3 DATA COLLECTION

Introduction

3.1 This section of the report summarises the key findings of the 'Traffic Survey Report' produced in October 2007①. It focuses primarily on traffic related data collected during June 2007 and data regarding road traffic accidents. It also outlines the surveys undertaken by TPi covering accessibility issues, bus stops, cycle routes, highway condition and lighting, the results of which comprise a number of the short term recommendations detailed in Chapter 0.

Automatic Traffic Counts (ATC)

3.2 ATC data was collected at 6 sites in Celbridge between 7th and 13th June 2007. Additional ATC data collected by Count on Us (CoU) on behalf of RPS between 26th February and 5th March 2007 was also made available. The location of the surveys sites is shown on Figure 4 and listed below. Table 1 shows 24 hour directional traffic flows by day of the week.

- 1 - Maynooth Road
- 2 - Clane Road
- 3 - Ballygoran Road
- 4 - Oldtown Road
- 5 - Maynooth Road
- 6 - Scoil Na Mochua Road
- R1 - R408 Dublin Road, 1 kilometre east of R405 Primrose Hill
- R2 - R405 Primrose Hill, 200 metres north of junction at Simmonstown
- R3 - Clane Road, 150 metres east of access to Priory Estate
- R4 - R403 Wolstan Haven Road, 800 metres west of R405 Maynooth Road
- R5 - R405 Maynooth Road, 200 metres north of R403 Wolstan Haven Road

Manual Classified Turning Counts (MCC)

3.3 MCC data were collected at two sites in Celbridge on 6th June 2007. Additional MCC data collected by Count on Us (CoU) on behalf of RPS on 29th March 2007 was also made available. The location of the sites is shown on Figure 5 and listed below:

- 10 - R405 Maynooth/ Thornhill Road/ Croduan Forest Park
- 11 - R403 Clane Road/ Church Road/ Wolstan Haven Road
- R1 - R405 Big Lane / R405 Main Street / Castletown Drive
- R2 - R403 Dublin Road / Local Road
- R3 - R405 Primrose Hill / Local Road
- R4 - R403 Dublin Road / R405 Primrose Hill / Newtown Road
- R5 - R405 Main Street / R405 Primrose Hill / English Row
- R6 - Clane Road / Church Road / English Row
- R7 - R405 Maynooth Road / R403 Wolstan Haven Road / R405 Big Lane
- R8 - R403 Clane Road / R403 Wolstan Haven Road

① Additional Analysis and survey data are provided within the 'Traffic Survey Report'.

