme, DTO record the percentage of signalised junctions prioritised for buses. In July 2006 no junctions either on, or on the approach roads to the 13 QBCs were prioritised in this manner.

B3: Bus speeds for each Quality Bus Corridor

The QBC monitoring programme records bus speeds along QBCs at various times of the day. Surveys on each corridor are undertaken on a single weekday in November (Tuesday, Wednesday, or Thursday). Surveys of inbound bus speeds are undertaken in the A.M. peak (07:00 - 10:00hrs) and off-peak (12:00 - 13:00hrs). Surveys of outbound bus speeds are undertaken in the off-peak (13:00 - 14:00hrs) and in the P.M. peak (16:00 – 19:00hrs).

The journey time survey routes are illustrated in ***Appendix A***. In the case of three corridors - Malahide, Tallaght and Rathfarnham, the extent of the journey time surveys does not coincide with the full infrastructure surveys. ***Table 8.2*** summarises the survey results.

The corridors with the highest and lowest average bus speeds in November 2004, 2005 and 2006 are indicated in red and blue in the above table for each of the time periods surveyed.

Inbound bus speeds in the A.M. peak period (07:00 – 10:00hrs) on the 12 corridors monitored in 2005 and 2006 increased on 4 corridors and decreased on 8 corridors. The biggest increases in A.M. peak average inbound bus speeds between 2005 and 2006 were recorded on Clontarf QBC, where average bus speeds increased from 9.7km/ h in 2005 to 18.6km/ h in 2006. The biggest decrease in average A.M. peak bus speeds was experienced on Malahide QBC where bus speeds fell from 11.8 km/ h in 2005 to 9.9 km/ h in 2006. Average A.M. peak inbound bus speeds on the 10 QBCs surveyed in all 3 years fell from 13.6km/ h in 2005 to 12.8km/ h in 2006, representing an increase of 6%. The corresponding average speed in 2003 was 13.9km/ h, representing a decrease of 1.1Km/ h or 8% between 2004 and 2006.

Inbound bus speeds in the off-peak period (12:00 – 13:00hrs) on the 11 corridors monitored in 2005 and 2006 (in addition to Bray and Howth, speeds for Lucan were not available during this time period) increased on 5 corridors and decreased on 6 corridors. The biggest increases in off-peak average inbound bus speeds between 2005 and 2006 were recorded on Clontarf QBC, where average bus speeds increased from 17.3km/ h in 2005 to 23.6km/ h in 2006. The biggest decrease in average off-peak inbound bus speeds was experienced on Rathfarnham QBC where bus speeds fell from 12.2km/ h in 2005 to 9.3 km/ h in 2006. Average off-peak inbound bus speeds on the 9 QBCs surveyed in all 3 years decreased from 18.3km/ h in 2005 to 17.4km/ h in 2006, representing a decrease of 4.7%. The corresponding average speed in 2004 was 19.1km/ h, representing a decrease of 1.6Km/ h or 8.6% between 2004 and 2006.

Outbound bus speeds in the off-peak period (13:00 – 14:00hrs) on the 11 corridors monitored in 2005 and 2006 (in addition to Bray and Howth, speeds for Lucan were not available during this time period) increased on 8 corridors and decreased on 3 corridors. The biggest increases in off-peak average outbound bus speeds between 2005 and 2006 were recorded on Ballymun QBC, where average bus speeds increased from 12.2km/ h in 2005 to 16km/ h in 2006. The biggest decrease in average off-peak outbound bus speeds was experienced on Bray QBC where bus speeds fell from 33.4km/ h in 2005 to 30.4 km/ h in 2006. Average Off-peak outbound bus speeds on the 9 QBCs surveyed in all 3 years increased from 16.7km/ h in 2005 to 17.7km/ h in 2006, representing a decrease of 6%. The corresponding speed in 2004 was 18.8km/ h, indicating a decrease of 1.0Km/ h or 5.6% between 2003 and 2005.

Outbound bus speeds in the P.M. peak period (16:00 – 19:00hrs) on the 12 corridors monitored in 2004 and 2005 increased on 3 corridors and decreased on 9 corridors. The biggest increases in P.M. peak average outbound bus speeds between November 2005 and November 2006 were recorded on Clondalkin QBC, where average bus speeds increased from 10.1km/ h in 2005 to 12.5km/ h in 2006. The biggest decrease in average P.M. peak inbound bus speeds was experienced on Ballymun QBC where bus speeds fell from 11.8km/ h in 2004 to 9.2 km/ h in 2005. Average P.M. peak outbound bus speeds on the 10 QBCs surveyed in all 3 years increased from 14.3km/ h in 2005 to 14.6km/ h in 2006, representing an increase of 0.3km/h or 2.3%. The corresponding speed in 2004 was 13.2km/ h, indicating an increase of 1.5km/ h or 11.3% between 2004 and 2006.

Table 8.2: November 2004, 2005 and 2006 bus speeds for each QBC

QBC No.	Quality Bus Corridor	Section of QBC monitored	Direction	2004				2005				2006			
				Average Bus Speeds (km/ h)				Average Bus Speeds (km/ h)				Average Bus Speeds (km/ h)			
				Inbound		Outbound		Inbound		Outbound		Inbound		Outbound	
				07:00 - 10:00hrs	12:00 - 13:00hrs	13:00 - 14:00hrs	16:00 - 19:00hrs	07:00 - 10:00hrs	12:00 - 13:00hrs	13:00 - 14:00hrs	16:00 - 19:00hrs	07:00 - 10:00hrs	12:00 - 13:00hrs	13:00 - 14:00hrs	16:00 - 19:00hrs
1	Malahide	Greencastle Rd to Amiens St	In	6.96	28.74			11.83	18.85			9.87	19.14		
		Nth Strand to Greencastle Rd	Out			14.90	13.08			21.28	18.28			19.09	16.88
2	Swords	Main St, Swords to O'Connell St	In	13.40	18.84			14.57	23.09			13.74	18.43		
		Lower Abbey St to Main St, Swords	Out			19.01	16.63			19.28	15.21			19.97	16.35
3	Finglas	Finglas Rd at Main St to Parnell Sq East	In	15.56	17.17			19.19	14.20			19.09	18.04		
		Parnell St to Finglas Road at Main St	Out			17.02	11.79			17.16	11.40			14.53	10.16
4	Ballymun	Civic Centre, Ballymun to O'Connell St, via Whitworth Rd	In	11.68	15.08			9.73	18.32			9.22	15.12		
		O'Connell St to Civic Centre via Whitworth Road	Out			14.36	11.77			12.22	9.16			15.99	7.59
5	Blanchardstown	River Rd to Ormond Quay	In	15.26	21.30			10.41	17.21			15.13	17.80		
		Merchants Quay to New River Rd	Out			22.75	15.78			15.90	15.09			17.87	15.01
6	Lucan	N4 at Foxhunter pub to Bachelors Walk via Chapelizod By-Pass	In	23.58	22.83			23.38	23.11			18.68	N/A		
		Wellington Quay to Foxhunter pub via Chapelizod By-Pass	Out			26.63	26.18			25.12	25.87			N/A	24.99

Table 8.2 contd.: November 2004, 2005 and 2006 bus speeds for each QBC

QBC No.	Quality Bus Corridor	Section of QBC monitored	Direction	2004				2005				2006			
				Average Bus Speeds (km/ h)				Average Bus Speeds (km/ h)				Average Bus Speeds (km/ h)			
				Inbound		Outbound		Inbound		Outbound		Inbound		Outbound	
				07:00 - 10:00hrs	12:00 - 13:00hrs	13:00 - 14:00hrs	16:00 - 19:00hrs	07:00 - 10:00hrs	12:00 - 13:00hrs	13:00 - 14:00hrs	16:00 - 19:00hrs	07:00 - 10:00hrs	12:00 - 13:00hrs	13:00 - 14:00hrs	16:00 - 19:00hrs
7	North Clondalkin	Coldcut Road to Westmoreland St	In	14.39	16.49			12.26	16.99			10.78	15.99		
		Aston Quay to Coldcut Road	Out			17.40	6.96			15.20	10.12			16.82	12.53
8	Tallaght	West of M50 to Westmoreland St	In	14.04	17.88			10.25	14.67			9.02	16.13		
		Dame St. to West of M50	Out			16.04	10.74			15.74	12.36			16.49	11.86
9	Rathfarnham	Rathfarnham Village to Westmoreland St	In	9.35	13.30			9.47	12.21			8.04	9.33		
		College Green to Butterfield Avenue	Out			14.36	10.10			9.41	9.55			11.73	10.60
10	Stillorgan	N11 at Foxrock Church to Leeson St	In	19.25	20.91			19.29	23.27			18.56	19.42		
		Leeson St to N11 at Foxrock Church	Out			22.56	19.20			16.28	18.14			17.93	16.95
11	Bray	Main St, Bray to N11 at Foxrock Church	In	21.70	33.03			21.09	27.79			22.25	22.78		
		N11 at Foxrock Church to Main St, Bray	Out			33.51	22.61			33.44	26.69			30.43	17.50
12	Clontarf	Clontarf Rd at Bus Garage to Fairview	In	15.87	23.24			9.67	17.26			18.60	23.57		
		Fairview to Clontarf Rd at Bus Garage	Out			21.71	13.79			22.03	20.72			23.32	18.70
13	Howth Road	Raheny to Fairview	In	N/A	N/A			9.39	17.31			11.13	28.59		
		Fairview to Raheny	Out			N/A	N/A			25.87	25.41			N/A	17.14
Total for all QBCs				**14.24**	**19.62**	**19.25**	**13.62**	**13.31**	**18.80**	**17.49**	**14.80**	**13.37**	**18.18**	**18.56**	**14.64**
Total for all QBCs (excludes Ballymun, Bray, Clontarf & Howth)				**13.86**	**19.1**	**18.79**	**13.15**	**13.58**	**18.28**	**16.74**	**14.30**	**12.75**	**17.42**	**17.74**	**14.63**

B4: Bus modal share for each Quality Bus Corridor

The bus modal share for each QBC is one of the key performance indicators measured each year. The occupancy of all buses is recorded at the Canal cordon by Dublin Bus to coincide with Dublin City Council's annual (November) Canal cordon count. The Canal cordon crossing point locations are illustrated in ***Appendix A***. The modal share figure for each QBC relates to all bus passengers crossing the Canal cordon in the A.M. peak (07:00 – 09:59hrs) on these corridors.

