

Northside Partnership Healthy Communities Pilot Area Walkability Audit



Lin Zhao and Meadhbh Ni Lochlainn

April 2015



Table of Contents

Section 1: Introduction

- 1.1 Map: 1000m and 500m Euclidean and Network Catchment Areas
- 1.2 Map: 500m Walking Route
- 1.3 Map: 1000m Walking Route

Section 2: 500m Walking Route

- 2.1 Corner Radii
- 2.2 Carriageway Width
- 2.3 Roundabout
- 2.4 Footpath Quality
- 2.5 Park Permeability
- 2.6 Litter and dog fouling
- 2.7 Northside Shopping Centre Car Park
- 2.8 Permeability Index
- 2.9 Recommendations

Section 3: 1000m Walking Route

- 3.1 Pedestrian Crossing
- 3.2 Parked Cars
- 3.3 Footpath Quality and Litter
- 3.4 Corner Radii
- 3.5 Park Access
- 3.6 Permeability Index
- 3.7 Improved Priority Measure for Pedestrians

Northside Partnership Healthy Communities Walkability Audit

Introduction

The Northside Partnership (NSP), a local development company based in north east Dublin, is running a Healthy Communities Initiative in conjunction with the Health Service Executive (HSE) to promote wellbeing and address the circumstances which can lead to poor health (O'Connor et al, 2013). These circumstances, which the World Health Organisation (WHO) refers to as *the social determinants of health*, include a wide range of factors, from lifestyle, to social networks and the built environment (WHO, 2015). The pilot area (see fig. 1.1) for the initiative manifests a number of determinants which can contribute to poorer than average health, such as low income and welfare dependency (O'Connor et al, 2013).

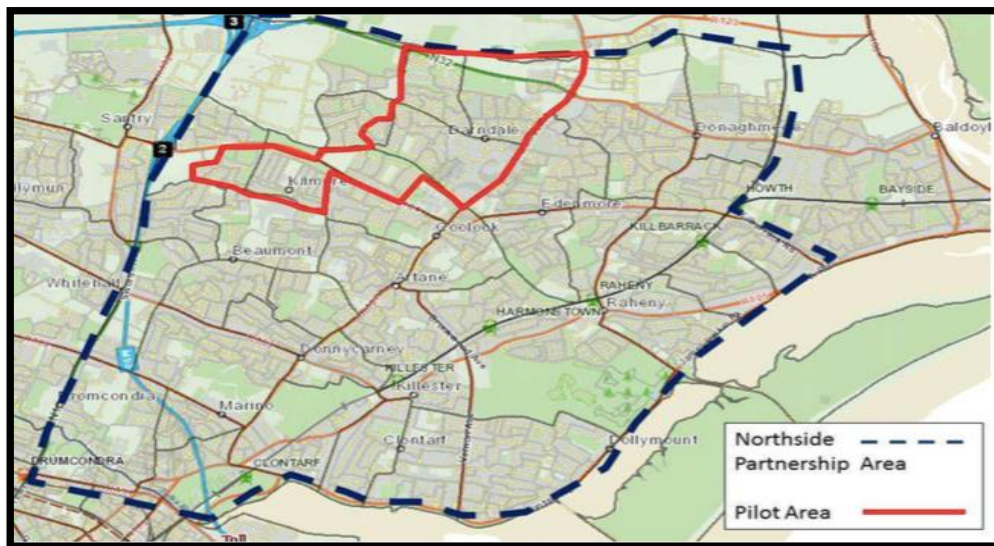


Figure 1.1: Northside Partnership Healthy Communities Pilot Area

As part of the Community Links Programme, the School of Spatial Planning in the Dublin Institute of Technology (DIT) has been working with the NSP to address some of the issues of transport and mobility in the Healthy Communities Pilot Area (O'Connor et al, 2013). Building on the 2013 study of public transport use and the 2014 study on cycling, the MSc in Sustainable Development and the MSc in Local Development and Innovation classes focused on walkability for the pilot area.

