



# Road User Monitoring 2009

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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 2008 is the fifth 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:

- 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/web2008/qbcmmon.htm>).

As this is the fifth Road User Monitoring Report, much of the information within it can be compared with data from 2004-2007, 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 previous reports (<http://www.dto.ie/web2007/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 2007 however for some indicators the most recent data relates to 2008, and, where available, this data is used.

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

- 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 volumes increased on national roads except the M50 (which experienced road works over the period). Of the four roads examined, traffic flows grew by an average of 5% between 2006 and 2007 and by 2% between 2007 and 2008. ([G3 National Roads Traffic Flows](#)).

### ***Cyclists***

During the AM peak cyclist numbers across the Canal Cordon increased by 56% between 2004 and 2008. The increase between 2007 and 2008 was 8%. ([C2 Canal Cordon Cycle Flows](#)).

### ***Pedestrians***

Inbound pedestrian movements over the Canal Cordon have varied from a low of 15,565 in 1998 to a high, of 18,594 in 2007. Flows in 2008 were 1.3% lower than those recorded in 2007. ([P2 Canal Cordon Ped Flows](#)).

### ***Bus***

The Quality Bus Corridor (QBC) monitoring exercise, organised by the DTO recorded that bus average journey times in the morning peak were less than the corresponding car average journey times in 12 out of the 16 QBCs monitored, with significant (greater than 10%) variations on 8 QBCs. ([B2: Comparative Bus & Car Journey Times](#)).

### ***Luas***

The 2008 Annual Luas Census recorded 44,365 passenger boardings on the Green Line. This represents a fall of 4.6% from 2007 (see figure 5.1, below). Some 50,910 passenger boarding were recorded on the Red Line. This represents a fall in passenger of 5.1%. ([Luas Census](#)).

### ***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:

- 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 consisted 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 2008 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 2006 and 2007 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, 2006 and 2007 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 <sub>2</sub> , PM <sub>10</sub> , 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:

➤ *Bus*

Indicator Code	Indicator
B1	Summary of QBC Progress
B2	Comparative Bus & Car Journey Times in the Morning Peak
B3	% Bus Lane

### **2.3** *Monitoring Surveys*

A set of surveys to supplement available data was carried out in November 2007. 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 2007.

**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**

Data on this indicator was provided in the 2007 report. No additional data on this indicator has been published in the interim.

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

Data on this indicator was provided in the 2007 report. No additional data on this indicator has been published in the interim.

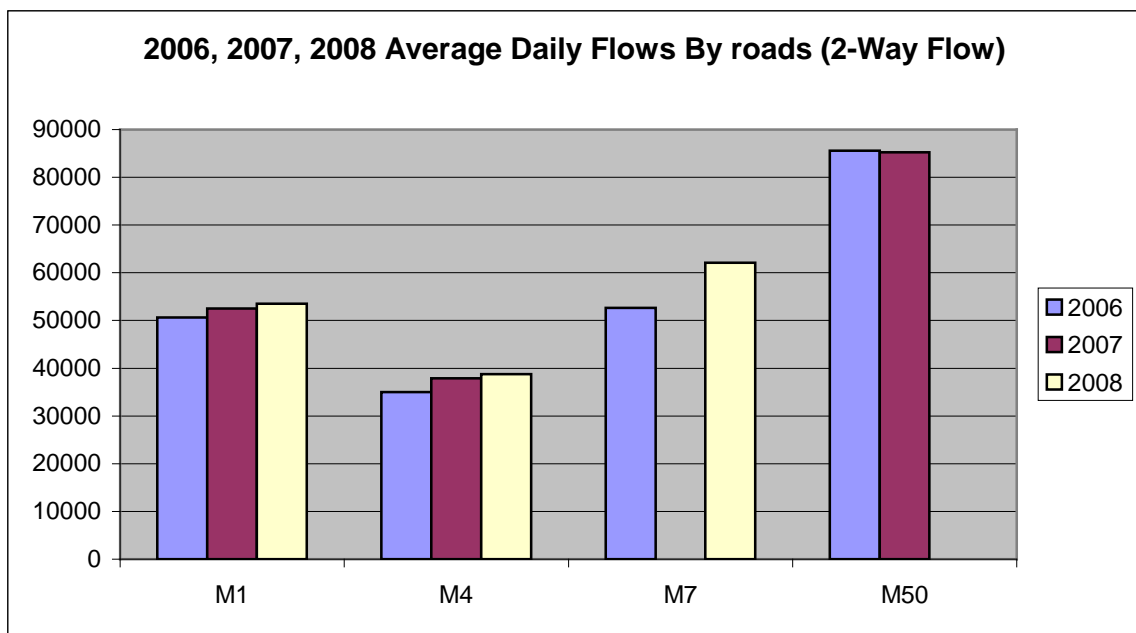
**G2: Percentage of shopping trips by walk, cycle, bus and car**

Data on this indicator was provided in the 2007 report. No additional data on this indicator has been published in the interim.

**G3: (A) Traffic flow on national primary roads**

*Figure 3.1* presents average daily traffic flow variations over a three-year period between 2006 and 2008. The graph demonstrates a significant increase in daily traffic flows over on all roads except the M50 (which experienced road works over the period). Of the four roads examined, traffic flows grew by an average of 5% between 2006 and 2007 and by 2% between 2007 and 2008. The largest increase recorded was on the M4, which experienced traffic growth of 8% between 2006 and 2007.

**Figure 3.1: 2006, 2007 and 2008 average daily traffic flows (national primary roads)<sup>1</sup>**



*Figures 3.2* 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 2006}
- 2) M4: Maynooth West (NRA site M04-34)

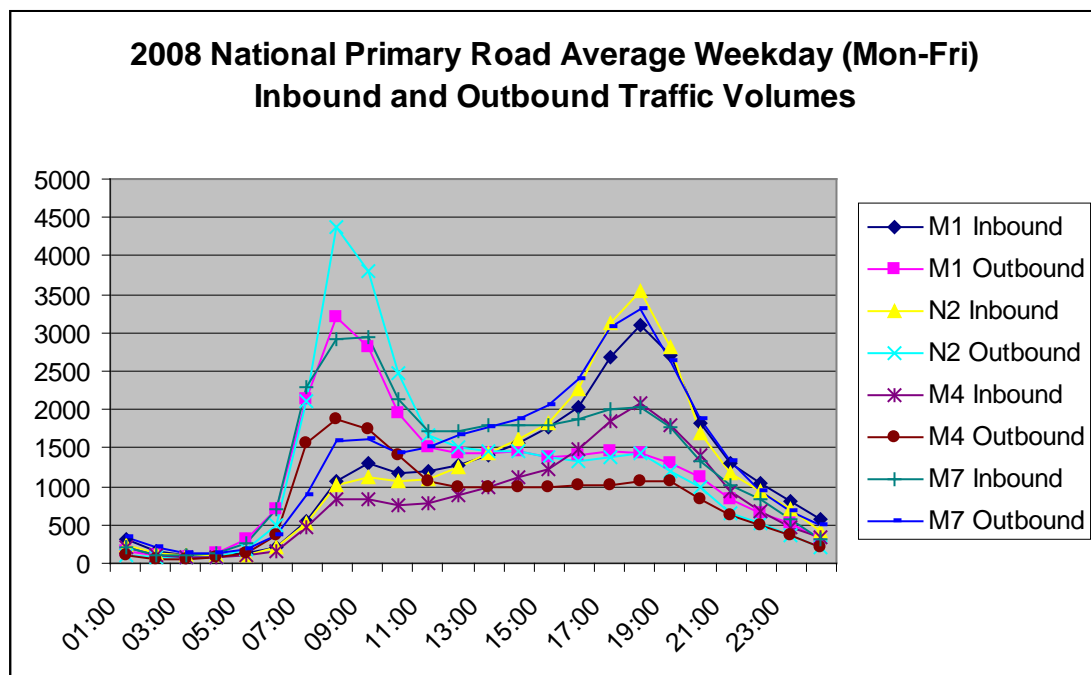
<sup>1</sup> Source: NRA Website, <http://www.nra.ie/NetworkManagement/TrafficCounts/TrafficCounterData/>