Table 8.2: November 2004, 2005 and 2006 bus speeds for each QBC

Quality Bus Corridor	Bus Mode Share (% of all person trips crossing cordon inbound) at Canal Cordon during AM Peak (07:00-09:59hrs.)			
	2003	2004	2005	2006
Stillorgan	47	48	42	48
Lucan	53	52	58	55
Blanchardstown	46	52	49	48
Malahide	73	63	61	62
Tallaght	50	45	55	44
Swords/Finglas	51	55	59	55
Rathfarnham	44	42	40	39
North Clondalkin	61	53	57	50
Total for all QBCs	**52**	**52**	**53**	**51**

As can be seen from the above table, the QBCs with the highest bus mode share for 2006 was Malahide, at 62%. The QBC with the lowest bus mode share is Rathfarnham with 39%. This pattern has been consistent since 2003.

9. Conclusions and Next Steps

9.1 General Traffic Indicators

Trips to Work and School

The report examines journeys to work and education, by mode of travel in the GDA. 2006 Census data is compared to 2002 census data, and trends in transport use are identified. Amongst the findings, a large increase in those travelling to work in the GDA (16%). The largest mode increase in these trips was train journeys which rose by more than 2%. Cycling and getting the bus to education has declined.

Over 70% of work trips in the GDA originate in Dublin City and County. Some 30% of work trips originate in Dublin City. Over 22% of Dublin City residents walk to work.

Cycling and walking to work combined is highest in Dublin City (28.6%) and lowest in Fingal and Meath (8%). Public transport use to work (bus and rail combined) is highest in Dublin City (27.3%) and lowest in Meath (7%).

Car use to work is lowest in Dublin City (40%). Car use to work is over 60% in every other GDA local authority, and is over 70% in Wicklow, Meath and Kildare.

The overall numbers of GDA residents travelling to work as car drivers, on foot, cycling, on a train, or on bus have all increased. The numbers using a motorcycle to travel to work or travelling to work as a car passenger have declined.

A little over one third (34.6%) of GDA students travel to school or college on foot, and 3.4% cycle to education. Some 32.2% are driven to school. Just less than one in four (21.3%) get the bus, while 4.4% use the train.

Some 38.4% of students in the Dublin City and County region travel to school or College on foot, compared to 29% in Kildare, 23 % in Meath and 25% in Wicklow. One in five Dublin City and County students get the bus to school or college. The percentage share in Kildare (21%) and Wicklow (22%) are broadly similar. In Meath, the proportion is somewhat higher, at 29%. Some 28.2% of students get a lift in a car in the Dublin Region, compared to over 40% in the Mid East region.

Cycling to school is most popular in Dublin City and County (4.3% of students are cyclists). It is least popular in Wicklow and Meath (1%).

Since 2002, the share of GDA education trips made on foot has increased by 3.9%. The share of trips made by cycling has declined by 9.5%, while the percentage share getting the bus has fallen by 3.2%. There has been a 10.5% increase in share of trips by students getting a lift to education, and a 59.7% increase in mode share for car drivers to education.

Traffic flows

Average daily traffic flows on National primary Roads were 7% higher than 2004 and 4% higher than 2005.

Weekday traffic flows on the national primary road network are lowest on Mondays and increase thereafter, peaking on Thursdays. Flows on all roads fall off on Saturdays and again on Sundays. This trend has remained static over between 2003 and 2006.

Average flows on national primary radial roads approaching Dublin (M1 & M4) are experienced in June. Highest flows are experienced in September, when flows were 6.4% above typical/ average flows. Lowest flows were recorded in December, when flows were 16.5% below the average.

Average daily traffic flows on National primary Roads were 7% higher than 2004 and 4% higher than 2005.

Inbound traffic flows, along the canal cordon during the morning peak (07:00-09:59hrs), reduced by 15% between 1997-2006. Between 2005 and 2006, however, flows have increased by 2%.

Average car journey times in the AM peak, across a variety of origins and destinations within Dublin, were recorded at 12.27kph.

This speed represents a decline of 34% from the speed of 18.63kph recorded in 1997 (see figure 3.20, below).

Road Accident Casualties

The number of personal injury accidents across the GDA fell by 12% between 2002 than 2005. The number of fatalities on roads in the GDA decreased by 7% between 2004 and 2005, while the number injured increased by 15% over this time. Over the 7-year period over which this data is available (1998 – 2005), the annual number of fatalities fell by 30% and the number injured by 44%.

Air Quality

Environmental air quality, as monitored by the EPA, indicates that over the 2-year period between 2003 and 2005, significant improvements were recorded in PM_{10} levels. All of the values were within the Stage 2 annual limits of 20 $\mu g/m_3$ (to be achieved by 2010). Similarly, values of NO_2, CO, C_6H_6 were compliant with EU directives.

9.2 Cyclists

Across the canal cordon, cycle flows during the morning peak increased by 20% between 2004 and 2006. This increase was echoed by DTO city centre cycle counts in November 2006 which recorded a 6% rise on 2004 figures.

9.3 Pedestrians

The DTO organised a survey of pedestrian facilities at major city centre junctions in April/ May 2006. The maximum waiting time across a single junction arm measured at the 23 junctions surveyed in the city area was 4:03 minutes. There has been no significant improvement in pedestrian waiting times since surveys were first undertaken in 2004.

9.4 Taxi

The 2005 report provides data on the number of taxis by local authority area. There is no new data to report on this indicator.

9.5 Parking

Very limited information is currently available on the volumes of short stay on-street and off-street parking supply in the GDA.

9.6 Bus

QBC monitoring organised by the DTO on an annual basis recorded 112.3km of bus lanes along the 216.9km one-way length of QBCs monitored. The corridors with the highest and lowest percentage of bus lanes are highlighted in red and blue and are Stillorgan and North Clondalkin, with two-way bus lane provisions of 87% and 28% respectively.

July 2006 QBC infrastructure monitoring indicated that no signalised junctions either on or on the approach roads to QBCs were prioritised for buses.

The Quality Bus Corridor (QBC) monitoring exercise organised by the DTO recorded:

- A decrease in A.M. peak inbound speeds of 6% in 2006. However, outbound P.M peak speeds increased by 2.3% on speeds recorded in 2006.

9.7 Next Steps

It is hoped that this report will used as a tool in the decision making processes of local authorities, the NRA and government departments in identifying changes that will better benefit road users, particularly those using sustainable modes of transport.

It is also hoped that the data deficiencies identified will act as a prompt to all relevant agencies to collect the required data in a consistent manner to enable better monitoring of trends, as they impact on transport users, over time.

Recommended actions include:

- A review by local authorities of crossing facilities at junctions, especially in town and city centres, and identification of opportunities to improve pedestrian crossing facilities, and to reduce the waiting times experienced by pedestrians.
- The initiation of in-depth cycle monitoring, to collect all information relating to cycle network infrastructure (length, type and quality/ comfort of cycle

lanes, cycle parking facilities etc.) This information, when used in conjunction with the results of a GDA Travel Survey would facilitate the identification of appropriate measures to combat the decline in cycle use in the past 2 years.

- Agreement between local authorities and the DTO on data deficiencies and how best to collect missing data in future.
- The initiation of a continuous Greater Dublin Area (or National) Travel Survey, to monitor people's travel behaviour, needs and attitudes throughout the day, week and year.

