

# Indications for an Economic Appraisal of *MetroLink* from Estuary to Firhouse

*Would Estuary to Firhouse be good Value for Money?*



Metro South West

October 2020

# Indications for an Economic Appraisal of *MetroLink* from Estuary to Firhouse

## 1 Introduction

1.1 A cost-benefit analysis was carried out in 2018 of the *MetroLink* Scheme<sup>1</sup>. At that time *MetroLink* was conceived as:

*“A new metro service running from Swords (Estuary) via the Airport to the city centre (New Metro North- NMN) and an upgrade of the existing Luas Green Line to metro standard. This, therefore facilitates a metro line running from Swords to Sandyford via the airport and the city centre. It is assumed that the metro will connect with the Luas Green line at a tie-in point at Charlemont Luas stop.”*

1.2 However, the southern / south western route of *MetroLink* has not been decided<sup>2</sup>. The current NTA proposal is to bring *MetroLink* from St. Stephens Green to Charlemont with a further tunnel / layby orientated directly towards Beechwood to best enable later conversion – in 20 years’ time – of the Green Line Luas to metro standard<sup>3</sup>. The boring machine would have no further use, simply being stored there. There is no published cost-benefit analysis of this proposal.

1.3 In this document,

a) We use key metrics from the cost-benefit analysis (Estuary-Sandyford) to estimate indicative values for a *MetroLink* from Estuary to Firhouse<sup>4</sup>.

b) We ask:

Could the current NTA proposal to run *MetroLink* from Estuary to Charlemont/Beechwood be extended towards South West Dublin?

c) We compare

○ the current NTA proposal - Estuary-Charlemont/Beechwood - which the NTA considers should be linked ultimately to upgrading the Green Luas Line to metro standard

WITH

○ Estuary-Portobello/Cathal Brugha Barracks<sup>5</sup>, which could be continued to Firhouse.

---

<sup>1</sup> *MetroLink* Scheme – Cost Benefit Analysis, Jacobs/SYSTRA, March 2018

<sup>2</sup> *“We should have a discussion about where the tunnel goes. The current proposal, as I understand it, is to leave the machine in the ground somewhere around Ranelagh. We should have that discussion about whether it would make sense to go west or east from there, perhaps to UCD, perhaps to Sandyford.”* An Taoiseach, Dáil Éireann, 26 March 2019

<sup>3</sup>

[https://www.metrolink.ie/assets/downloads/Public\\_Consultation\\_Document\\_for\\_the\\_PREFERRED\\_Route\\_HR.pdf](https://www.metrolink.ie/assets/downloads/Public_Consultation_Document_for_the_PREFERRED_Route_HR.pdf)

<sup>4</sup> This does not imply that Firhouse would be the best terminus for the continuation of *MetroLink* to South West Dublin. The proposed feasibility study of continuing *MetroLink* to South West Dublin should examine this issue.

<sup>5</sup> Again the feasibility study may discover another more suitable site.

1.4 It should be noted that all of the analysis in this document is preliminary and all locations which are postulated are hypothetical and subject to revision based on further analysis.

## 2 Cost-benefit Estuary-Sandyford<sup>6</sup>

2.1 This route was 26 kms long and it was intended to carry 50m+ passengers per year<sup>7</sup>. Total Transport User Benefits were estimated over a 60-year period at €6,778m. It is worth noting that, as the Luas Green Line in 2017 already carried 15.9m passengers (before Luas Cross city was opened)<sup>8</sup>, the Transport User Benefits of transferring from car and bus to a superior public transport service (Luas) would have been attributed to the Luas Green Line when that project (Luas Green Line) underwent its economic appraisal. Accordingly, in this document, the Transport User Benefits attributed to *MetroLink* are assumed to have related to c. 34.1m passengers (50m-15.9m).