3) M50: Blanchardstown Toll Area (NRA site M50-20)

As can be seen from **Figure 3.2**, inbound weekday flows on all roads on all roads peak between 07.00 and 09.00hrs 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 two 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 3.2: 2007 weekday traffic flows variations by time of day (national primary roads)** <sup>2</sup>

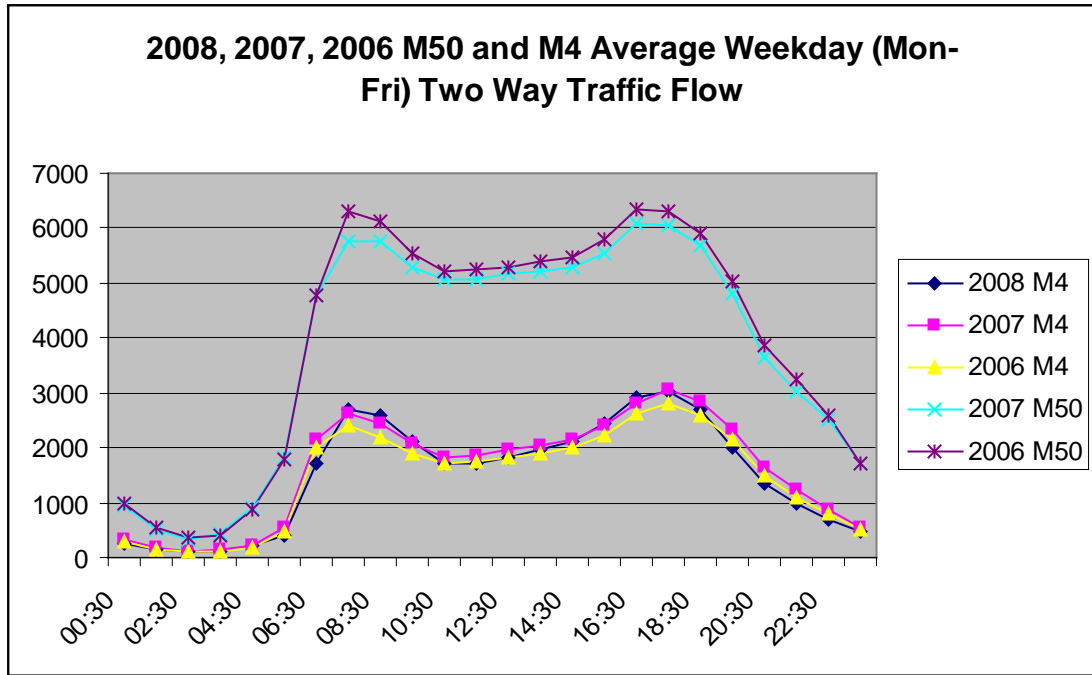


Traffic weekday flows on national primary roads by hour of the day were compared to 2006 and 2007 flows and this is illustrated in **Figure 3.3**. The highest hourly increases on the M4 radial road were experienced between 07:00-08:00hrs, where increases of 8.87% were recorded between 2007 and 2008. Flows on the M50 in 2007 were lower than those recorded in 2006, however, numbers were reduced by road works.

**Figure 3.3: 2006-2008 2-way weekday traffic flows variations by time of day (national primary roads)** <sup>3</sup>

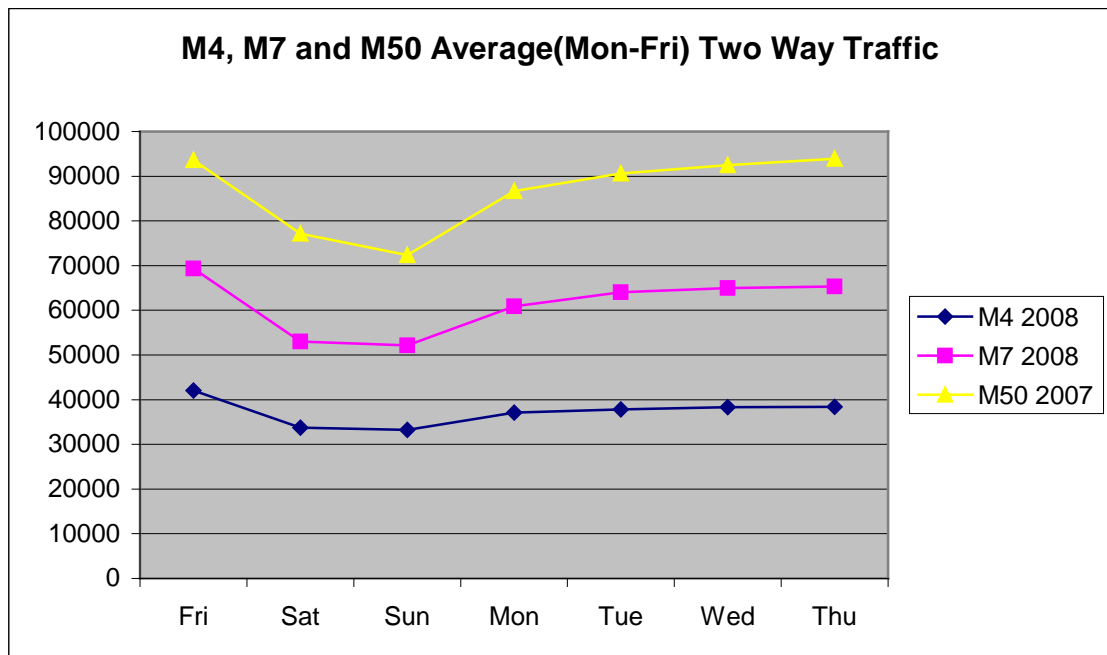
<sup>2</sup> Source: NRA Website, <http://www.nra.ie/NetworkManagement/TrafficCounts/TrafficCounterData/>

<sup>3</sup> Source: NRA Website, <http://www.nra.ie/NetworkManagement/TrafficCounts/TrafficCounterData/>