If agencies or others require a more detailed breakdown of any of the data contained in the Report, they should contact the Dublin Transportation Office at the following e-mail address: postmaster@dto.ie

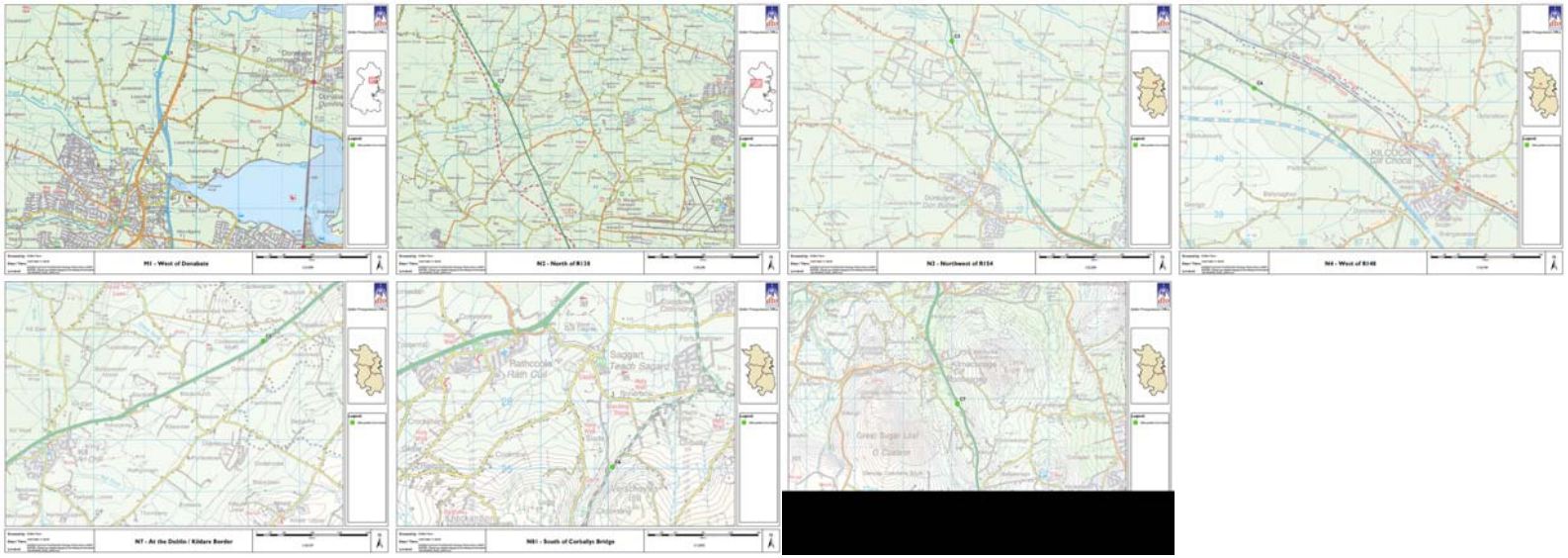
Detailed information relating to **Section 8, Bus** is contained in the QBC Monitoring Report, which is available http://www.dto.ie/web2006/QBCmon2006.pdf

Appendix A

Count Location of General Traffic Flows

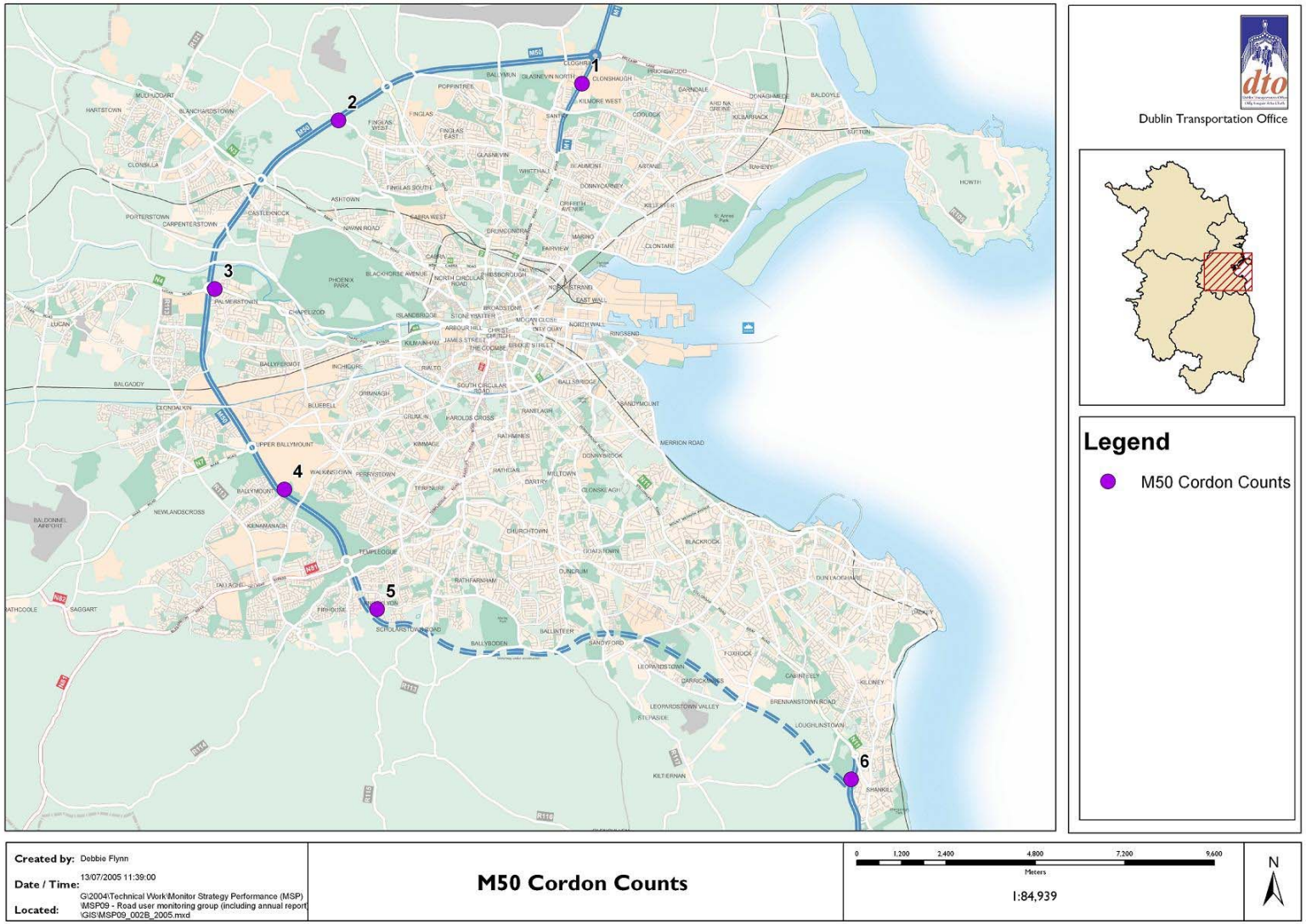
Classified City-Bound Only Link Counts (Metropolitan Cordon)

	Road	***Approximate Location***
1	M1	West of Donabate
2	N2	North of R130
3	N3	Northwest of R154
4	N4	West of R148
5	N7	At the Dublin/ Kildare border
6	N81	South of Corballys Bridge
7	M11	North of R762



Classified Link Counts (M50 Cordon)

	Area	***Link***
1	Baldoyle	M1 between M50 and Coolock Lane
2	Finglas	Cappagh Road immediately south of M50
3	Clondalkin North	N4 immediately east of M50
4	Clondalkin South	Ballymount immediately east of M50
5	Tallaght	R133 east of M50
6	Shankhill/ Loughlinstown	M11 at Stonebridge Road overbridge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2
3
4
5
6
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M50 Cordon Counts
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Meters
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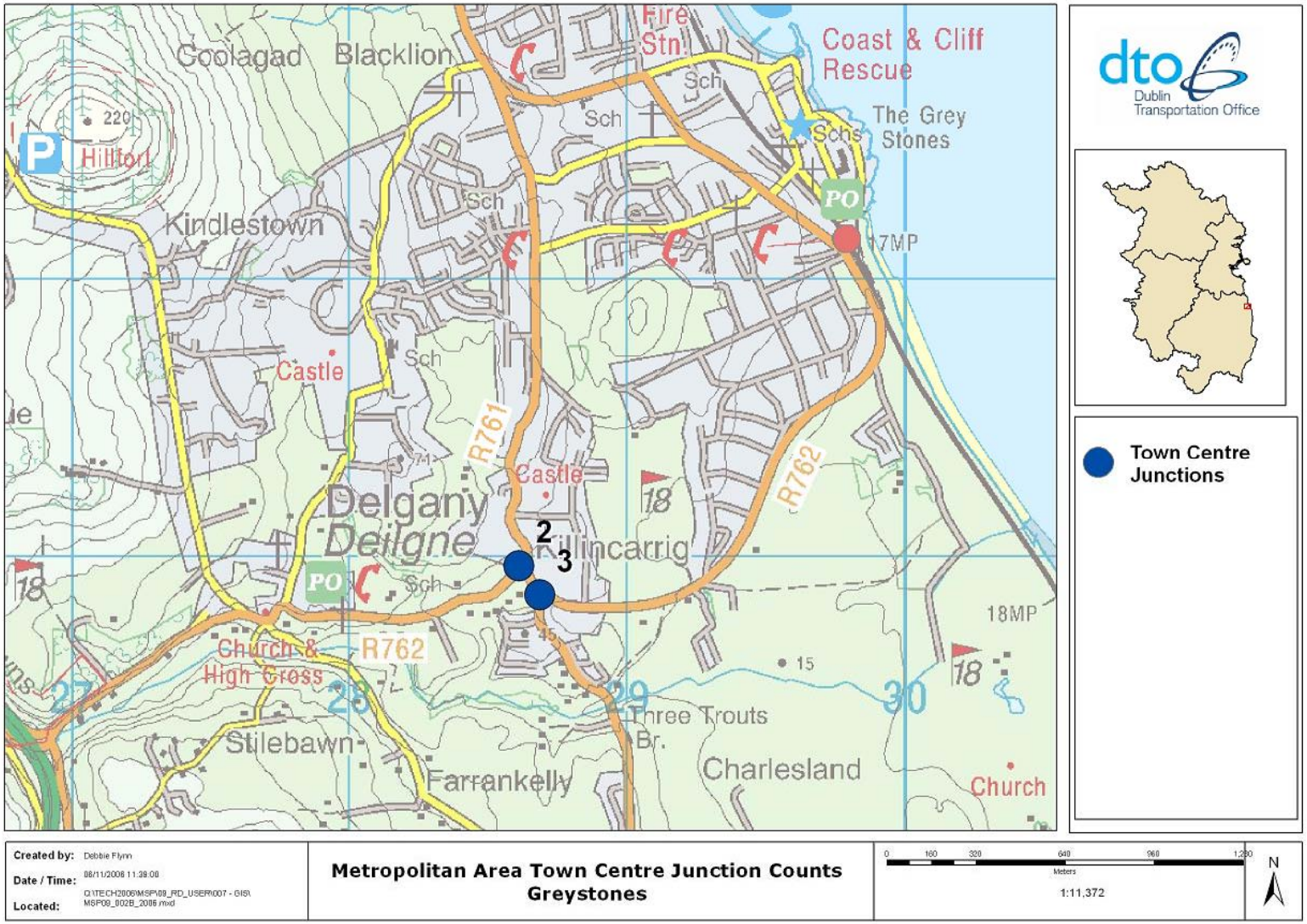
Metropolitan Area Town Centre Classified Junction Counts