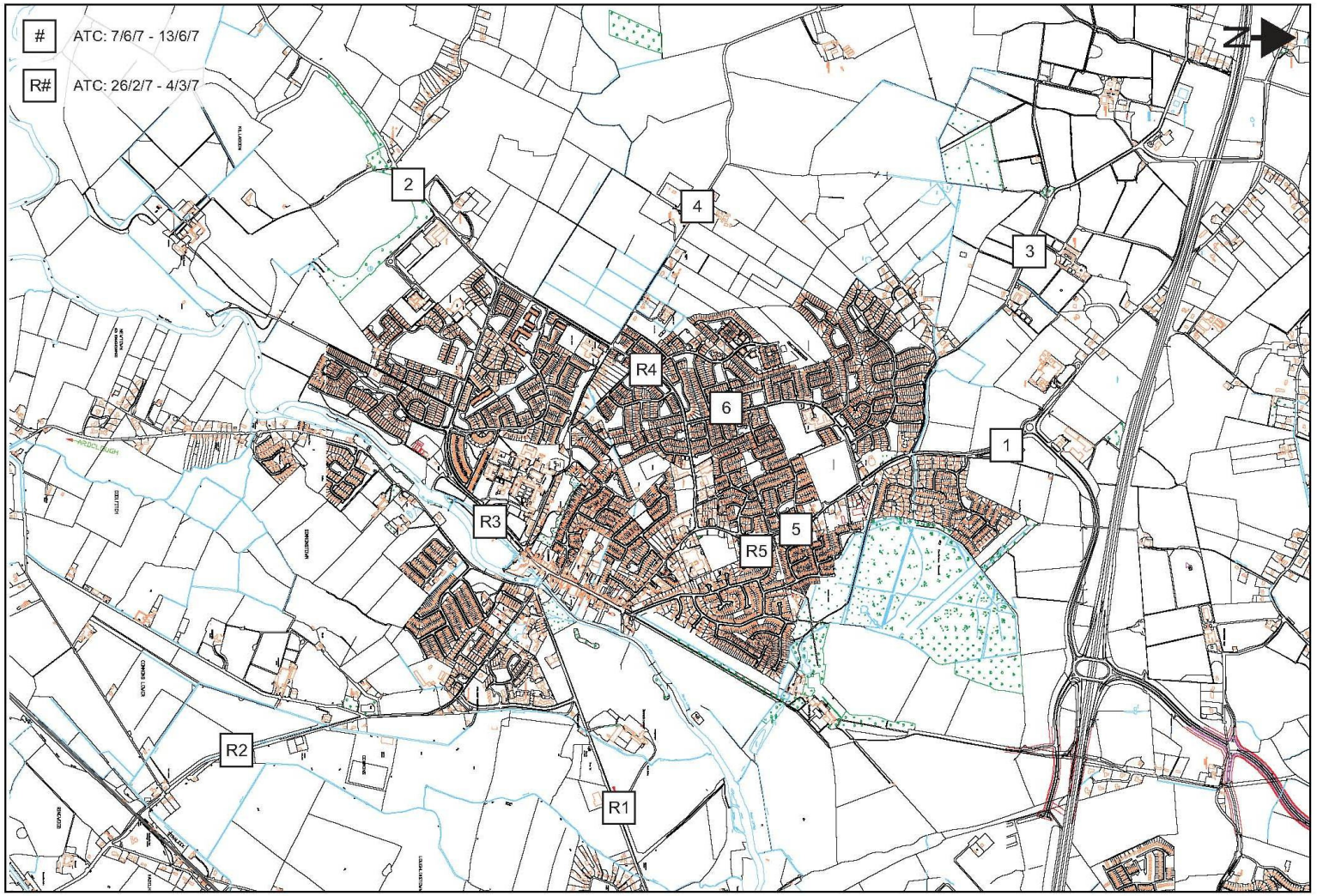

Figure 4: Automatic Traffic Count Locations, Celbridge

ALL VEHICLES			24 Hour - ATC Summary						
SITE	LOCATION	DIRECTION	Mon	Tue	Wed	Thu	Fri	Sat	Sun
1	R405 Maynooth Rd	Northbound	8351	8883	8737	9104*	9297	7952	6329
		Southbound	8936	9384	9225	9352*	9626	8097	6907
2	Clane Rd	Northbound	3402	3634	3658	3693	3565	2987	2546
		Southbound	3280	3499	3491	3601	3521	3091	2367
3	Ballygoran Rd	Northbound	280	326	276	314	329	265	170
		Southbound	311	363	332	347	342	272	234
4	Oldtown Rd	Northbound	198	202	213	226	220	179	174
		Southbound	248	250	270	304	287	187	189
5	R405 Maynooth Rd	Northbound	7149	7551	6504	7802	7971	7016	5754
		Southbound	7830	8237	7695	8220	8503	7266	6159
6	Scoil Na Mochua Rd	Northbound	2704	2982	2982	3143	3165	2587	2112
		Southbound	2609	2883	2840	3053	3007	2580	2193
R1	R408 Dublin Rd	Eastbound	6132**	6860	6665	6915	6819	6658	5288
		Westbound	5601**	6404	6258	6430	6124	6152	5048
R2	R405 Primrose Hill	Northbound	3805**	4413	4229	4336	4557	3068	2284
		Southbound	4190**	4692	4586	4650	4601	3066	2229
R3	Clane Rd	Eastbound	4643**	5178	5075	5147	5386	5047	4126
		Westbound	4264**	4436	4529	4507	4688	4521	3794
R4	Shackleton Rd	Eastbound	3541**	3843	3896	4015	3957	3708	2784
		Westbound	4412**	4917	5018	5056	5069	4340	3220
R5	R405 Maynooth Rd	Northbound	6772**	7386	7291	7763	7890	7250	5462
		Southbound	7310**	7875	7926	8509	8363	7405	5893

* ATC fault, no data 00:00 – 05:00

** Monday data a combination of morning and afternoon counts on separate days

Table 1: 24 Hour Flow - ATC Summary, Celbridge

Turning movements of particular interest

3.4 Following an assessment of the MCC data the following turning movements proved to be of particular interest namely:

Junction 10 – R405 Maynooth Road into Thornhill Road
During the day about, 21% of southbound vehicles turn right from Maynooth Road onto Thornhill Road (Scoil Mochua Road). This rises to 26% (137 vehicles) in the AM peak and 29% (228 vehicles) in the PM peak. The existing narrow right turn lane has a capacity of approximately 3 cars, and increasing right turning capacity within the existing arrangement of a priority junction would require additional landtake.

Junction 11 – R403 Clane Road / Church Road / Wolstan Haven Road
9261 movements were recorded at the junction over a 12 hour period, 89% being concentrated on four movements:
Shackleton Road (S) to Shackleton Road (N) (northbound)– 2498 vehicles (27%)
Church Road to Shackleton Road (N) (northbound) – 1369 vehicles (15%)
Shackleton Road (N) to Church Road (eastbound) – 1778 vehicles (19%)
Shackleton Road (N) to Shackleton Road (S) (southbound) – 2553 vehicles (28%).