Transport and Mobility

Transport and mobility has been identified as one of the key areas in which health and wellbeing can be promoted. Car dependency can have a number of negative outcomes, such as: physical inactivity; pollution and carbon emissions; traffic congestion; fragmented communities; reduced social interaction; urban sprawl; etc. (Department of Transport, 2009), all of which impact on our health. Conversely, active transport, such as walking and cycling, not only promotes physical activity, but also has a low impact on the environment, is more affordable, and does not promote urban sprawl (Department of Transport, 2009).

The pilot area largely consists of low-density housing estates, most of which were built in the 1960s and 1970s (O'Connor et al, 2013). It is not very conducive to active transport due to structural factors, such as impermeable blocks, cul de sacs, wide carriageways and large junctions (Department of the Environment, Local Government and Community (DELGC), 2013), as is discussed in more detail in the walkability audit results. Moreover, there is a negative attitude towards active transport, due to perceptions of safety and the environment (O'Connor et al, 2013).

Walkability Audit

The first stage of this paper involved identifying key trip demand centres within the pilot area. Using demographic data from the Central Statistics Office (CSO) and consulting with the NSP, 12 representative destinations (including schools, health care facilities, retail outlets, employment and community facilities) were identified and mapped. This report focuses on two routes to the Northside Shopping Centre.

The Northside Shopping Centre is a busy focal point for the area, consisting of two anchor stores (Dunnes Stores and Supervalu), clothes shops, pharmacies, cafés, and a public swimming pool. Moreover, it is adjacent to Coolock Library and Colaiste Dhulaigh, further increasing the footfall in the area.

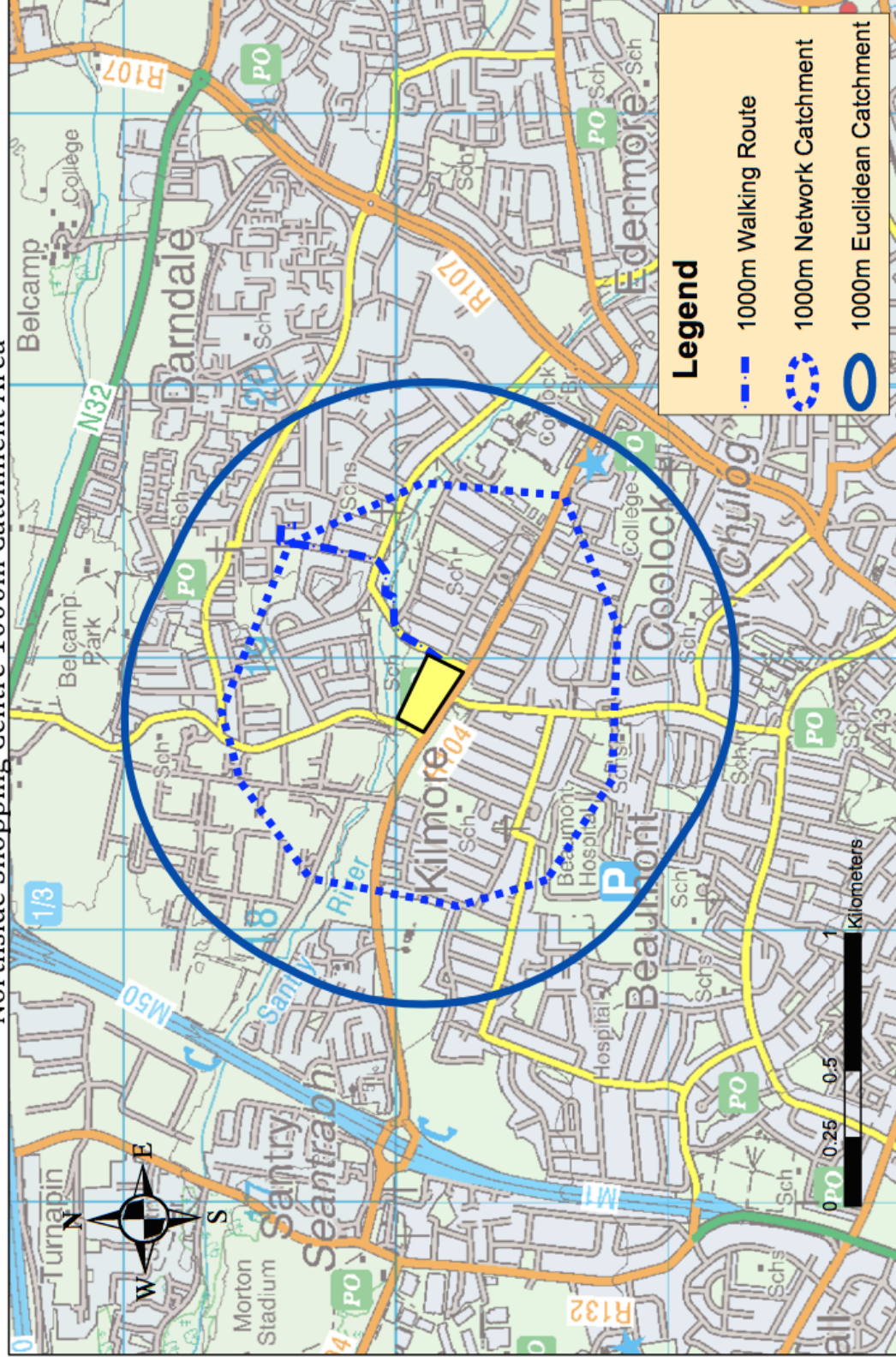
Two representative routes were chosen - one within 5 minutes and one within 10 minutes of the shopping centre. The routes were assessed in terms of their walkability; barriers to walking were identified and a permeability index was carried out. Drawing on guidelines outlined in the Design Manual and Urban Roads and Streets (DMURS) (DELGC, 2013) and the Adamstown Street Design Guide (South Dublin County Council, 2010) the following sections discuss the results of the audits and make recommendations to address the problems.