	Town	***Junction***
1	Quarryvale	Coldcut Road / South entrance to Liffey Valley S.C.
2 & 3	Greystones	R761/ R762 (2 junctions, all junction arms)

Hinterland Area Town Centre Classified Junction Counts

	Town	***Junction***
4 & 5	Newbridge	R416/ R445/ R445 junctions (2 junctions, all junction arms)
6 & 7	Arklow	N11/ R750 (all junction arms – see attached map) N11/ R747 (all junction arms – see attached map)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Blacklion
Fire Stn
Coast & Cliff Rescue
The Grey Stones
Hillton
Kindlestown
Castle
Delgany
Deilgne
Killincarrig
R761
R762
Church & High Cross
Stilebawn
Farrankelly
Three Trouts Br.
Charlesland
Church
17MP
18MP
2
3
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Dublin Transportation Office
Town Centre Junctions
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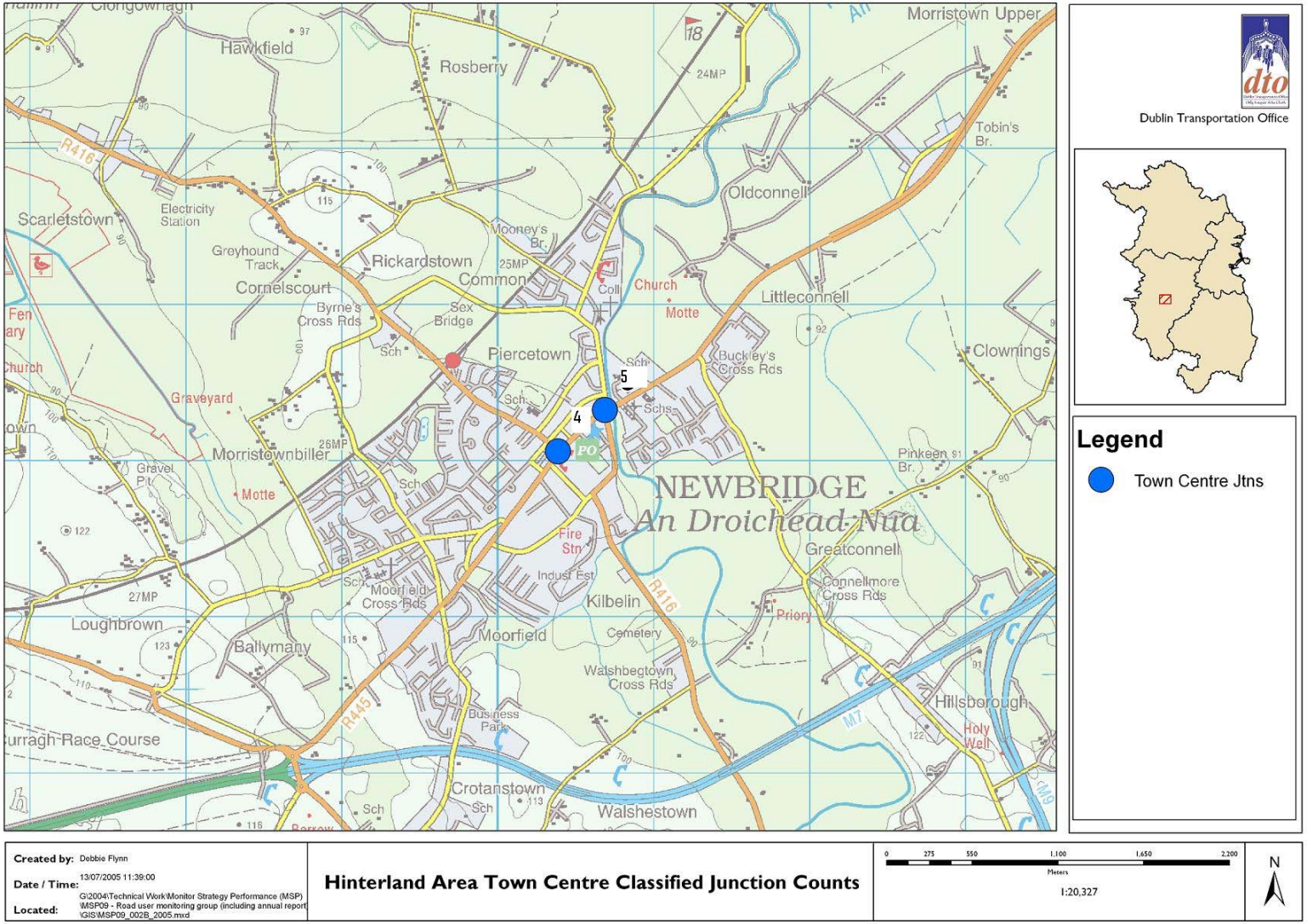
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Hinterland Area Town Centre Classified Junction Counts
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An Droichead Nua
Hawkfield
Rosberry
Morristown Upper
Tobin's Br.
Oldconnell
Littleconnell
Clownings
Scarletstown
Electricity Station
Greyhound Track
Rickardstown
Common
Mooney's Br.
Church
Motte
Cornelscourt
Byrne's Cross Rds
Sex Bridge
Piercetown
Buckley's Cross Rds
Graveyard
Morristownbiller
Gravel Pit
Motte
Pinkeen Br.
Fire Stn
Indust Est
Greatconnell
Connellmore Cross Rds
Moorfield Cross Rds
Kilbelin
Priory
Loughbrown
Ballymany
Moorfield
Cemetery
Walshbegtown Cross Rds
Hillsborough
Holy Well
Business Park
Crotanstown
Walshestown
urragh Race Course
R416
R445
M7
M9
24MP
25MP
26MP
27MP
PO
Sch
Schs
Coll
4
5