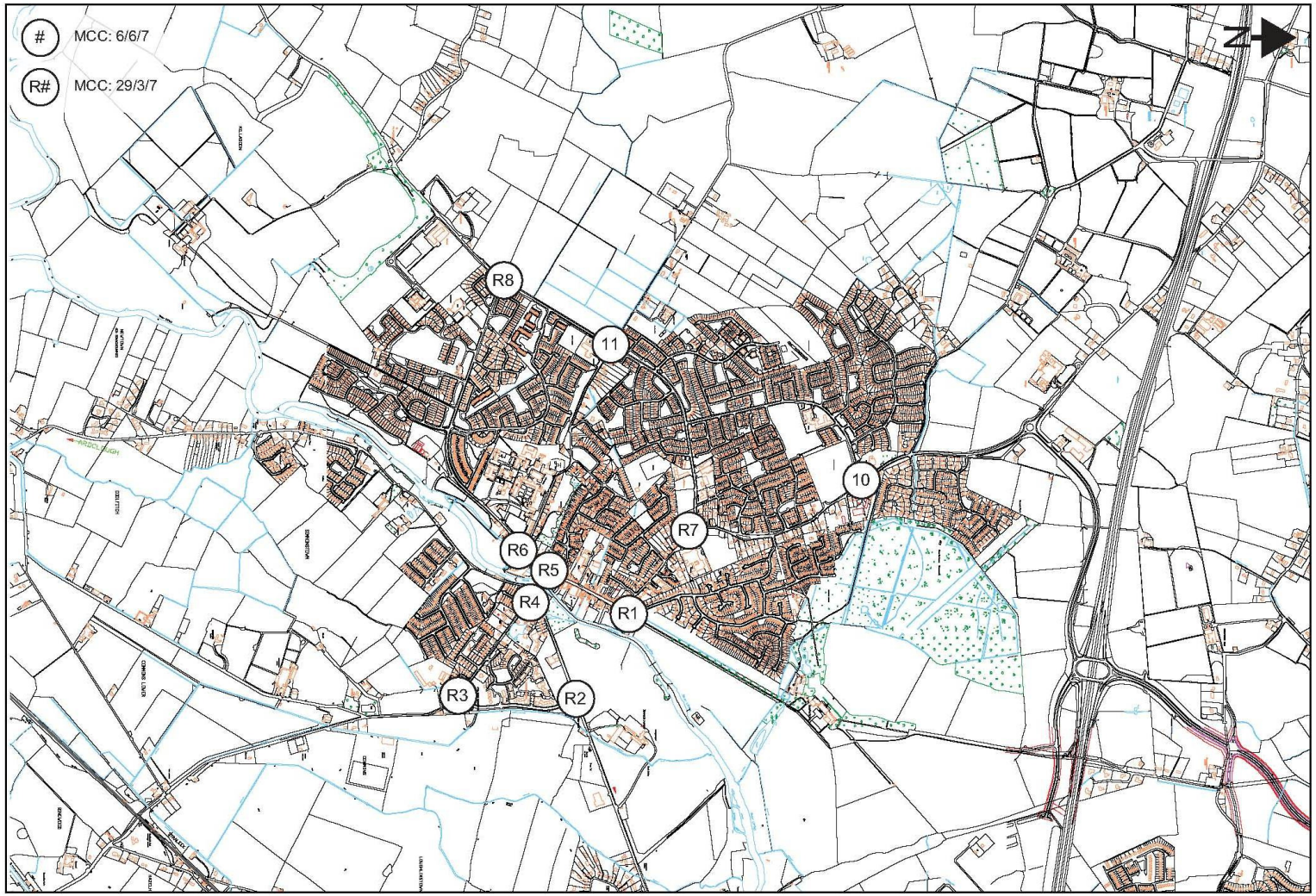

Figure 5: Manual Classified Turning Count Locations, Celbridge

All arms of the junction have single lane approaches.

Junction R1 – Main Street / Castletown Drive
The maximum hourly flow of vehicles turning from Main Street through Castletown Gates (straight ahead, but across the priority movement) was 101, recorded in the PM peak hour. The maximum flow out of Castletown Gates was 111 vehicles in the AM peak hour.

Junction R2 – Dublin Road
Only 15% of vehicles (300) heading east on Dublin Road turn into St Wolston's Abbey Road, considerably less than make the right turn from the Bridge onto Primrose Hill (3109). Whilst the main flow is along Dublin Road, significant numbers of vehicles seem to be using St's Wolston's Abbey Road as a strategic link from travelling westbound on Dublin Road to eastbound on Primrose Hill/Hazelhatch Road.

Junction R3 – Primrose Hill
There is a significant eastbound movement through the junction peaking before 08:00 suggesting commuting towards Dublin. Movements in the PM peak hour are less clearly defined. 89% of southbound traffic on St Wolston's Abbey Road continues eastbound on Primrose Hill/Hazelhatch Road, reinforcing the suggested strategic use of the link noted above.