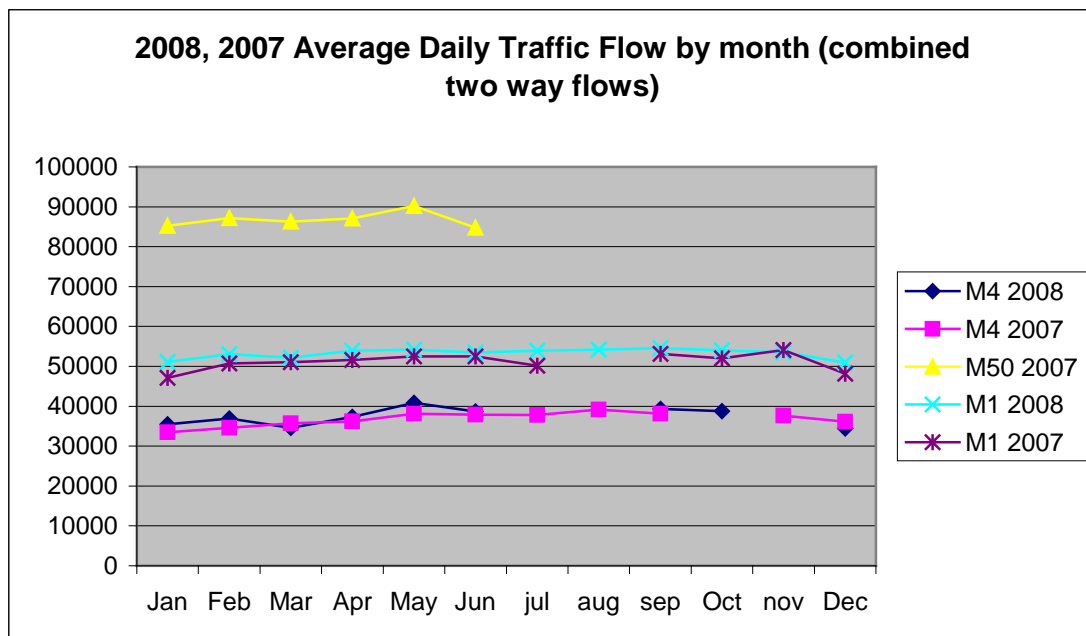
*Figure 3.4* presents traffic flow variations by day of the week at the same survey points on the national primary road network listed above.

Figure 3.4: Average 2-way traffic flows by day, 2007 - 2008 (national primary roads) <sup>4</sup>



As can be seen from *Figure 3.4*, the highest flow on the M50 (2007) takes place on Thursdays (8.4% above average). On the M4 the peak is recorded on Friday (7.4% above average). On the M7 the peak is recorded on Friday (12% above average). All three roads record lowest volumes on Sunday (16.5% lower than average on the M50, 10.8% lower than average on the M4 and 15% lower than average on the M7).

Figure 3.5: 2008 and 2007 traffic flows variations by month of the year (national primary roads) <sup>5</sup>



<sup>4</sup> Source: NRA Website, <http://www.nra.ie/NetworkManagement/TrafficCounts/TrafficCounterData/>

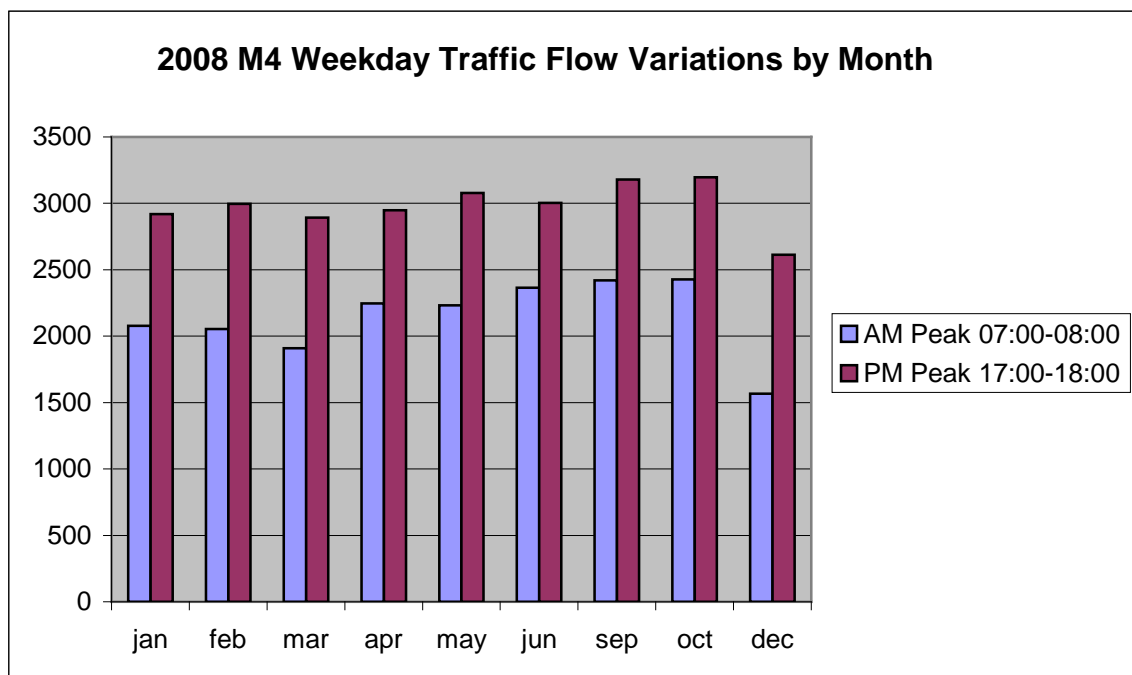
<sup>5</sup> Source: NRA Website, <http://www.nra.ie/NetworkManagement/TrafficCounts/TrafficCounterData/>

**Figure 3.5** presents traffic flow variations by month of the year in 2007 and 2008 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 April. Flows on the national radial roads peaked in August for the M1 (2.3% above average) and May for the M4 (9.4% above the average). Flows on the M50 in the first half of 2007 peaked in May (3.9% above average). In general the lowest daily traffic flows are experienced in January (1.8% below average).

**Figure 3.6** presents variations in weekday peak traffic flows by month of year in 2008 on a national primary radial road approaching Dublin (M4). Average flows on these roads are experienced in June. Highest flows are experienced in September, when flows were 7.9% above typical/ average flows. Lowest flows were recorded in March, when flows were 7.4% below the average.