Shelton Abbey
Killiniskyduff
Seabank
Church
Kilbride
Ticknock Br
Porters Br
Ballyraine Lower
Ballyraine Middle
Ticknock
Avoca River
Abhainn Abhoca
6
Ferrybank
Marsh
Moated Site
Yardland
7
Ballyraine Upper
North
Lamberton
Sheephouse
Castle
Graveyard
Sailing Club
ARKLOW
An tInbhear Mór
Ballyduff Br
Harbour
Pier
Abbeylands
Fire Sta
Pier
South
Ballyrooaun Br
Knockanrahan Lower
Lifeboat Stn
Moneylane
Tinahask
Indust Est
Knockanrahan Upper
Ballyrooaun
Ballintombay
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Town Centre Junctions
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Hinterland Area Town Centre Junction Counts
Arklow
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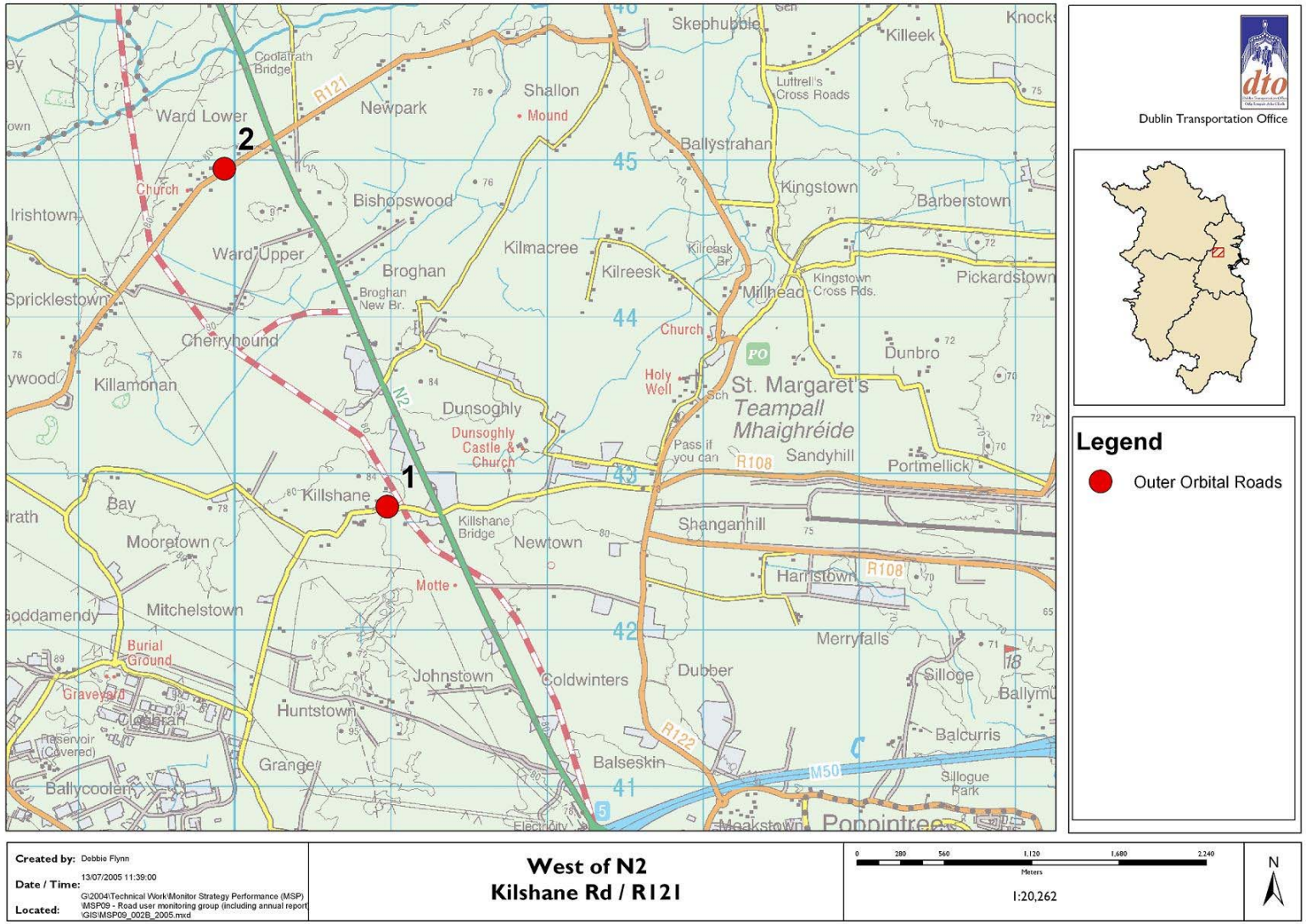
	Road	***Approximate Location***
1	Kilshane Road	West of N2
2	R121	West of N2
3	R121	Westmanstown (between Clonsilla and Lucan)
4	R149	Passifyoucan
5	R113	South of N7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Outer Orbital Roads
1
2
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Ward Lower
Ward Upper
Broghan