2.2 A range of costs was provided, from €3bn to €4bn.

2.3 The benefit to cost ratio had different values depending on the costs used as follows:

**Table 2.1 Benefits and Costs *MetroLink* Estuary-Sandyford, Jacobs/SYSTR A March 2018**

Capital expenditure costs	Transport User Benefits	Benefit to cost ratio
€3bn	€6.8bn	3.02
€3.25bn	€6.8bn	2.84
€3.5bn	€6.8bn	2.68
€3.75bn	€6.8bn	2.54
€4bn	€6.8bn	2.41

According to Jacobs/SYSTR A, these benefit to cost ratios would represent ‘very high’ Value for Money.

## 3 Indications for Cost-benefit Estuary-Firhouse

### *Passenger numbers*

3.1 Estuary-Firhouse, at c. 27 kms, would be slightly longer than Estuary-Sandyford. As the catchment population for the continuation of *MetroLink* (St. Stephens Green-Firhouse) would be very similar to the Luas Green Line<sup>9</sup>, it could be expected that there would be equivalent passenger numbers on that portion of the line, i.e. 15.9m, as there were on the Luas Green Line in 2017 (before Luas Cross City was opened).

3.2 However, there is important evidence which shows that this figure of 15.9m passengers would need to be increased substantially to relate to Firhouse-St. Stephens Green.

<sup>6</sup> *MetroLink Scheme – Cost Benefit Analysis*, Jacobs/SYSTR A, March 2018

<sup>7</sup> [https://www.metrolink.ie/assets/downloads/Report\\_on\\_Consultation\\_on\\_Emerging\\_Preferred\\_Route.pdf](https://www.metrolink.ie/assets/downloads/Report_on_Consultation_on_Emerging_Preferred_Route.pdf)

<sup>8</sup> *Transport Omnibus 2017*, CSO

<sup>9</sup> *The Case for Continuing MetroLink to South West Dublin*, South West Metro Group, August 2020. Paragraph 2.3.2

3.3 In *South West Dublin and the Continuation of MetroLink: Improvements in Commuting Times*, Metro South West, October 2020<sup>10</sup>, commuting times to the GPO were computed for people living in 63 different locations throughout the outer suburbs<sup>11</sup> of the catchment area for the continuation of *MetroLink* to South West Dublin. Two hypothetical metro stations were postulated – in Spawell and Dodder Valley Park. Assuming the commuters leave their homes at 7.50 am, the following questions were posed:

- How long does it now take commuters to reach the GPO by car, by bus and by bike?
- How long would it take them if they cycled, walked or drove to one of these metro stations and took the metro to O’Connell Street?

Google Maps was used for all calculations.

3.4 The analysis showed that substantial time savings would arise for commuters who would leave their house at 7.50 am and use the metro rather than drive or get the bus to the GPO. Across the 63 locations, the average time savings would be as follows:

**Table 3.1 Average Time Savings by using the Metro rather than the Car or the Bus to go to the GPO from South West Dublin: *MetroLink* catchment**

<b><u>Cycle to a metro station and take metro rather than driving all the way into town</u></b>	<b><u>Cycle to a metro station and take metro rather than taking the <u>Bus</u> all the way into town</u></b>	<b><u>Drive to a metro station and take metro rather than driving all the way into town</u></b>	<b><u>Drive to a metro station and take metro rather than taking the <u>Bus</u> all the way into town</u></b>
17.8 mins.	20.3 mins.	18.4 mins.	21.3 mins.

3.5 In this document the same methodology is used in respect of 15 locations in the catchment area of the Luas Green Line in the outer suburbs of South East Dublin, i.e. below the orbital Churchtown Road, Taney Road, Mount Anville Road and Fosters Avenue. Across the 15 locations, with a departure time of 7.50 am, the average time savings would be as follows:

**Table 3.2 Average Time Savings by using the Luas rather than the Car or the Bus to go to the GPO from South East Dublin: Luas Green Line catchment<sup>12</sup>**

<b><u>Cycle to a Luas stop and take Luas rather than driving all the way into town</u></b>	<b><u>Cycle to a Luas stop and take Luas rather than taking the <u>Bus</u> all the way into town</u></b>	<b><u>Drive to a Luas stop and take the Luas rather than driving all the way into town</u></b>	<b><u>Drive to a Luas stop and take the Luas rather than taking the <u>Bus</u> all the way into town</u></b>
7.0 mins.	7.1 mins.	6.9 mins.	7.0 mins.