Junction R4 – Dublin Road / Primrose Hill
Before 09:00 the there is a very significant movement from the Bridge onto Primrose Hill (641 vehicles 07:00-08:00: 484 vehicles 08:00-09:00), compared to the movement from the Bridge onto Dublin Road (283 vehicles 07:00-08:00: 274 vehicles 08:00-09:00). Whilst traffic volumes on Dublin Road remain largely constant after this AM peak hour, flows from the Bridge onto Primrose Hill drop (289 vehicles 09:00-10:00: 187 vehicles 10:00-11:00: 148 vehicles 11:00-12:00). This pattern continues throughout the day without significant increase in the PM peak hour. The maximum flow from Primrose Hill onto the Bridge was 247 vehicles in the PM peak hour, compared to 396 vehicles from Dublin Road onto the Bridge. Over 900 vehicles in each direction make the movement from Newtown Road to/from Dublin Road. This latter movement may decrease significantly following the opening of Ardclough Road at the beginning of October 2007.

Junction R5 – Main Street / English Row
82% (4011) of the vehicles travelling south on Main Street turn onto the Bridge, the peak flow being 409 vehicles between 07:00 and 08:00. The straight on movement from Main Street into English Row is typically undertaken by between 1 and 2 vehicles a minute. 75% (4555) of the vehicles travelling north on English Row also turn onto the Bridge, the peak flow being 586 vehicles also between 07:00 and 08:00. The reverse flow from the Bridge is relatively evenly split between English Row and Main Street, the only significant difference being an increased flow onto Main Street between 18:00 and 19:00.

Junction R6 – Clane Road / Church Road / English Row
25% (1147) of vehicles travelling west on English Row turn right onto Church Street. The number making the movement increases both in peak hours and at the end of the school day. Nearly 90% (1909) of the vehicles travelling eastbound on Church Road turn onto English Row. Less than 5% (209) vehicles turn from Clane Road into Church Road.

Junction R7 – Maynooth Road / Wolstan Haven Road
Whilst the turning movements of southbound vehicles from Maynooth Road (N) are evenly split across the day, 3124 vehicles continue on Maynooth Road towards the town centre and 3136 vehicles turn on to Wolstan Haven Road, at peak times, around 58% of vehicles make the latter manoeuvre. This movement could be expected to increase following the

completion of the new retail development by Tesco Ireland. 29% (1092) of vehicles currently turn right out of Wolstan Haven Road, 28% (1324) making the corresponding manoeuvre from Maynooth Road (S).

Junction R8 – Clane Road / Wolstan Haven Road
A significant flow was recorded from: Shackleton Road to Clane Road (S) (116 vehicles 08:30-08:45: 91 vehicles 08:45-09:00); and, from Clane Road (E) to Clane Road (S) (73 vehicles 08:30-08:45: 79 vehicles 08:45-09:00) in the AM peak, which appears to be related to school traffic. An increase in the reverse flow from Clane Road (S) is also observed, as is an afternoon peak, significantly higher than background flows:

- 16:00-16:15 - 70 vehicles from Clane Road (S) to Shackleton Road and 51 vehicles to Clane Road (E); and
- 16:15-16:30 - 92 vehicles from Clane Road (S) to Shackleton Road and 70 vehicles to Clane Road (E).

Queue Length Surveys

3.5 Queue length data was collected in parallel to the Manual Classified Turning Counts for 2 sites in Celbridge on 6th June 2007, namely the junctions of Maynooth Road / Thornhill Road, and Clane Road / Shackleton Road.

3.6 Queue length surveys are summarised in Table 2, and highlight short queues when turning right from Maynooth Road onto Thornhill Road adjacent to Aldi and significant queuing on three of the arms of the Old Town Road/Shackleton Road traffic signals. The queue lengths at the latter junction suggest that the operation of the existing signals is inefficient, the lack of right turning capacity and parking of school related traffic in the vicinity of the junction being particular issues.

SITE	MOVEMENT	Maximum queue length (metres)	AM Peak maximum queue (time)	PM Peak maximum queue (time)
10	Maynooth Road Southbound	40	09:00	18:30
	Thornhill Road	15		
	Maynooth Road Northbound	10		
	Crodaun Forest Park	45		
11	Oldtown Road Eastbound	25	09:15	17:15
	Shackleton Road Northbound	>90		
	Oldtown Road Westbound	>55		
	Shackleton Road Southbound	>150		

Table 2: Queue Length Survey Summary, Celbridge

Parking Beat Surveys

3.7 Parking beat surveys were undertaken on 13th June 2007, between 07:00 and 19:00, with a beat frequency of 30 minutes, with additional surveys on Main Street being undertaken on 23rd August 2007.