Bishopswood
Kilmacree
Kilreesk
Newpark
Shallon
Mound
Ballystrahan
Kingstown
Barberstown
Millhead
Pickardstown
Dunbro
St. Margaret's
Teampall
Mhaighréide
Sandyhill
Portmellick
Dunsoghly
Dunsoghly Castle & Church
Killshane Bridge
Newtown
Shanganhill
Harristown
Merryfalls
Silloge
Dubber
Coldwinters
Johnstown
Huntstown
Balseskin
Grange
Balcurris
Sillogue Park
Poppintree
Mooretown
Mitchelstown
Cherryhound
Killamonan
Irishtown
Spricklestown
Bay
Ballycoolen
Graveyard
Burial Ground
Motte
Holy Well
Church
Pass if you can
Skephubble
Killeek
Luttrell's Cross Roads
Kingstown Cross Rds.
Broghan New Br.
Kilreask Br.
Coolatrath Bridge
R121
R108
R122
M50
N2
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Meters
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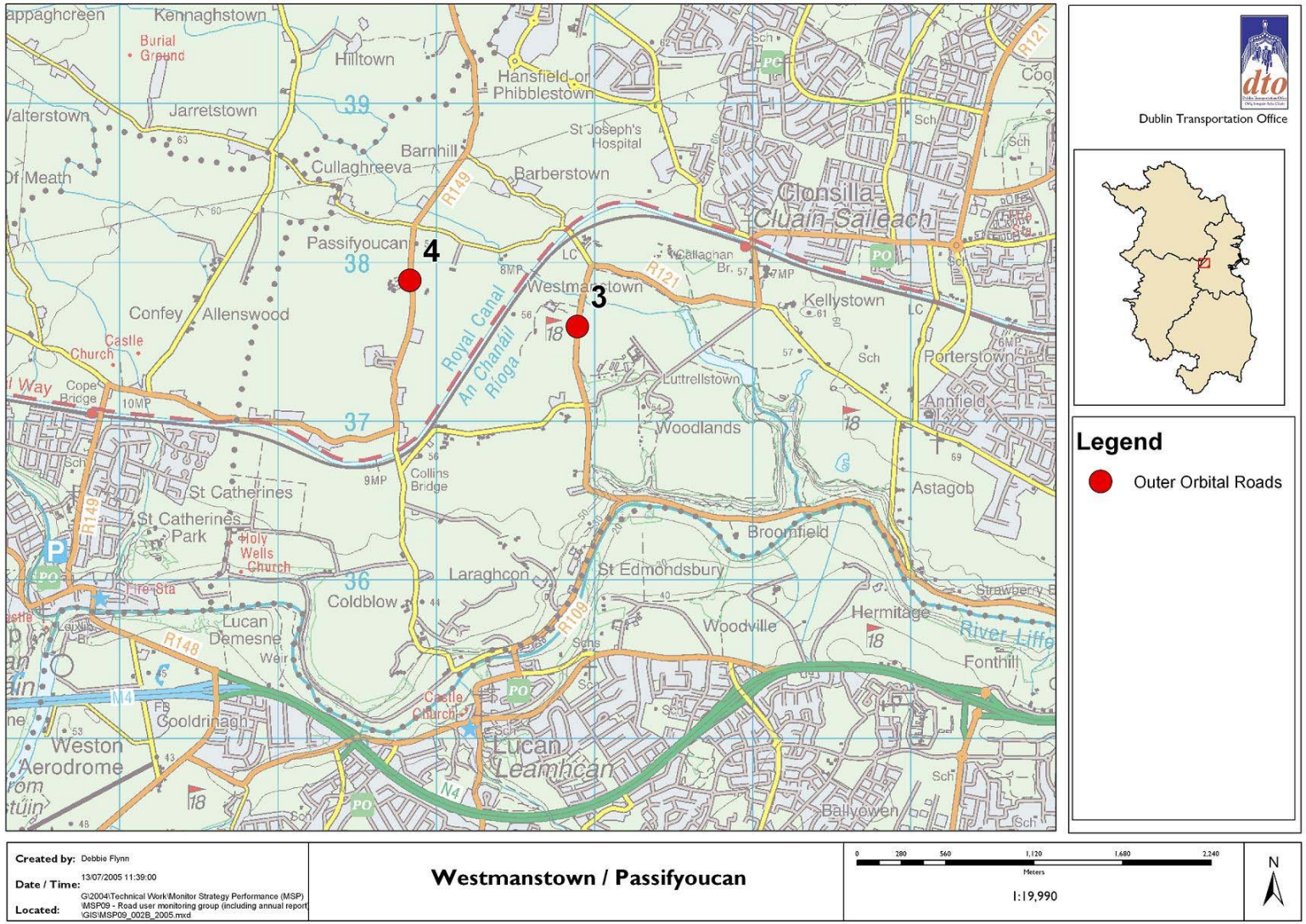
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Westmanstown / Passifyoucan
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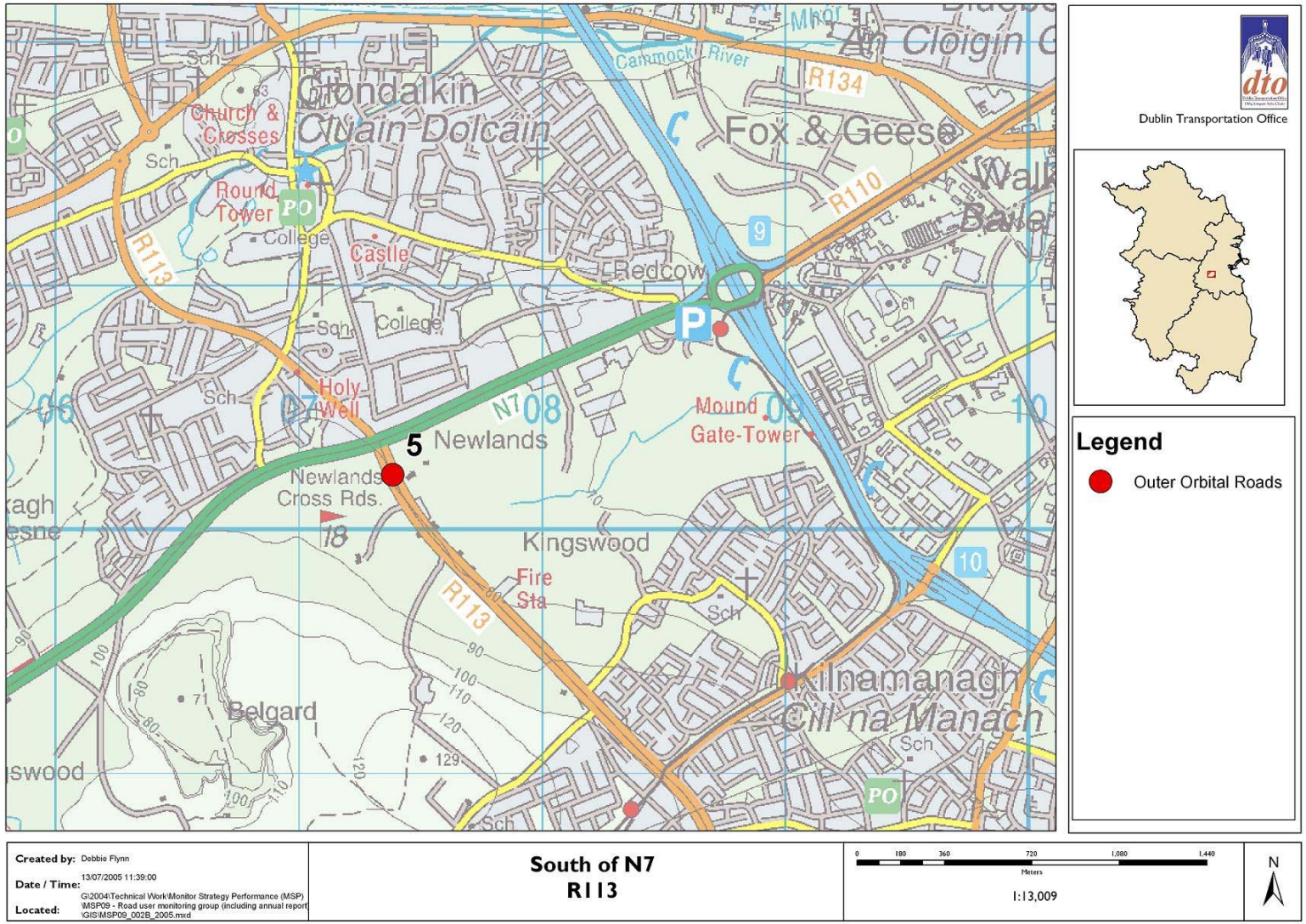
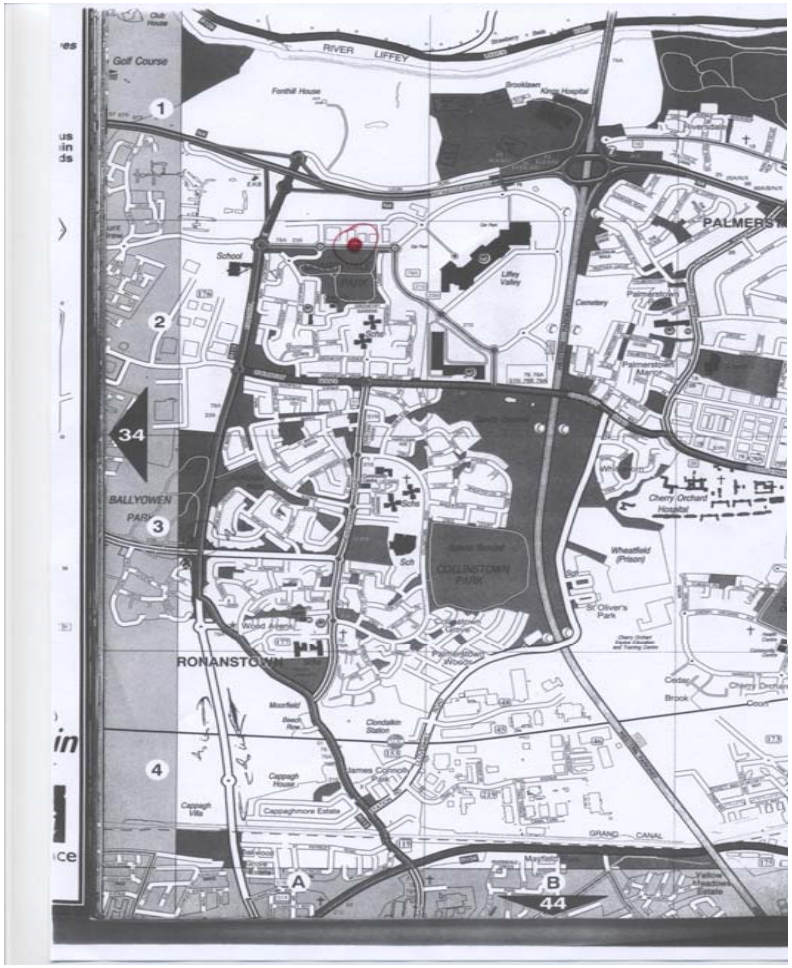
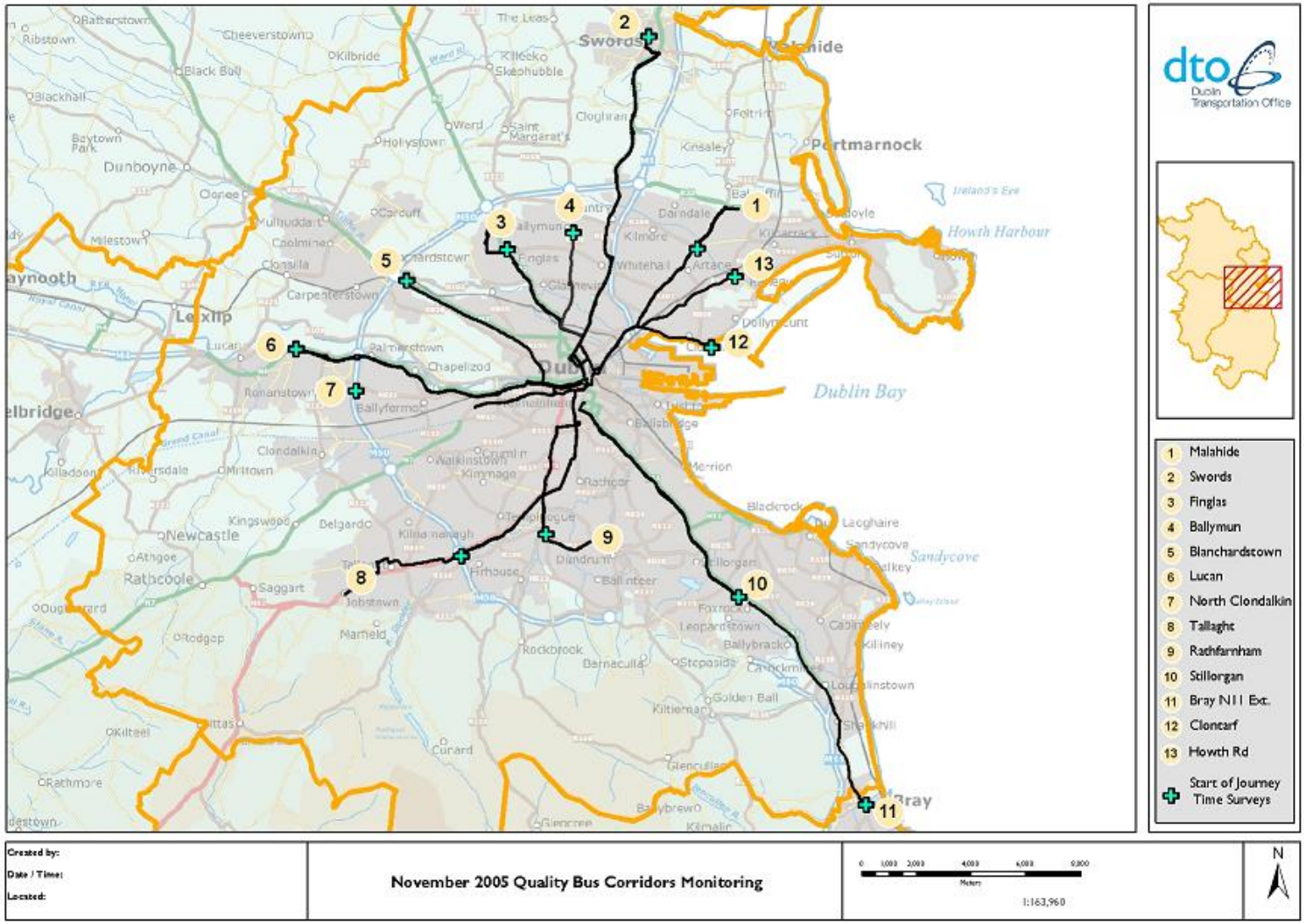