Northside Shopping Centre 500m Catchment Area



Map Produced by Lin Zhao and Meadhbh Ní Lochlainn
 MSc Sustainable Development 2015
 Dublin Institute of Technology

Northside Shopping Centre 1000m Catchment Area



Map Produced by Lin Zhao and Meadhbh Ní Lochlainn
 MSc Sustainable Development 2015
 Dublin Institute of Technology

Northside Partnership Healthy Communities Walkability Audit

Section 2: 500m Route to Northside Shopping Centre

Meadhbh Ni Lochlainn

This section highlights the major issues in terms of walkability for the 500m route to the Northside Shopping Centre (see fig. 2.1).

Contents:

2.1: Corner Radii

2.2: Carriageway Width

2.3: Roundabout

2.4: Surface Quality

2.5: Park Permeability

2.6: Litter

2.7: Permeability Index

2.8: Recommendations



Figure 2.1: Adapted Google Maps Satellite Image of 500m route to Northside Shopping Centre

Northside Partnership Healthy Communities Walkability Audit

Section 2.1: Corner Radii



Figure 2.1.1: Adapted Google Map Satellite Image of 500m Walking Route

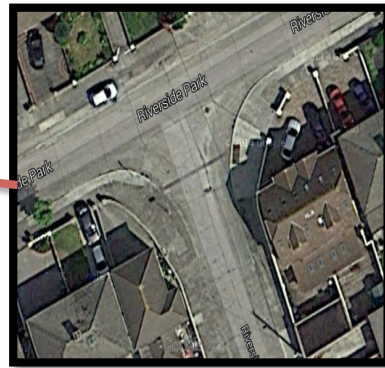


Figure 2.1.2: Google Map Satellite Image of corners at Riverside Park and Riverside Ave.