3.8 In general terms, town centre on-street parking currently operates at capacity between 10:00 and 16:00 on weekdays, whereby; 75% of those parking do so for less than one hour, rising to 94% for less than 2 hours. Parking accumulation on Main Street is shown in Figure 6.

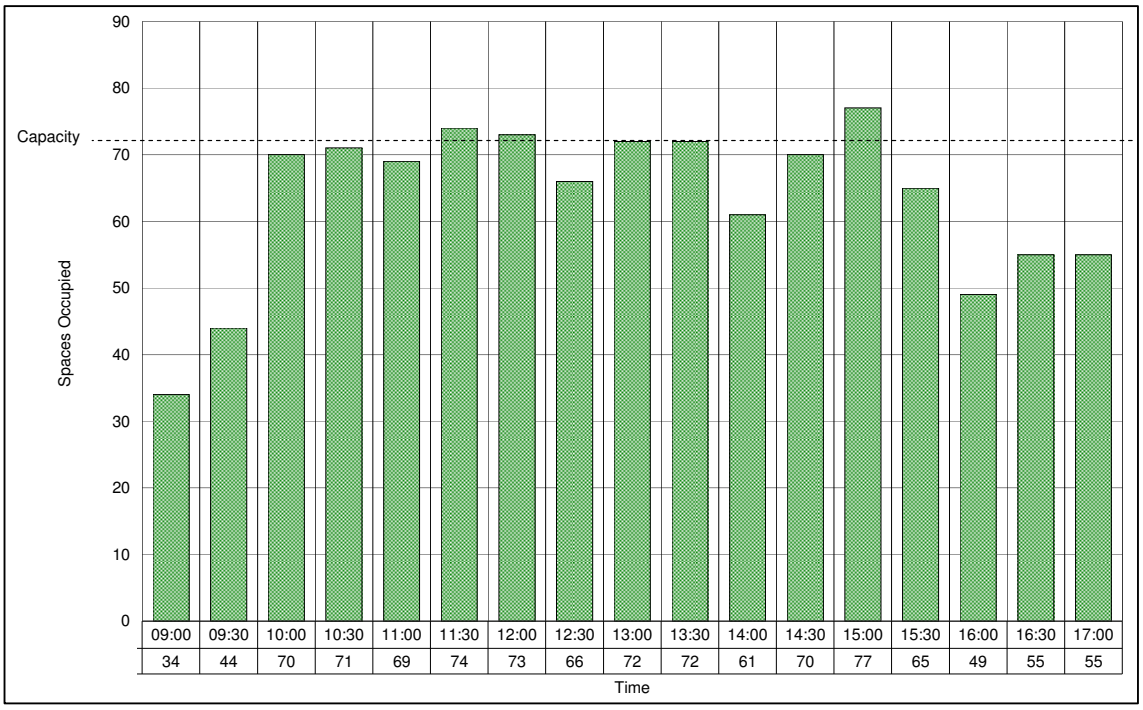

Figure 6: Main Street Parking, Accumulation, Celbridge

Loading and Illegal Parking Surveys

3.9 Loading and illegal parking surveys were undertaken 21st August 2007, between 08:30 and 16:30. The surveys were undertaken in 'real time' to provide a complete record of events. The main findings of the survey over the 8 hours were:

- 468 daily incidents of illegal parking on Main Street and English Row
- 31% of these incidents were parking or loading in Bus Stops
- 28% were parking or loading on Double Yellow Lines
- 27% abusing Loading Bays
- The handheld parking enforcement machines, used by parking attendants to issue penalty tickets have a built-in 'cooling-off-period' of 10 minutes so that attendants cannot physically issue tickets within the first 10 minutes of an offence occurring.
- 63% of illegal parking was for under 10 minute minutes, i.e. attendants could not issue a penalty ticket.
- 9% of illegal parking was for between 11 and 20 minutes, i.e. attendants would only be able to issue a ticket if they were at the specific location shortly after the driver parked.
- 8 locations account for 60% of the daily incidents
- Key locations where illegal parking occurs are the loading bays, particularly outside Remax, Centra and opposite The Mill, bus stops, particularly outside the Taxi Offices, and outside the Dry Cleaners near Castletown Gates
- Double Yellow Lines in the vicinity of the Bookshop and at the AIB ATM.

Journey Time Surveys

3.10 Surveys are undertaken to gain an accurate understanding of typical journey times, speeds and delays on the highway network. In order to obtain average conditions, a number of timed 'runs' are undertaken in both directions during the AM, Inter and PM peak periods, three bi-directional routes were defined within Celbridge (Figure 7):

- Blue – R405 from R445/R405 roundabout to R405 at Hazelhatch Station (4.34km);
- Green – Oldtown Road from Clane Road to Willowbrook Road (1.52km); and
- Red – R403 from Ballymakealy to R403 at Loughlinstown (2.78km).