Grondalkin
Cluain Dolcain
Church &
Crosses
Round
Tower
PO
College
Castle
Sch
College
Holy
Well
5
Newlands
Newlands
Cross Rds.
Kingswood
Fire
Sta
Belgard
Redcow
Fox & Geese
Mound
Gate-Tower
Kilnamanagh
Cill na Manach
Cammock River
R113
R134
R110
N7
P
PO
Dublin Transportation Office
Legend
Outer Orbital Roads
Created by: Debbie Flynn
Date / Time: 13/07/2005 11:39:00
Located: G\2004\Technical Work\Monitor Strategy Performance (MSP)\MSP09 - Road user monitoring group (including annual report\GIS\MSP09_002B_2005.mxd
South of N7
R113
0 180 360 720 1,080 1,440
Meters
1:13,009
N

Classified Link Counts (Metropolitan Area Town Centre location)

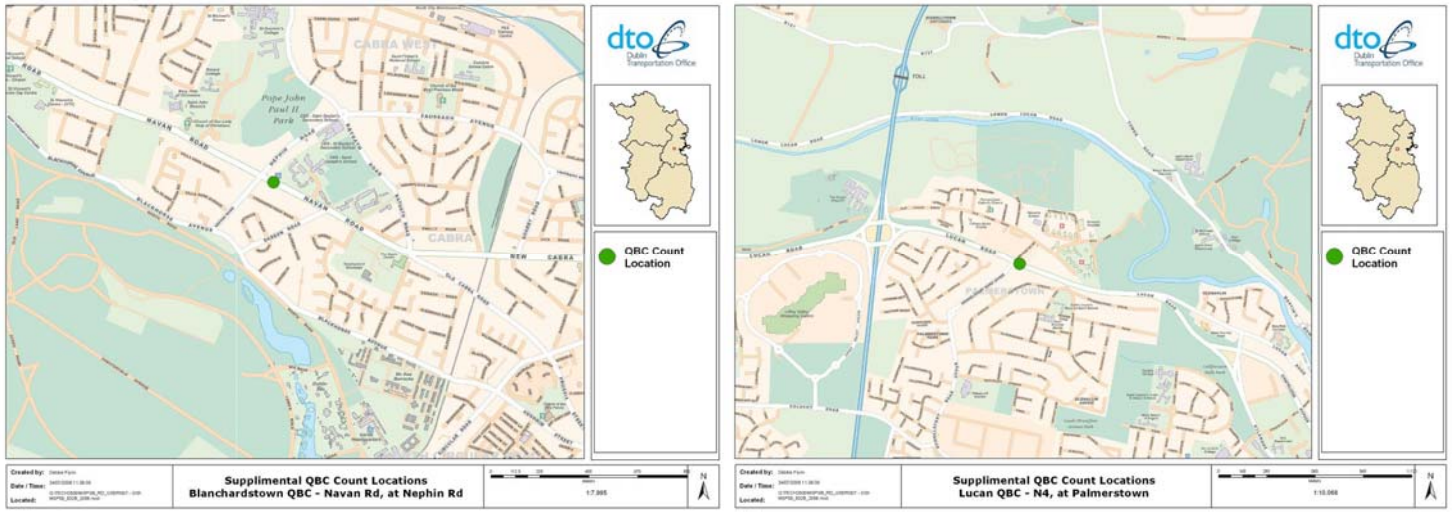
Classified Link Counts at		
6	Quarryvale	West Access Road to Liffey Valley S.C., north of Quarryvale Park

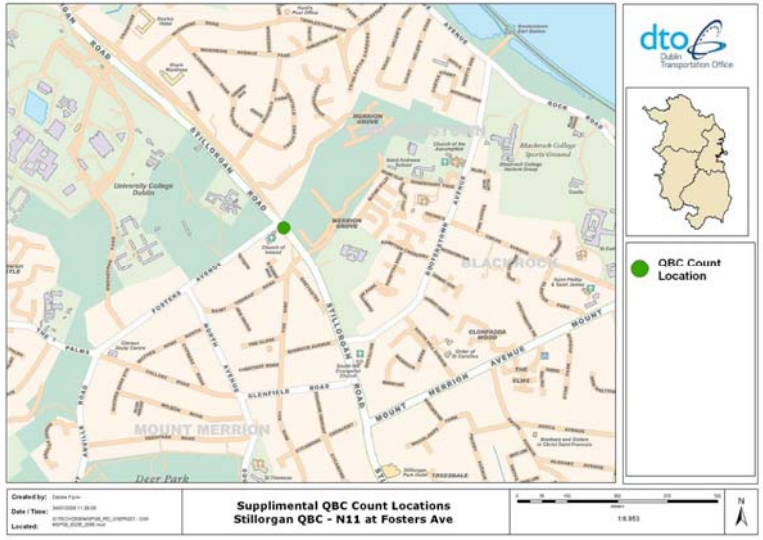

RIVER LIFFEY
Golf Course
Forthill House
Brooklawn
Kings Hospital
PALMERS
School
Liffey Valley
Cemetery
Palmerstown Manor
34
BALLYOWEN PARK
Cherry Orchard Hospital
Wheatfield (Prison)
COOLINSTOWN PARK
St Oliver's Park
RONANSTOWN
Moorfield
Clondalkin Station
Cappagh House
Cappaghmore Estate
GRAND CANAL
A
B
44

November 2006 Quality Bus Corridor Monitoring Locations



November 2006 Quality Bus Corridor Supplemental Count Locations





NRA Counts

Hour Ending	Mid Time Period	Total National Radial Roads (M4 and N7), 2004	Total National Radial Roads (M4 and N7), 2005	Total National Radial Roads (M4 and N7), 2006	M50, 2004	M50, 2005	M50, 2006
01:00	00:30	604	697	668	783	868	990
02:00	01:30	334	390	373	437	472	538
03:00	02:30	249	269	273	288	305	357
04:00	03:30	256	297	317	296	331	410
05:00	04:30	447	524	555	484	678	867
06:00	05:30	1179	1347	1505	1290	1542	1770
07:00	06:30	4248	4439	4871	3334	4011	4783
08:00	07:30	5242	5152	5649	6624	6383	6292
09:00	08:30	5091	5213	5660	6419	6219	6112
10:00	09:30	4585	4726	4897	5575	5621	5550
11:00	10:30	4256	4379	4457	5178	5236	5231
12:00	11:30	4306	4445	4507	5152	5195	5237
13:00	12:30	4467	4666	4757	5289	5331	5295
14:00	13:30	4570	4760	4907	5376	5443	5409
15:00	14:30	4804	5001	5226	5465	5508	5483
16:00	15:30	5313	5471	5876	5835	5846	5805
17:00	16:30	6056	6258	6913	6404	6384	6330
18:00	17:30	6316	6611	7286	6402	6401	6323
19:00	18:30	5628	5860	6318	5750	5880	5905
20:00	19:30	4425	4700	4987	4715	4857	5020
21:00	20:30	3116	3354	3427	3501	3676	3880
22:00	21:30	2386	2558	2541	2885	3028	3237
23:00	22:30	1714	1848	1825	2144	2349	2581
00:00	23:30	1137	1192	1159	1393	1548	1729
Total		80729	84157	88954	91019	93112	95134

DTO M50 Cordon Flows, Selected Roads

	Inbound	Outbound
07:00	8,284	4,744
08:00	9,370	5,881
09:00	8,363	5,305
10:00	6,527	4,887
11:00	6,129	5,287
12:00	5,818	5,827
13:00	6,031	6,384
14:00	6,042	6,733
15:00	5,733	7,510
16:00	5,482	8,709
17:00	5,317	9,565
18:00	4,962	8,319

DTO AM Peak (07:00-09:59hrs.) Counts on Orbital Roads, November 2006

		07:00-10:00
Kilshane Road	**Eastbound**	1,199
	Westbound	1,902
R121	**Eastbound**	873
	Westbound	1,288
	Northbound	1,141
	Southbound	1,068
R149	**Northbound**	1,002
	Southbound	1,434
R113 Belgard Rd.	**Northbound**	2,828
	Southbound	2,605
Liffey Valley Approach Road	**Eastbound**	2,252
	Westbound	527

DTO AM Peak (07:00-09:59hrs.) Metropolitan Area Counts, November 2006

Time Period Beginning	Quarryvale 3 Junctions	Greystones 4 Junctions	Newbridge 7 Junctions	Arklow 7 Junctions
07:00	387	227	373	296
07:15	370	268	497	329
07:30	433	335	607	428
07:45	468	402	735	577
08:00	465	501	719	530
08:15	437	463	817	512
08:30	470	501	736	667
08:45	501	599	776	805
09:00	498	491	632	856
09:15	473	431	752	818
09:30	495	336	753	713
09:45	476	321	613	539

DCC Inbound AM Peak (07:00-09:59hrs.) Canal Cordon Flows

Year	Cars	Goods	Buses	P.Cycles	M.Cycles	Peds.
1997	73,561	3,283	1,459	5,628	1,816	16,679
1998	71,536	3,090	1,350	4,579	1,845	15,565
1999	73,147	3,112	1,454	5,384	2,267	18,157
2000	67,935	3,000	1,521	4,464	2,558	15,808
2001	68,003	3,004	1,522	5,085	2,845	18,558
2002	65,657	2,828	1,576	4,714	2,920	16,609
2003	63,509	2,651	1,563	4,711	2,656	17,305
2004	62,475	3,057	1,537	3,941	2,249	15,241
2005	60,600	2,711	1,601	4,404	2,187	16,332
2006	62,489	2,291	1,680	4,839	2,395	17,114