<sup>10</sup> <https://documentcloud.adobe.com/link/review?uri=urn:aaid:scds:US:4013503d-9fe7-4f65-b8d1-a380eafdb0c7>

<sup>11</sup> Below St. Peters Road, Templeville Road, Dodder Park Road.

<sup>12</sup> Details are in the Appendix.

**These average time savings in the Green Luas catchment are far lower than for the proposed *MetroLink* catchment in South West Dublin. Indeed, for 7 of the 15 locations in the Green Luas catchment, a quicker way of getting to town is available by not using the Luas. A similar circumstance - where the car or the bus was quicker than the metro - would not arise for any commuter in the 63 areas surveyed in South West Dublin.**

3.6 Part of the explanation for the much higher improvements in commuting times in South West Dublin **if *MetroLink* were continued to Firhouse** lies in the very poor existing public transport capacity in South West Dublin. It has been shown that public transport capacity in South West Dublin is less than a quarter of that in South East Dublin<sup>13</sup>. And, South East Dublin has the N11-Stillorgan Road-Donnybrook Road, for which there is no equivalent in South West Dublin.

3.7 Thus, while many commuters in the Luas Green Line catchment have other attractive transport options, this would not be the case in the outer suburbs of South West Dublin, if *MetroLink* were continued to Firhouse.

In South West Dublin, the car has a very high modal share<sup>14</sup>. The combination of:

- Substantial improvements in commuting times and
- A lack of other options

means that the advent of *MetroLink* to South West Dublin would bring about a large modal shift from car to metro and, inevitably, patronage of *MetroLink* would be very high in the outer suburbs of South West Dublin.

3.8 It is postulated that 15.9m passengers on the Luas Green Line in 2017 would be increased by 50 per cent to represent the metro patronage for the continuation of *MetroLink* to Firhouse. Thus, the original *MetroLink* projection of 50m+ passengers for Estuary-Sandyford would be increased to 58m+ for Estuary-Firhouse ((50m+(15.9\*0.5)). All of the Transport User Benefits associated with these passengers would be attributable to *MetroLink*, including its continuation to Firhouse.

This would yield Transport User Benefits of €11.5bn (€6.8bn\*58/34.1) for Estuary-Firhouse over a 60-year period.

(We also do a sensitivity test for only a 25 per cent increase on the 2017 Green Luas line passenger numbers. This would yield 54m passengers on Estuary-Firhouse. The associated Transport User Benefits would amount to €10.7bn (€6.8\*54/34.1).)

3.9 Let us assume a 'high' capital cost per kilometre for metro construction - €158m<sup>15</sup>. For 27 kms, from Estuary to Firhouse, the cost would be c. €4.3bn. Following Jacobs/STSTRA, a range of costs is shown from €4.3bn to €5.3bn.

3.10 The benefit to cost ratio would have different values depending on the costs used. We show the estimated Transport User Benefits and also the sensitivity value for lower Transport User Benefits (in brackets).

---

<sup>13</sup> *The Case for Continuing MetroLink to South West Dublin*, South West Metro Group, August 2020. Paragraph 2.3.1

<sup>14</sup> *Transport Strategy for the Greater Dublin Area 2016-2035*, National Transport Authority

<sup>15</sup> Derived by allocating the estimated capital cost of Estuary-Sandyford (€3bn) to the much shorter distance Estuary-Beechwood (19 kms). This yields an estimated 'high' cost per kilometre of €158m.