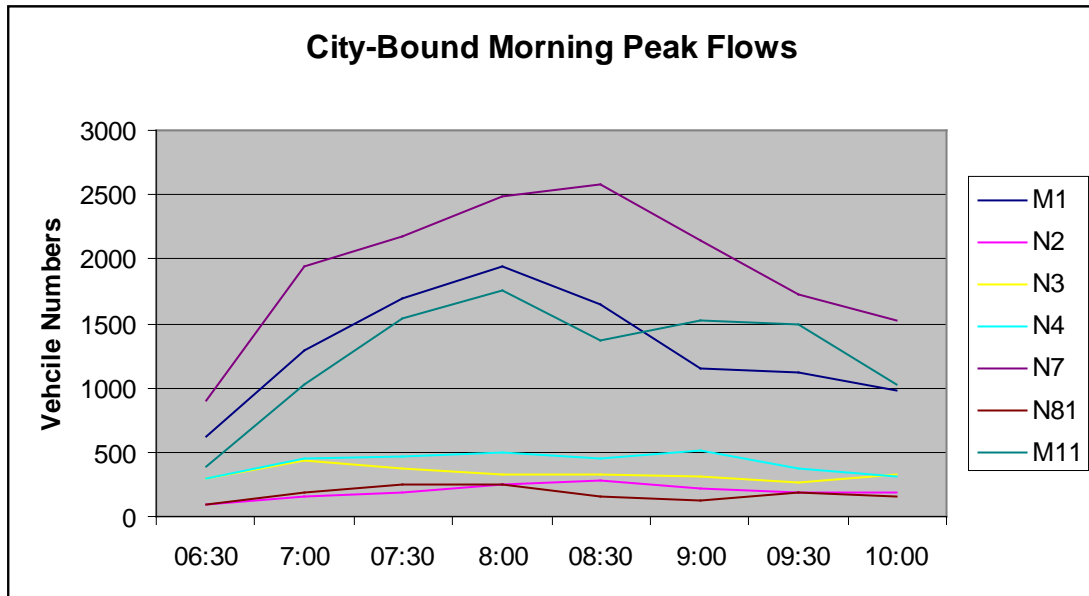
**Figure 3.6: 2007 traffic flow variations by month of the year on the M4 (national primary road)<sup>6</sup>**



<sup>6</sup> Source: NRA Website, <http://www.nra.ie/NetworkManagement/TrafficCounts/TrafficCounterData/>

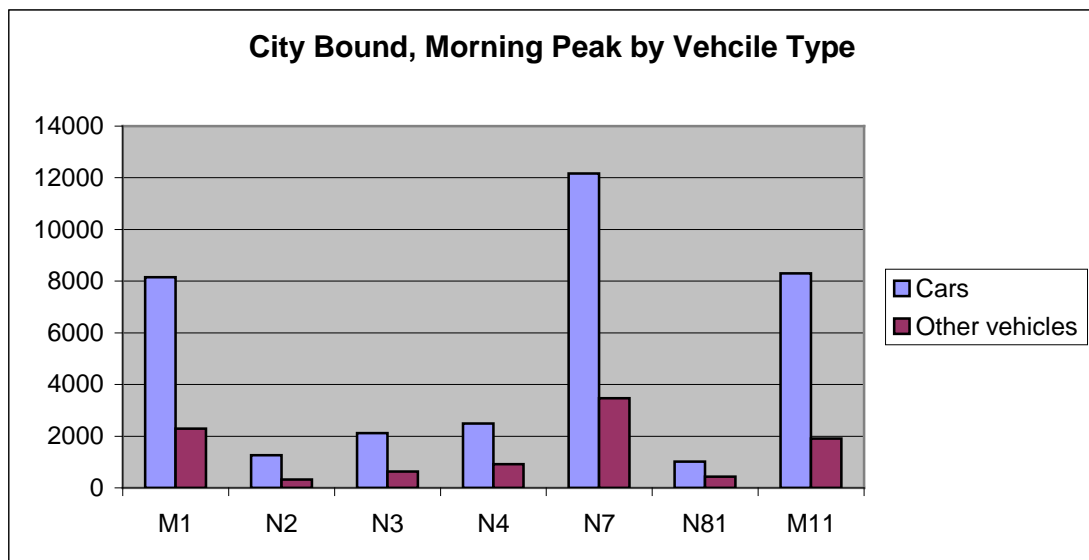


**Figure 3.7: City Bound Morning Peak (06:00-10:00) Flows at the Metropolitan Cordon, November 2008<sup>7</sup>**



The DTO commissioned city bound vehicle counts around the metropolitan cordon, in November 2008. These recorded a wide variation over the peak period of travel. The peak for the M1, M81 and M11 is 07:30-08:00. For the N2 and N7, the peak is later, at 08:00-08:30, and for the N7, the peak is 08:30-09:00. The earliest peak takes place on the N3, at 06:30-07:00.

**Figure 3.8: City Bound Morning Peak (06:00-10:00) at the Metropolitan Cordon, by Vehicle Type, November 2008<sup>8</sup>**



Looking at the composition of the vehicles, it is clear that cars are by far the dominant mode, at 78% mode share. The highest proportion of 'other vehicles' is on the N81, where this category represents 30% of overall flows. On the M11, 'other vehicles' represent just 19% of overall flows.

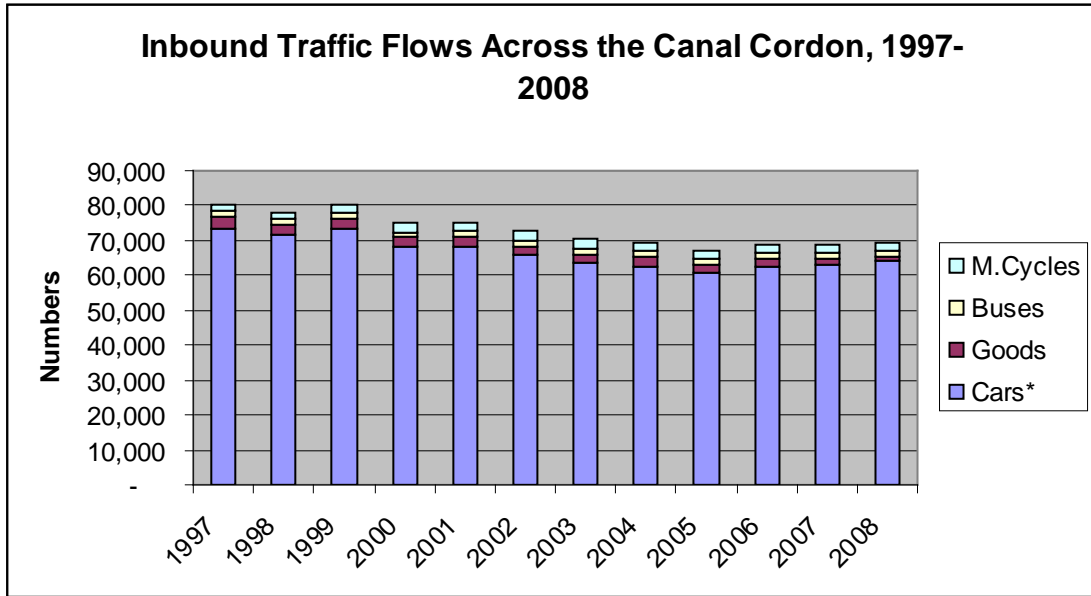
<sup>7</sup> Source: DTO Survey, November 2008

<sup>8</sup> Source: DTO Survey, November 2008

**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 3hour period on two separate weekdays (Tuesday, Wednesday or Thursday)

**Figure 3.9: 1997-2008 Inbound Traffic Flows Across Canal Cordon**



As can be seen from *Figure 3.7*, traffic flows in 2008, were almost identical with those in 2007, recording an increase of just 0.07%. It is interesting to note, however, that bus movements are up slightly (4.3%), while goods movements are down significantly (15.4%). Over the entire period, from 1997-2007, traffic numbers have fallen by 15.5%.