DTO Cycle Counts, November 2006

Location No.	Location	Direction To	Half Hourly Cycle Flow						Total Link Flow, 07:00 - 09:59hrs	2006 Total 2-Way Link Flow, 07:00 - 09:59hrs
			Time Period Beginning							
			07:00	07:30	08:00	08:30	09:00	09:30		
E2	Stoneybatter	N	5.4	6.6	4	5.6	4.8	4.4	30.8	
		S	13.8	28	31.6	54.4	42.8	28	198.6	229.4
E2	St John's Road	E	17	26.8	34	43	36.4	23.4	180.6	
		W	3.6	5.4	13	12.4	5	9	48.4	229
E3	Ormond Quay	E	30.2	41.8	58	84.4	67.4	44.6	326.4	
E4	Wellington Quay	W	5	10.6	11.4	12.2	15.8	10.8	65.8	392.2
E4A	Millennium Bridge	N	2.2	5.6	9.8	23.8	21.4	7.4	70.2	
E3A	Millennium Bridge	S	2.8	5.8	4.2	6.8	9.2	4.2	33	103.2
E5	O'Connell Bridge	N	17.2	32.2	30.4	54.2	56	32.4	222.4	
		S	25.8	57.2	58.6	74.8	79.2	52.4	348	570.4
E6	Amien St	N	7.2	12.8	19.4	27	18.4	12.6	97.4	
		S	23.4	46.4	80.8	142.8	112.8	72.4	478.6	576
E7	Bolton St	N	11.2	21.4	19.8	42.6	35.4	18.8	149.2	
		S	8.4	15.6	18	28	26.2	16.4	112.6	261.8
E8	Cuffe St	N	3.8	4	10	15	18.8	15	66.6	
		S	10.2	14	21.4	45.6	30.8	17.6	139.6	206.2
E9	Dame St	E	30.2	31	40.6	54.2	50.6	26.4	233	
		W	5	11.2	11.4	9.2	10.8	9.4	57	290
E10	Stephen's Green N	N	5.2	12.2	18.2	29.8	25.6	29.8	120.8	
		S	0	0	0	0	0	0	0	120.8
E11	Clanbrassil St	N	12.8	30.8	55.2	112.4	80.8	56.4	348.4	
		S	7	16.8	22.6	22	14.4	10.8	93.6	442
E12	Cork St	N	11.6	19.8	15.6	55.2	22.2	18.6	143	
		S	1.2	5	6.6	7.8	5.2	2.8	28.6	171.6
E13	Mespil Road	N	27.8	65	100	153.8	100	34.6	481.2	
		S	6	8.4	12.6	20.2	17.2	14.4	78.8	560
E14	James St	N	12.6	19	21.8	45	42.8	19.2	160.4	
		S	9.6	14.4	14.4	18	16.4	12.6	85.4	245.8
E15	Nassau St	N	11.6	19.8	15.6	55.2	22.2	18.6	143	
		S	1.2	5	6.6	7.8	5.2	2.8	28.6	171.6
E16	Pearse St	N	9.4	23	29	52.6	38	28.8	180.8	
		S	0	0	0	0	0	0	0	180.8
E17	Church St	N	7	9.4	9.4	18.4	17.4	10.2	71.8	
		S	13.4	16.4	17.6	28.8	26.4	14.6	117.2	189
E18	Custom House Quay	N	41.4	30.8	30.6	43.6	31.8	24	202.2	
		S	9	11.8	13.4	21.2	18.6	14.2	88.2	290.4
E19	Fredrick St N	N	1	3.2	1.6	2.2	1	2.4	11.4	
		S	17.2	40.8	48	61.4	45	35.6	248	259.4
E20	Phibsborough Rd	N	11.6	19.8	15.6	55.2	22.2	18.6	143	
		S	1.2	5	6.6	7.8	5.2	2.8	28.6	171.6

DCC Canal Cordon Cycle Counts, 07:00-09:59hrs, 2006

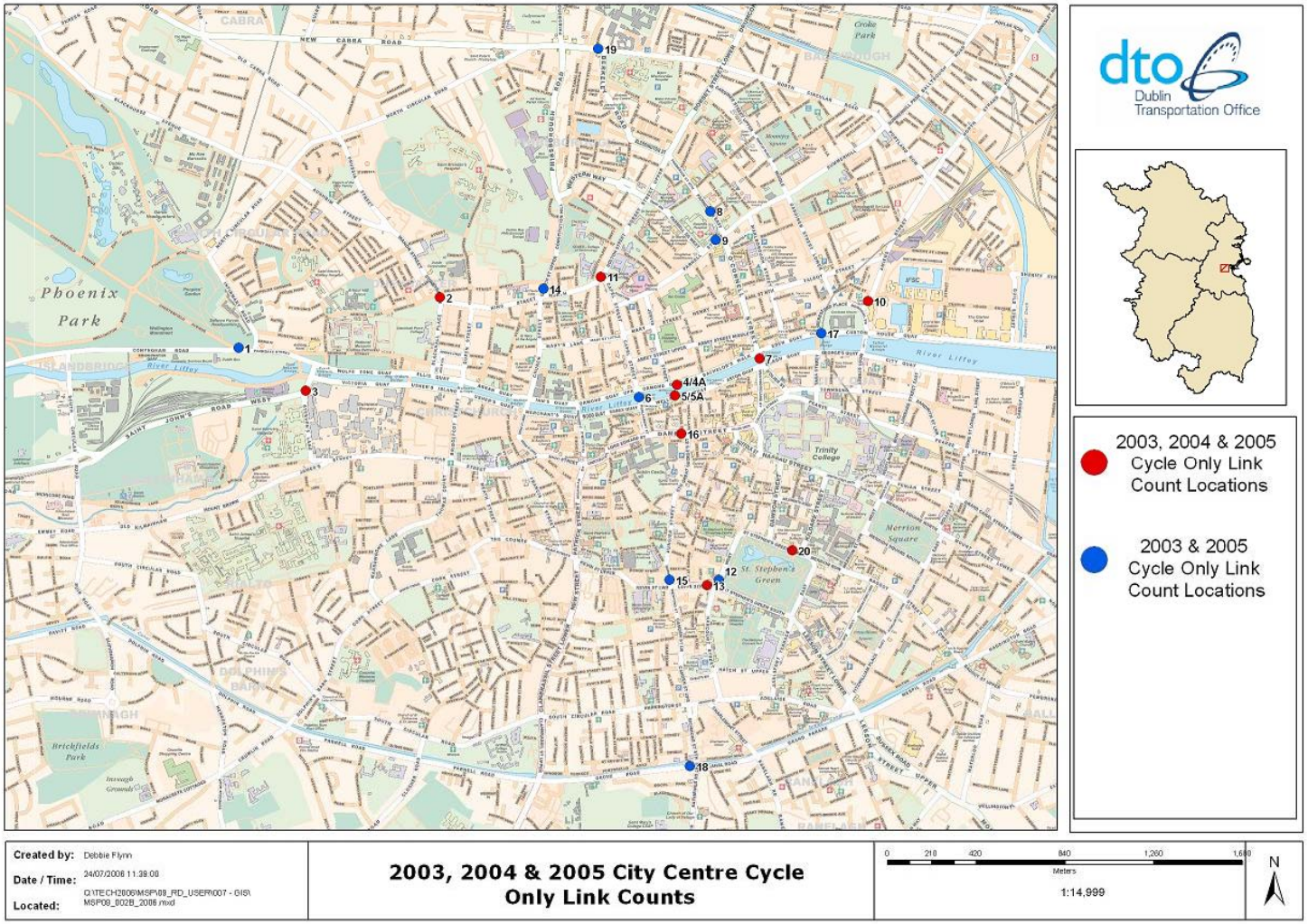
Location	Total 2006
Pearse St Br	104
Grand Canal St Br	115
Mount St Br	138.5
Baggott St Br	180
Leeson St Br	500
Charlemont St Br	290
Portobello Br	573.5
Harolds Cross Br	430
Dolphins Barn Br	118
Herberton Rd Br	73.5
South Circular Rd	64.5
Old Kilmainham	35
Kilmainham Lane	34.5
St. Johns Road	44
Conyngham Rd	67.5
Pheonix Park Main Rd	130.5
Pheonix Park Back Rd	20.5
Blackhorse Avenue	46
Old Cabra Rd	115.5
Annamoe Rd	33.5
Charleville Rd	22.5
New Cabra Rd	136.5
Phibsborough Rd	196
Royal Canal Bank	55.5
Sheriff St Upper Bridge	22.5
North Wall Quay	54

Appendix B

Count Locations of Cycle Flows

Count	***Link***
1	Stoneybatter, north of North King Street junction
2	St John's Road west, immediately east of Steeven's Lane
3/ 3A	Quays northside, just east of Millennium bridge/ Millennium bridge southbound
4/ 4A	Quays southside just west of Millennium bridge/ Millennium bridge northbound
5	O'Connell Street Bridge
6	Amiens Street between Beresford Place and Store Street
7	Bolton Street west of Capel Street
8	Cuffe Street east of Stephens Green
9	Dame Street west of St Gt Georges Street
10	St Stephens Green north, west of Kildare Street
11	Clanbrassil Street Lower, north of South Circular Road
12	Cork Street, West of Ardee Street
13	Mespil Road, east of Leeson Street
14	James's Street, east of Echlin Street
15	Nassau Street, east of Grafton Street
16	Pearse Street, east of Lombard Street East
17	Church Street, south of Hammond Lane
18	Custom House, west of Commons Street
19	Frederick Street North, south of Dorset Street Upper
20	Phibsborough Road, north of North Circular Road

November 2003 & 2005 City Centre Cycle Only Link Count Locations


dto
Dublin
Transportation Office
2003, 2004 & 2005
Cycle Only Link
Count Locations
2003 & 2005
Cycle Only Link
Count Locations
Created by: Debbie Flynn
Date / Time: 24/07/2006 11:39:00
Located: Q:\TECH2006\MSP\09_RD_USER\007 - GIS\
MSP09_002B_2006.mxd
2003, 2004 & 2005 City Centre Cycle
Only Link Counts
0 210 420 840 1,260 1,680
Meters
1:14,999
N