Celbridge Blue 1

Maynooth Road / Main Street – Increasing delays were experienced during the AM peak on Maynooth Road, 20 seconds at 08:00 and 120 seconds at 09:05. Delays were also experienced in the inter-peak, 40 seconds at 13:10, which appears to have been caused by queuing back from bridge. Delays were also experienced on the Main Street side of the bridge in the PM peak, 40 seconds at 17:05 and 10 seconds at 18:08.

Celbridge Blue 2

Significant delays were experienced during all time periods. In the AM peak, queues and delays were significant by 09:00. Whilst delays of 20 seconds were recorded on earlier runs, at 09:20 delays of 280 seconds were experienced between St. Wolston's Abbey and the bridge; 158 seconds on the Dublin Road side of the bridge' and, 107 seconds on the Main Street side of the bridge. During the inter-peak, a minor delay of 21 seconds was recorded on the Main Street side of the bridge, by 13:21 a delay of 54 seconds was recorded between St. Wolston's Abbey and the bridge; 15 seconds on the Dublin Road side of the bridge; 45 seconds on the Main Street side of the bridge: and; a further 18 seconds on Main Street. Four runs were undertaken in the PM peak, all experiencing significant delays, summarised in Table 3.

Run Section / Link	**Run Start Time / Delay (seconds)**			
	15:11	**16:12**	**17:18**	**18:18**
8 - 7 Hazelhatch Road (St Wolston's Abbey to Dublin Road)	20	90	15	86
7 - 6 Bridge	82	10	10	-
6 - 5 Main Street	95	-	-	15
5 - 4 Castletown Gates to Tesco	118	-	120	-
4 - 3 Tesco to Aldi	-	-	60	-

Table 3: PM Peak Delays, journey time survey route Celbridge Blue 2

Celbridge Green

Short delays eastbound and westbound were recorded at the Old Town Road traffic signals and signalised pedestrian crossing. The maximum delay equated to a single cycle of the traffic signals and can be considered to be acceptable.

Celbridge Red

Delays recorded were minimal, equating to an average of 7.25 seconds per run. The total delay at the bridge, over 20 runs, was 55 seconds. This shows that the main flow over the bridge can be considered as effectively free flowing.