**Table 3.3 Indicative Benefits and Costs *MetroLink* Estuary-Firhouse**

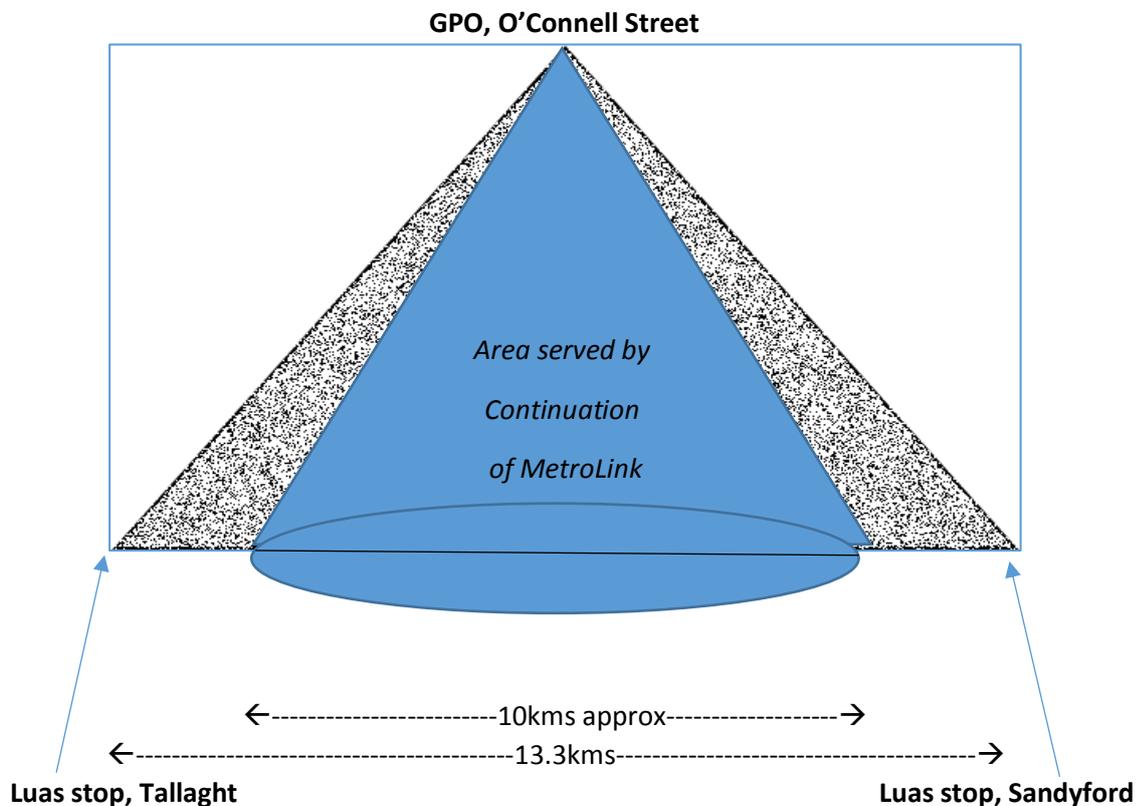
Capital expenditure costs	Transport User Benefits	Benefit to cost ratio
€4.3bn	€11.5bn/(€10.7bn)	2.7/(2.5)
€4.8bn	€11.5bn/(€10.7bn)	2.3/(2.2)
€5.3bn	€11.5bn/(€10.7bn)	2.2/(2.0)

The precise values for the Benefit-cost ratio (as shown in the last column) are not important. **The conclusion to be drawn here is that these values indicate that a full Benefit-cost appraisal of Estuary-Firhouse would be likely to return a high Benefit-cost ratio similar to the ratio which was estimated for Estuary-Sandyford.**

**4 Could the current NTA proposal to run *MetroLink* from Estuary to Charlemont/Beechwood be extended towards South West Dublin?**