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

Data on this indicator was provided in the 2007 report. Partial new data on this indicator is provided in G3, Traffic flow on roads crossing City Centre Canal Cordon, above.

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

Data on this indicator was provided in the 2007 report. No additional data on this indicator has been published in the interim.

**G8: Percentage of time that roads are congested**

Data on this indicator is not available at present.

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

Data on this indicator is not available at present.

**G10: (A) Number of personal injury road accidents**

Data on this indicator was provided in the 2007 report. No additional data on this indicator has been published in the interim.

**G11: Environmental emissions attributable to road traffic (NO<sub>2</sub>, PM<sub>10</sub>, 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<sub>2</sub> 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<sub>10</sub>), Lead, NO<sub>2</sub>, NO<sub>X</sub>, SO<sub>2</sub>, CO, VOC (Benzene)

The primary source of NO<sub>2</sub>, PM<sub>10</sub>, 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: Rathmines, Ballyfermot, Marino

**Table 3.1: Annual ambient air quality emission values which are directly attributable to road traffic (2005, 2006, 2007 & 2008 values)<sup>9</sup>**

Location		Pollutant	PM10 (µg /m3)	NO2 (µg /m3)	CO (mg /m3)	C6H6 (µg /m3)
City Centre	Wintavern St.	2005	20	33	0.2	1.4
		2006	19	35	0.3	
		2007	18	34	0.2	
		2008	17	34	0.3	
	Coleraine St	2005	20	28	1.1	
		2006	21	31	0.7	
		2007	18	39	0.5	
		2008	19	36	0.5	
Suburban	Marino	2005	14			
		2006	16			
		2007	10			
		2008	13			
	Rathmines	2005	17	22		0.5
		2006	19	23		2.7
		2007	17	23		2.8
		2008	17	23		0.9
	Ballyfermot	2005	15	22		
		2006	17	22		
		2007	15	19		
		2008	12	17		
Background	Phoenix Park	2005	12			
		2006	14			
		2007	12			
		2008	11			

### PM<sub>10</sub>

Limits defined in Directive 1999/30/EC. Annual Mean limits of 40 µg/m<sup>3</sup> came into effect in 2006. None of the monitoring stations recorded average values in excess of this limit. Over the 3-year period between 2005 and 2008, significant improvements were recorded at most monitoring stations with the greatest improvement occurring at Marino. All of the locations were compliant with the Stage 2 annual limits of 20 µg/m<sup>3</sup> (to be achieved by 2010).

### NO<sub>2</sub>

Hourly and Annual Mean Limits defined in Directive 1999/30/EC. All stations were compliant, (40 µg m<sup>-3</sup>), with the greatest improvement at Ballyfermot. The largest increase occurred in Coleraine St. Limit values come into force in 2010.

### Carbon Monoxide (CO)

Limit defined in Directive 2000/69/EC. The limit value of 10 mg/m<sup>3</sup> 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 0.5 mg /m<sup>3</sup>, is below the lower threshold figure of 5 mg /m<sup>3</sup>.

<sup>9</sup>Source: EPA, Air Quality in Ireland 2008

[http://www.epa.ie/downloads/pubs/air/quality/epa\\_air\\_quality\\_report\\_2008.pdf](http://www.epa.ie/downloads/pubs/air/quality/epa_air_quality_report_2008.pdf)

Source: EPA, Air Quality in Ireland 2007

[http://www.epa.ie/downloads/pubs/air/quality/epa\\_air\\_quality\\_report\\_2007.pdf](http://www.epa.ie/downloads/pubs/air/quality/epa_air_quality_report_2007.pdf)

Source: EPA, Air Quality in Ireland 2006

[http://www.epa.ie/downloads/pubs/air/quality/epa\\_air\\_quality\\_report\\_2006.pdf](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](http://www.epa.ie/NewsCentre/ReportsPublications/AirQuality/FileUpload_10063.en.pdf)

**C<sub>6</sub>H<sub>6</sub> (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<sup>3</sup>. Rathmines recorded a level of 0.9µg/ m<sup>3</sup>. C<sub>6</sub>H<sub>6</sub> values monitored represent a significant improvement on 2007 (2.8.µg/ m<sup>3</sup>).

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

Data on this indicator is not available at present.

## 4. Cycling

### **C1: (B) Cycle flows crossing City Centre Canal cordon**

Data on this indicator was provided in the 2007 report. No additional data on this indicator has been published in the interim.

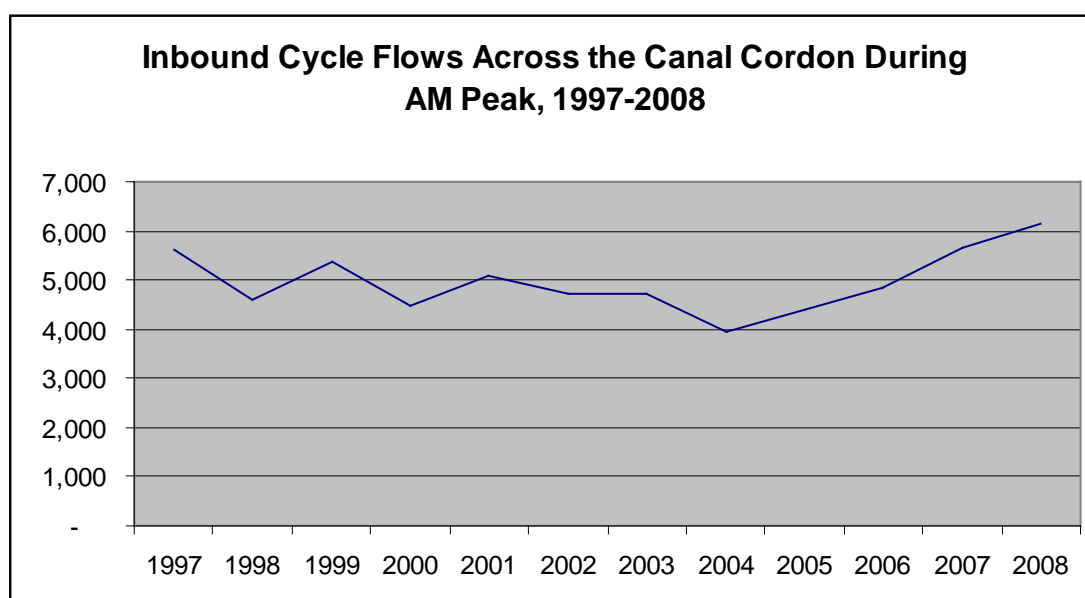
### **C2: (B) Cycle flows crossing City Centre Canal cordon**

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 4-hour period on two separate weekdays (Tuesday, Wednesday or Thursday). Inbound and outbound cyclists were surveyed between 06:00 and 10:00hrs each day.