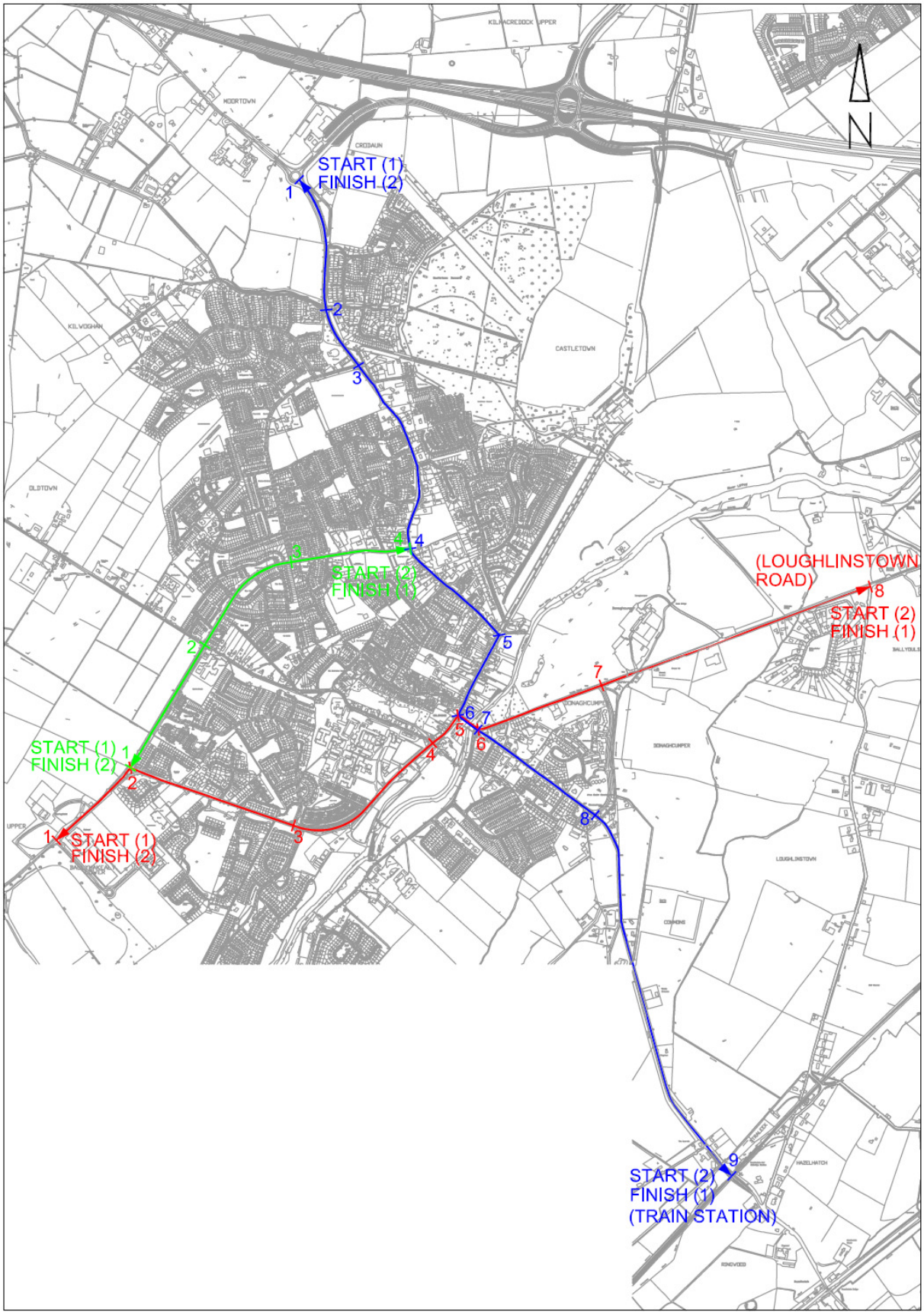

Figure 7: Journey Time Routes, Celbridge

Vehicle Registration Matching

3.11 Vehicle registration matching surveys are undertaken to establish the relative proportions of strategic traffic within a defined area. All traffic entering and leaving the area along main routes is monitored using numberplate recognition cameras to identify through movements. Surveys were undertaken at 9 monitoring sites and shown on Figure 8, covering strategic and internal routes in Celbridge between 07:00 and 19:00 on 14th June 2007. Figure 9 also provides an indication of the key traffic movements within the town, showing both desire lines and 12 hour flows in vehicles.

3.12 The sample rates at these survey sites was between 89% and 100%, a total of 50717 vehicles were recorded from a possible 53706, giving an average sample rate of 94%.

Road Traffic Accidents

3.13 Data for accidents within Celbridge, resulting in personal injury, have been provided by the Road Safety Authority in agreement with the client. This has been plotted spatially, using the co-ordinates provided, within the MapInfo GIS package for further analysis. Unfortunately, the precision of the co-ordinates for several accidents was poor, making it impossible to accurately plot their location.

3.14 Between 2001 and 2005 inclusive, 45 accidents were recorded within the Celbridge study area (2001=8; 2002=12; 2003=8; 2004=7; 2005=10). In summary:

- of the 45 accidents 1 accident resulted in a fatality, 6 serious injury and 38 minor injuries.
- The accident resulting in a fatality occurred in dry but poorly lit, conditions at 17:20 on 6th October 2001. A motorcycle left the road and entered a ditch on Oldtown Road. The motorcyclist was killed and the pillion passenger received serious injuries. The lighting was recorded as 'poor'.
- Two of the accidents resulting in serious injury, one on 4th January 2001 and the second on 17th October 2004, occurred in the vicinity of the railway bridge to the north of Hazelhatch Station. In the first, a car left the road and entered a ditch, and in the second, a head-on collision occurred. Both accidents occurred during the hours of darkness in an area without street lighting.
- An accident resulting in serious injury occurred on Killeenlea in the vicinity of its junction with the R403, at 17:45 on 13th February 2001. In dry dark conditions, a motorist collided with a 3 year old male pedal cyclist. The child sustained serious injuries.