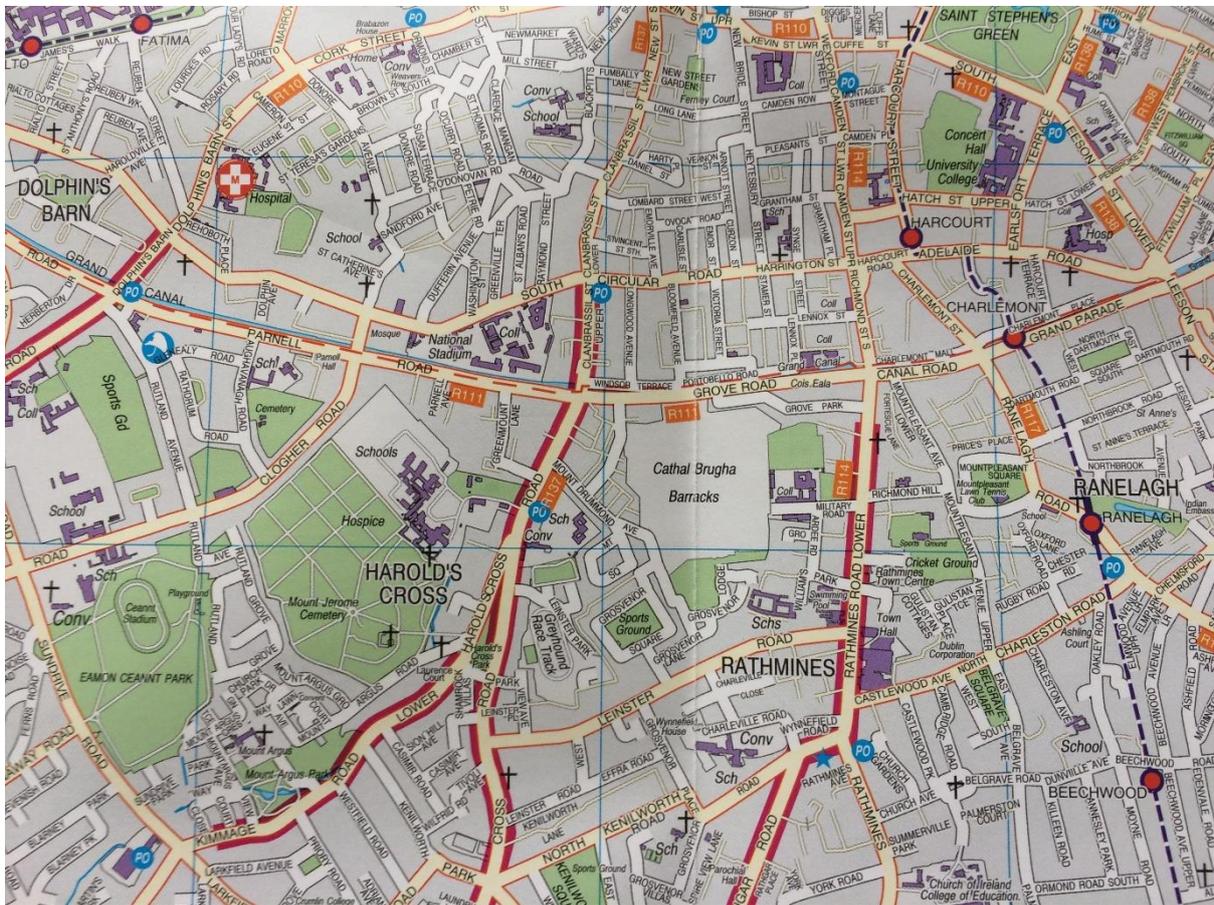
4.1 The area served by the proposed continuation of *MetroLink* to South West Dublin would lie between the Red and Green Luas lines. This area is shaped roughly like a triangle. The Luas stop in Tallaght is 12.3 kms from the confluence of the two Luas lines near the GPO (walking or by bike) and the Sandyford Luas stop is approximately the same distance from the GPO (11.7 kms). The distance between the Luas stop in Tallaght and the Luas stop in Sandyford is 13.3 kms. Thus, the area between the two Luas lines may be thought of as a rough triangle as follows:

**Figure 4.1: Area served by a continuation of *MetroLink* to South West Dublin**



4.2 It is proposed to install a *MetroLink* station at St. Stephens Green. As St. Stephens Green lies directly below O’Connell St., this would be a suitable location from which to direct *MetroLink* towards South West Dublin. From St. Stephens Green, the optimum route could be identified through the inner and outer suburbs of South West Dublin.

**Figure 4.2 The inner suburbs of South West Dublin**



4.3 However, if instead, *MetroLink* were to go from St. Stephens Green towards South East Dublin, the situation would change. While it would still be possible to continue *MetroLink* by guiding it towards the outer suburbs of South West Dublin - to Terenure and beyond - the inner suburbs of South West Dublin would have been bypassed. For example, it would appear from Figure 4.2 that if *MetroLink* were to go to Charlemont, the option of serving much of Harolds X would be lost. If *MetroLink* were to go nearly as far as Beechwood (which is the current NTA proposal), the opportunity of serving Harolds X and Rathmines would be lost.

4.4 Would there be a better alternative to sending *MetroLink* from St. Stephens Green to Charlemont/Beechwood? For example, why not send *MetroLink* from St. Stephens Green to Portobello/Cathal Brugha Barracks?

**5 Economic Appraisal of Estuary-Charlemont/Beechwood  
vs  
Estuary-Portobello/Cathal Brugha Barracks**

5.1 There is no published economic appraisal of the current NTA proposal to run *MetroLink* from Estuary to Charlemont/Beechwood.

*Estuary-Charlemont/Beechwood*

5.2 The distance from Estuary to St. Stephens Green is 17 kms and the distance from St Stephens Green to Charlemont (where it is proposed to build a metro station) is one kilometre and there is a further kilometre from Charlemont to Beechwood. The last kilometre would be used to facilitate turn backs, park trains and store the Tunnel Boring Machine. Thus, the total metro length would be 19 kms.

*Estuary-Portobello/Cathal Brugha Barracks*

5.3 The distance from Estuary to St. Stephens Green is 17 kms and the distance from St Stephens Green to Portobello (where there would be a metro station) is one kilometre and there is a further kilometre from Portobello to Cathal Brugha Barracks. The last kilometre would be used to facilitate turn backs, park trains and store the Tunnel Boring Machine. Thus, the total metro length would be 19 kms.

*Comparison*

5.4 Given that the lengths of the proposals are identical (19 kms), it can be expected that the capital costs of these competing proposals (Estuary-Cathal Brugha Barracks vs Estuary-Beechwood) would be very similar.

5.5 However, it can also be expected that the Transport User Benefits of Estuary-Cathal Brugha Barracks would exceed those of Estuary-Beechwood. The reason is that the proposed metro station at Charlemont would yield little or no passenger benefits, as the metro service from St. Stephens Green to Charlemont would merely duplicate the existing Luas Green Line service.

By contrast, the metro service linking Portobello to St. Stephens would bring significant passenger benefits to large numbers of people. These benefits would not merely displace existing benefits: they would be net additional passenger benefits.

5.6 **Thus, the Benefit-cost ratio for Estuary-Portobello/Cathal Brugha Barracks is likely to exceed the Benefit-cost ratio for Estuary-Charlemont/Beechwood.**

## **6 Conclusions**

6.1 Preliminary indications are that Estuary-Firhouse would yield a 'very high' Benefit-cost ratio. However, a cost-benefit analysis should be carried out.

6.2 We can be quite confident that Estuary-Portobello/Cathal Brugha Barracks would yield a higher Benefit-cost ratio than Estuary-Charlemont/Beechwood.