*Figure 4.1* 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*.

During the AM peak cyclist numbers increased by 56% between 2004 and 2008. The increase between 2007 and 2008 was 8%.

**Figure 4.1: November 1997-2008 morning peak weekday cycle flows across the Canal Cordon**<sup>10</sup>



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

As part of the November 2007 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 2006, 2007 and 2008. 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*.

<sup>10</sup> Source: DCC 2004, 2007 surveys

Figure 4.2 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 4.2: November 2008 AM peak weekday cycle flows at City Centre count locations <sup>11</sup>

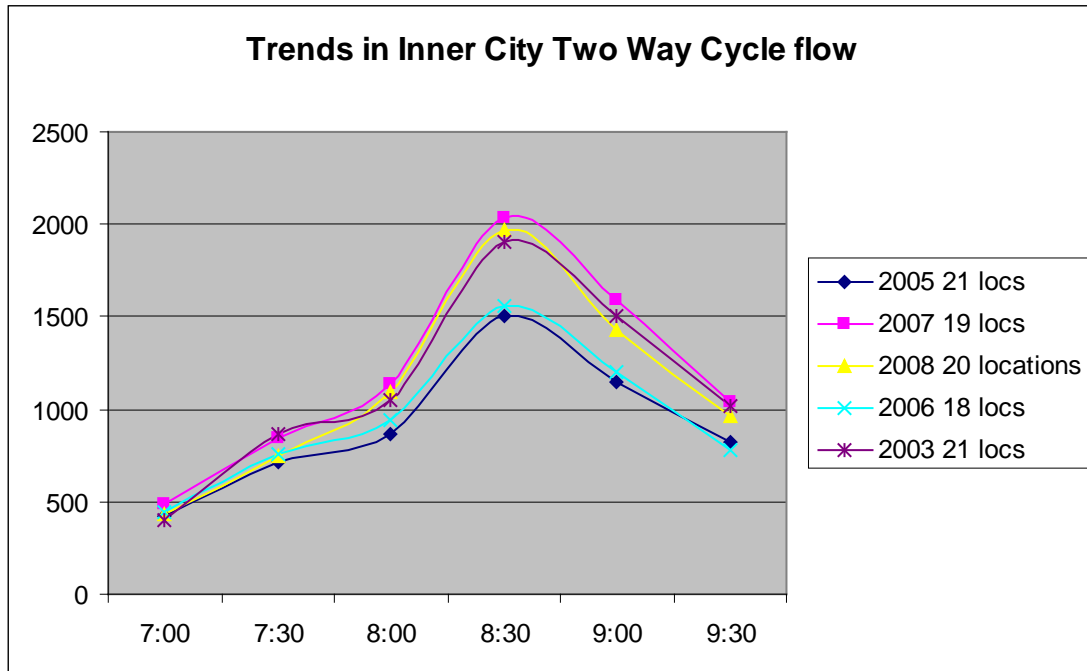
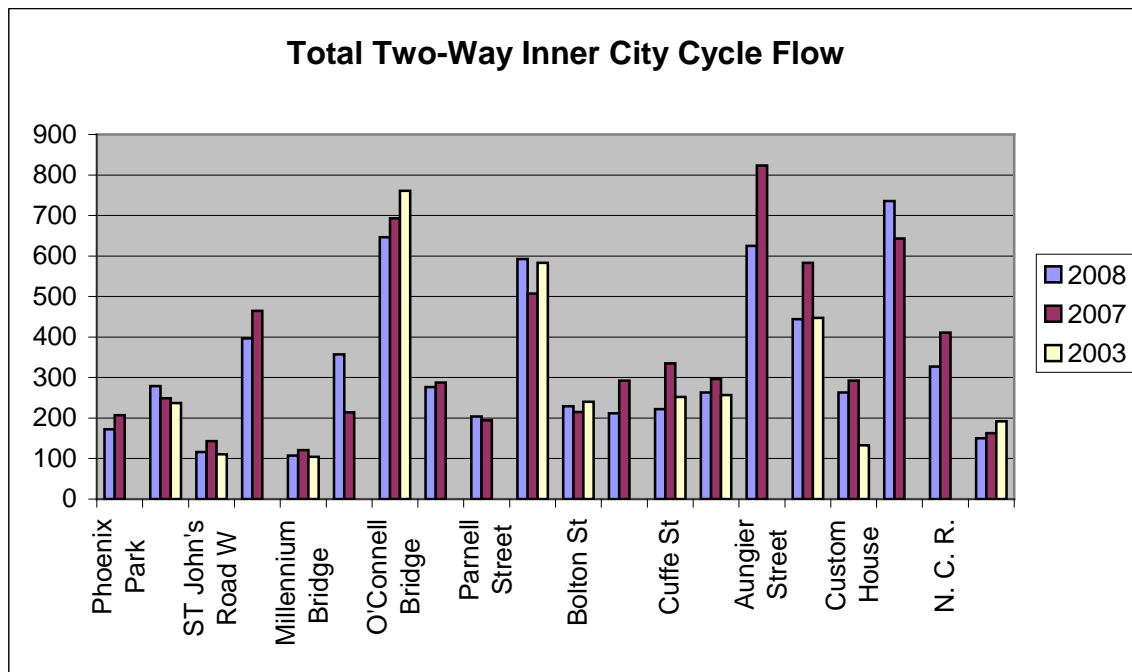


Figure 4.3: November 2003, 2007 and 2008 3-hour AM peak weekday cycle flow comparisons by city centre location <sup>12</sup>