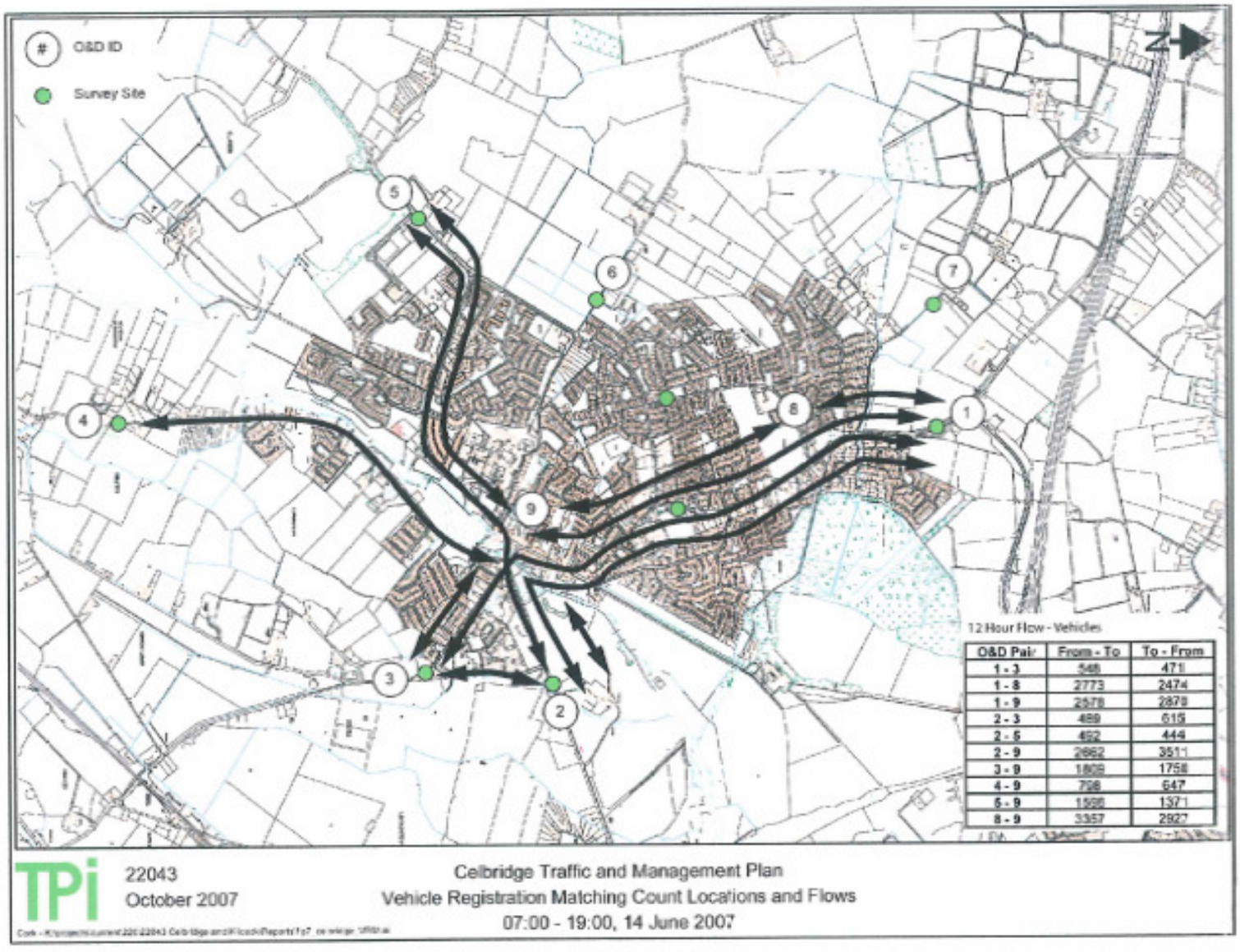

Figure 8: Vehicle Registration Matching Count Locations & Flows, Celbridge

- An accident resulting in serious injury occurred on Beatty Grove, close to its junction with Maynooth Road, at 17:30 on 10th September 2002. A 17 year old motorcyclist attempted an inappropriate overtaking manoeuvre whilst under instruction, resulting in a collision with a car and serious injury.
- An accident resulting in serious injury occurred at the Maynooth Road/Beatty Park junction, at 21:35 on 4th May 2003. A car hit a pedestrian who was crossing 'masked by parked vehicles' in wet conditions without street lighting. The pedestrian sustained serious injuries.
- An accident resulting in serious injury occurred on Clane Road, between the petrol station and plant nursery, at 16:50 on 27th September 2004. The accident occurred during daylight in dry conditions and involved a goods vehicle. A 10 year old male in a second vehicle sustained serious injuries, but the accident record provides no further information.
- 10 accidents occurred on or in the immediate vicinity of the bridge, all but 1 accident occurred in dry conditions, with 3 of the accidents occurring during the hours of darkness. Of the accidents at this location:
    - 1 involved a pedestrian;
    - 1 involved a head on collision;
    - 5 involved right turning vehicles; and
    - 1 a rear-end collision

- 12 accidents involved pedestrians. Of these, the pedestrian was considered to be largely at fault in 3 of the accidents. Whilst there is no specific spatial pattern to the pedestrian accidents, it may be appropriate to consider remedial measures at the accident locations in combination with any other physical works being undertaken in the vicinity.
- 13 accidents occurred in wet conditions and 2 icy in condition, there is no specific spatial pattern to these accidents;
- 9 accidents occurred on roads with a continuous centreline marking, 3 of these occurred on English Row in the vicinity of the Church Road junction, 2 on the R406 in the vicinity of Hazelhatch Station and 2 on Newtown Road.;
- 8 accidents involved a single vehicle, 5 of which involved collision with a wall and 2 driving into a ditch;
- 3 accidents involved learner drivers and 2 involved heavy goods vehicles (HGVs).

Inventory Surveys

3.15 Inventory surveys were carried out during August 2007. The inventory surveys covered:

- highway defects such as failing carriageways, defective gullies and ponding;
- other defects such as overhanging vegetation and damaged lamp columns;
- pedestrian/Access audit issues; and
- cycle network issues.

3.16 The results from the surveys inventory have been incorporated into the minor and short term recommendations, in Section 6.0.