**South West Metro Group  
October 2020**

## Appendix

This Appendix concerns residents of the outer suburbs in the catchment of the Luas Green Line, i.e. below Churchtown Road – Taney Road – Mount Anville Road – Foster Avenue.

It shows:

- Non-Luas commuting options (car/bus/bike) to the GPO, departing from home at 7.50 am.
- Cycling, walking or driving to the nearest Luas stop and taking the Luas to the GPO.

Commuting in the outer suburbs of the Green Luas Line catchment: What are the possibilities for going to the GPO at 7.50am?																
		<----Not using Luas---->			<-----Using Luas Green Line----->								<-----Time savings using Luas Green Line----->			
		<Non-Luas possibilities>			<----With Luas: access to Luas stop---->				<Total Journey time with Luas>				Saving vs car	Saving vs bus	Saving vs car	Saving vs bus
Home location	Distance	Car	Bus	Bike	Cycle	Walk	Drive	Luas	Luas	Luas+	Luas+	Luas+	Cycle+Luas	Cycle+Luas	Drive+Luas	Drive+Luas
	GPO	(up to)						stop	Journey	Cycle	Walk	Drive				
	kms	Mins.	Mins.	Mins.	Mins.	Mins.	Mins.		Mins.	Mins.	Mins.	Mins.	Mins.	Mins.	Mins.	Mins.
Belarmine	12.6	60	61	40	6	19	9	Glencairn	38	44	57	47	16	17	13	14
Blackglen Road	11.8	55	70	37	8	36	10	Balally	28	36	64	38	19	34	17	32
Broadford Rise	10.3	50	48	35	7	32	10	Dundrum	25	32	57	35	18	16	15	13
Farmleigh Avenue	8.8	40	41	27	6	20	12	Sandyford	33	39	53	45	1	2	-5	-4
Foxrock Avenue	11.6	55	49	39	14	38	12	Central Park	36	50	74	48	5	-1	7	1
Kingstown Grove	11.1	55	57	36	9	31	10	Balally	28	37	59	38	18	20	17	19
Linden Lea Park	9.3	40	41	31	7	25	9	Sandyford	33	40	58	42	0	1	-2	-1
Mart Lane	12.1	60	46	40	10	30	6	Carrickmines	43	53	73	49	7	-7	11	-3
Meadow Grove	8.7	45	42	30	4	13	4	Dundrum	25	29	38	29	16	13	16	13
Monaloe Park	12.9	50	53	44	12	36	8	Laughanstown	49	61	85	57	-11	-8	-7	-4
Mount Anville Park	7.9	35	43	28	7	22	8	Kilmacud	29	36	51	37	-1	7	-2	6
Priory Drive	8.4	40	35	29	15	43	10	Balally	28	43	71	38	-3	-8	2	-3
Stepaside Park	13.6	60	60	44	8	29	9	Glencairn	38	46	67	47	14	14	13	13
Sycamore Cres. Cab.	12.8	60	57	43	8	24	5	Carrickmines	43	51	67	48	9	6	12	9
Watson Avenue	14	60	64	48	11	37	12	Brides Glen	52	63	89	64	-3	1	-4	0
<b>Totals</b>	<b>165.9</b>	<b>765</b>	<b>767</b>	<b>551</b>	<b>132</b>	<b>435</b>	<b>134</b>		<b>528</b>	<b>660</b>	<b>963</b>	<b>662</b>	<b>105</b>	<b>107</b>	<b>103</b>	<b>105</b>
<b>Averages</b>	<b>11.1</b>	<b>51.0</b>	<b>51.1</b>	<b>36.7</b>	<b>8.8</b>	<b>29.0</b>	<b>8.9</b>		<b>35.2</b>	<b>44.0</b>	<b>64.2</b>	<b>44.1</b>	<b>7.0</b>	<b>7.1</b>	<b>6.9</b>	<b>7.0</b>