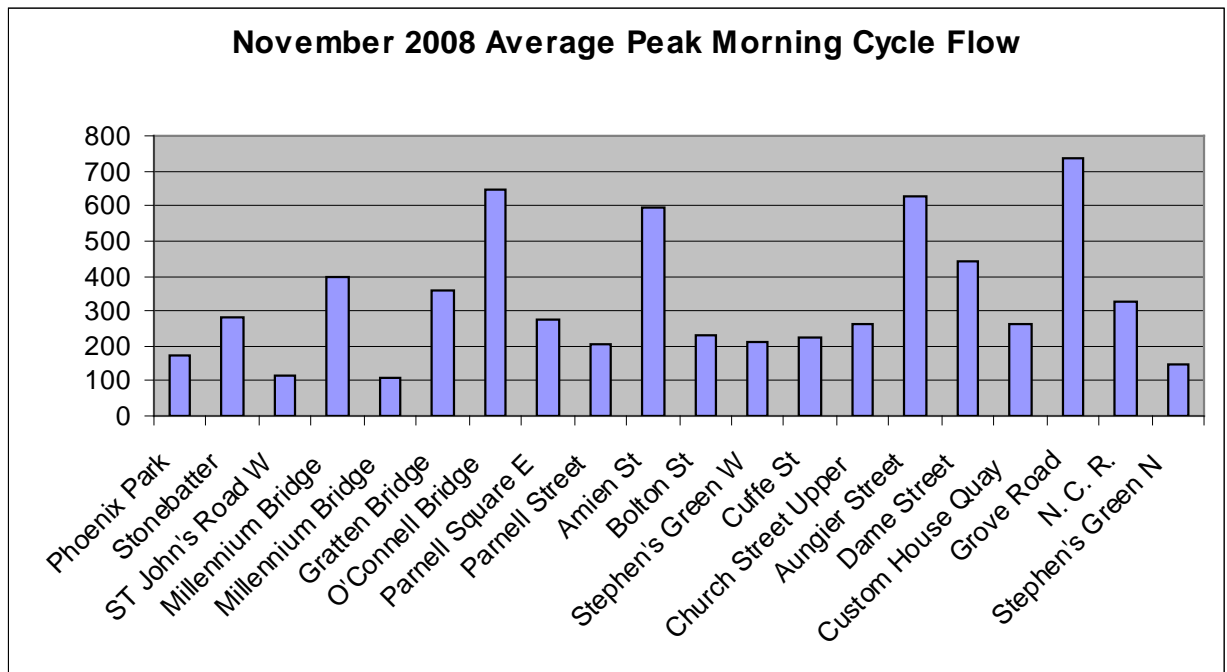


<sup>11</sup> Source: DTO November 2003-2008 surveys

<sup>12</sup> Source: DTO November 2003, 2007, 2008 surveys

**Figure 4.3** illustrates the change in the number of cyclists at a variety of city centre locations between 2003, 2007 and 2008. There has been a 7.4% decrease in the number of cyclists recorded in 2008, when compared with 2007. The largest increase occurred on Gratten Bridge (66%) while the largest decrease occurred on Dame Street (-23%).

**Figure 4.4:** November 2008 3-hour AM peak weekday cycle flow comparisons by city centre location <sup>13</sup>



**Figure 4.4** presents a view of the a.m. location of cyclists in the city. Of the areas surveyed, O'Connell Bridge (646) and Amiens St (593), on the Northside, and Aungier St (625) and Grove Road (735), on the Southside, are the busiest areas.

<sup>13</sup> Source: DTO November 2008 surveys



## 5. Pedestrians

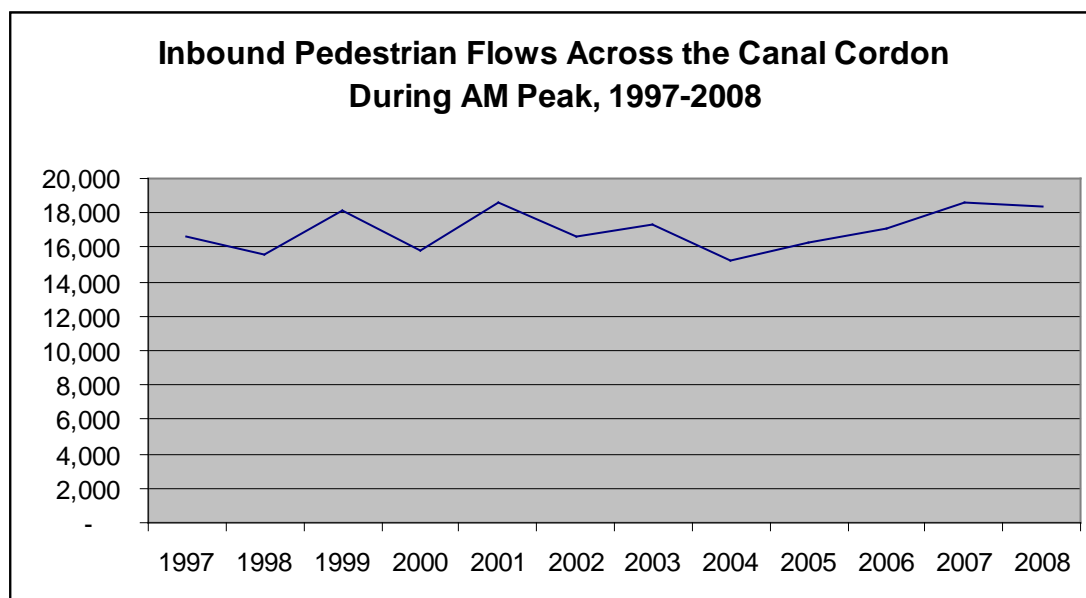
### P2: Number of pedestrians crossing City Centre Canal Cordon

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, inbound pedestrian numbers have varied from a low of 15,565 in 1998 to a high, of 18,594 in 2007. Flows in 2008 were 1.3% lower than those recorded in 2007.

Figure 5.1: November 1997- 2008 AM Peak inbound pedestrian flow<sup>14</sup>



<sup>14</sup> Source: DCC November 1997-2007 surveys

## 5. Bus

### B1: Summary of QBC progress

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/web2008/qbcmmon.htm>.

*Table 5.1* is a summary of the progress that has been made from November 1997 to November 2008 in respect of the increase in bus service supply and resultant patronage.

**Table 5.1: Summary of Progress 1997 - 2008**<sup>15</sup>

<b>QBC Monitoring</b> <b>Nov 1997 / Nov 2008</b> <b>Cars Crossing Canal Cordon by Corridor</b> <b>BAC Buses Crossing Canal Cordon by Corridor</b> <b>BAC Bus Passengers Crossing Canal by Corridor</b> <b>0700 - 1000</b>				
Corridor	Mode	Nov-97	Nov-08	% Change
Stillorgan	CARS	5794	3481	-39.92
	BUSES	40	127	217.50
	BUS PAX	1787	5808	225.01
Blanchardstown	CARS	5963	5016	-15.88
	BUSES	83	135	62.65
	BUS PAX	4573	6108	33.57
Lucan	CARS	6104	4918	-19.43
	BUSES	71	114	60.56
	BUS PAX	4303	6412	49.01
Finglas / Swords	CARS	5678	4851	-14.56
	BUSES	112	168	50.00
	BUS PAX	5670	7050	24.34
North Clondalkin	CARS	1555	2016	29.65
	BUSES	46	38	-17.39
	BUS PAX	2079	2050	-1.39
Malahide	CARS	4620	2573	-44.31
	BUSES	133	191	43.61
	BUS PAX	4747	8968	88.92
Tallaght	CARS	3314	1769	-46.62
	BUSES	72	98	36.11
	BUS PAX	4098	4744	15.76
Rathfarnham	CARS	3605	2829	-21.53
	BUSES	76	59	-22.37
	BUS PAX	3285	3025	-7.91
<b>Total</b>	<b>CARS</b>	<b>36633</b>	<b>27453</b>	<b>-25.06</b>
	<b>BUSES</b>	<b>633</b>	<b>930</b>	<b>46.92</b>
	<b>BUS PAX</b>	<b>30542</b>	<b>44165</b>	<b>44.60</b>

<sup>15</sup> Source: DTO QBC Monitoring, November 2007

Table 5.2 shows the changes in the last 12 months. There has been a 9% increase in the supply of buses and a 6% increase in passengers.

Table 5.2: Summary of Progress 2007 - 2008

<b>QBC Monitoring</b> <b>Nov 2007 / Nov 2008</b> <b>Cars Crossing Canal Cordon by Corridor</b> <b>BAC Buses Crossing Canal Cordon by Corridor</b> <b>BAC Bus Passengers Crossing Canal by Corridor</b> <b>0700 - 1000</b>				
Corridor	Mode	Nov-07	Nov-08	% Change
Stillorgan	CARS	3328	3481	4.60
	BUSES	120	127	5.83
	BUS PAX	4935	5808	17.69
Blanchardstown	CARS	4780	5016	4.94
	BUSES	132	135	2.27
	BUS PAX	6453	6108	-5.35
Lucan	CARS	4910	4918	0.16
	BUSES	106	114	7.55
	BUS PAX	5675	6412	12.99
Finglas / Swords	CARS	4897	4851	-0.94
	BUSES	146	168	15.07
	BUS PAX	7535	7050	-6.44
North Clondalkin	CARS	1989	2016	1.36
	BUSES	33	38	15.15
	BUS PAX	1904	2050	7.67
Malahide	CARS	2579	2573	-0.23
	BUSES	161	191	18.63
	BUS PAX	8685	8968	3.26
Tallaght	CARS	1965	1769	-9.97
	BUSES	99	98	-1.01
	BUS PAX	3621	4744	31.01
Rathfarnham	CARS	2813	2829	0.57
	BUSES	54	59	9.26
	BUS PAX	2860	3025	5.77
Total	CARS	27261	27453	0.70
	BUSES	851	930	9.28
	BUS PAX	41668	44165	5.99

## B2: Comparative Bus & Car Journey Times in the Morning Peak

Table 5.3 shows summary findings for comparative bus and car journey times for city bound morning peak journeys.

There are comparisons available for all the 16 QBCs monitored. The table details the section of each QBC over which the comparisons are made.

Bus average journey times in the morning peak were less than the corresponding car average journey times in 12 out of the 16 QBCs monitored, with significant (greater than 10%) variations on 8 QBCs.

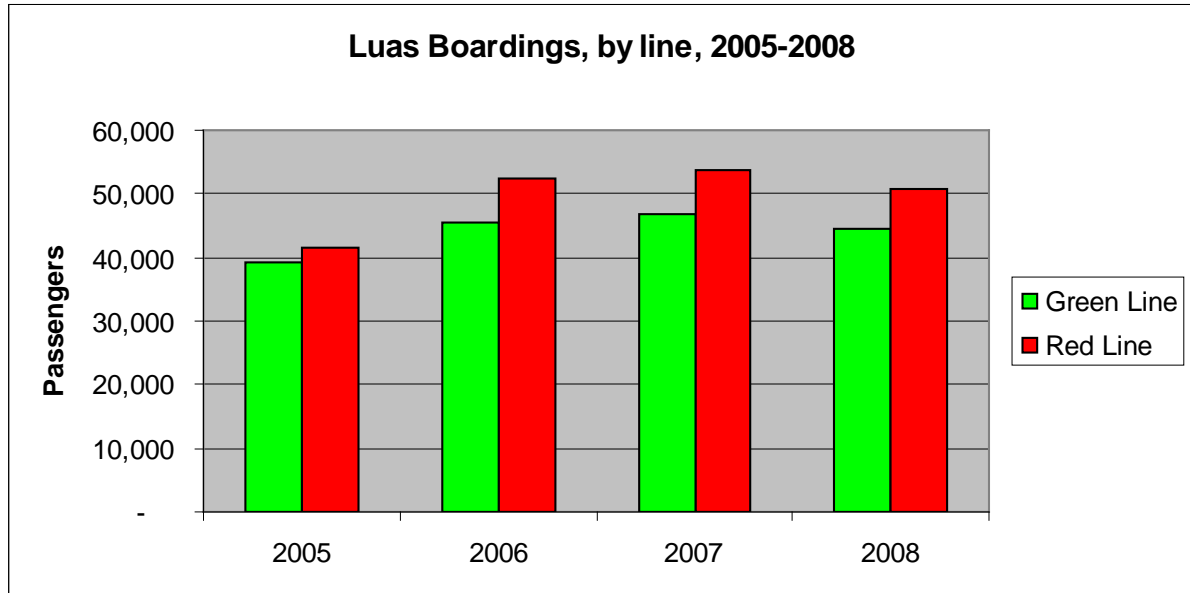
**Table 5.3: Comparative Bus and Car Journey Times**

QUALITY BUS CORRIDOR MONITORING NOVEMBER 2008 SUMMARY OF AM PEAK COMPARATIVE BUS AND CAR JOURNEY TIMES					
Corridor	Section Measured	Bus Average Journey Time	Car Average Journey Time	Time Difference	% Difference
Clontarf	Clontarf Bus Garage to Fairview	7:57	14:48	6:51	86.2%
Finglas	Finglas to Dorset Street Lower	12:18	15:35	3:17	26.7%
Howth Road	Raheny to Fairview	15:13	18:51	3:38	23.9%
Lucan	Foxhunter to Bachelors Walk via Chapelizod Bypass	28:35	33:22	4:47	16.7%
Rathfarnham	Rathfarnham to Camden Street	27:02	30:35	3:33	13.1%
Tallaght	West of M50 to Camden Street	32:45	36:52	4:07	12.6%
Malahide	Greencastle Road to Amiens Street	22:34	25:06	2:32	11.2%
Swords	Airside Business Park to Dorset Street Lower	35:56	39:48	3:52	10.8%
South Clondalkin	Grange Castle to Bachelors Walk	57:45	62:24	4:39	8.0%
Rock Road	Blackrock to Merrion Square	23:41	25:04	1:23	5.8%
Stillorgan	Foxrock Church to Leeson Street	29:15	30:39	1:24	4.8%
North Clondalkin	Coldcut Road to Cornmarket	30:30	30:50	0:20	1.1%
Ballymun	Ballymun to Dorset Street Lower	23:31	21:52	(1:39)	(7.0%)
Blanchardstown	Blanchardstown Bypass to Manor Street	29:14	26:39	(2:35)	(8.8%)
Crumlin Road	Drimnagh Road to Patrick Street	20:42	17:20	(3:22)	(16.3%)
Bray	Bray to Foxrock Church	25:11	17:08	(8:03)	(31.9%)

## 6. Luas Census

The 2008 Annual Luas Census recorded 44,635 passenger boardings on the Green Line. This represents a fall of 4.6% from 2007 (see figure 5.1, below). Some 50,910 passenger boarding were recorded on the Red Line. This represents a fall in passenger of 5.1%.

Figure 6.1: Luas Boardings 2005-2008



Looking at the patterns of demand across the day, it is interesting to note demand on the Green Line is more peaked than that on the Red Line. Peak boardings on the Green line were over three times (320%) greater than average boardings while, for the Red Line, peak boardings were 220% above average (see figure 5.2, below).

Figure 6.2: Hourly Trends in Luas Boardings, 2005-2008