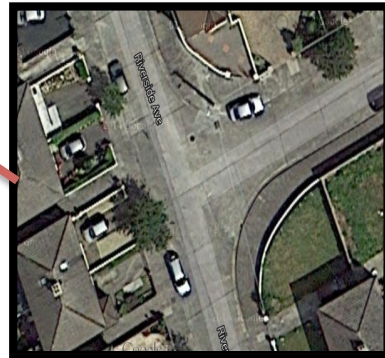


Figure 2.1.3: Google Map Satellite Image of corners at Riverside Ave. and Riverside Grove.



Figure 2.1.4: Google Map Satellite Images of corners at Riverside Ave. and Riverside Rd.

The corner radii along the 500m route measure approximately 9m in length (see fig. 2.1.5).

This is substantially larger than the 1-3m radius as is recommended for local roads in the DMURS. According to DMURS, 9m corner radii are only necessary for roads regularly carrying large vehicles, for example, in industrial estates.

These wide corners allow for motorised vehicles to move at a very high speed, posing a threat to pedestrians.

Moreover, they require pedestrians to look back further to check for turning vehicles and they increase the distance a pedestrian needs to cover to cross the street, as is demonstrated in the next section.

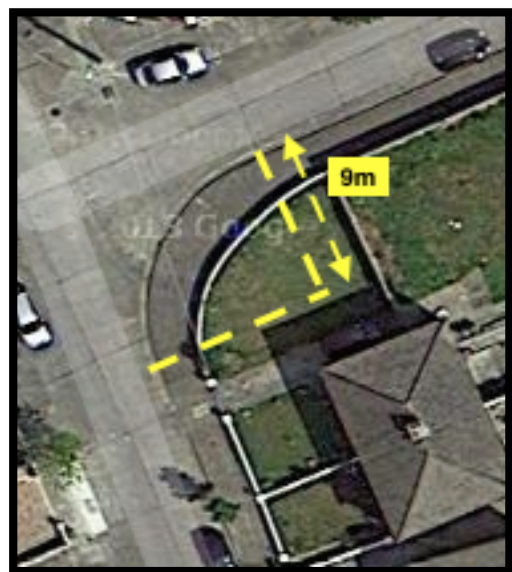


Figure 2.1.5: Adapted Google Map Satellite Image of corner radii.

Northside Partnership Healthy Communities Walkability Audit

Section 2.2: Carriageway Width

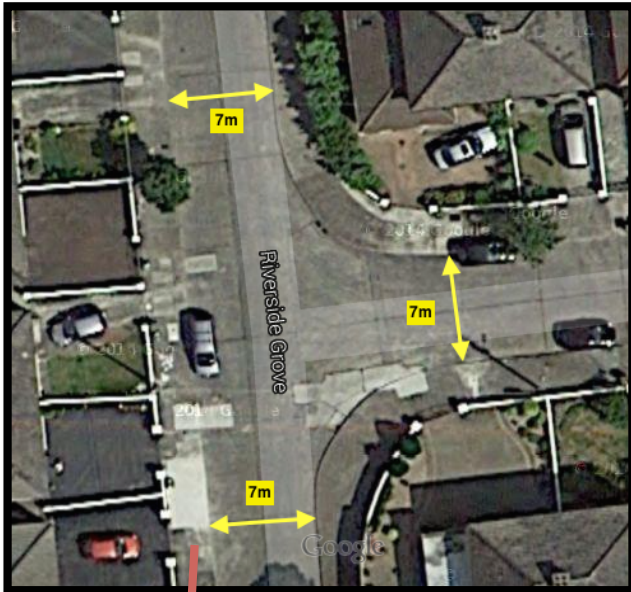


Figure 2.2.1: Adapted Google Maps Satellite Image of carriageway width at Riverside Grove and Riverside Avenue.

The carriageway width along the route is approximately 7m (see fig. 2.2.1), which is wider than the recommended 5-5.5m for local roads (DMURS).

Not only does this allow for motorised vehicles to move very quickly, it also means that pedestrians have to cover a large distance to cross the street.

In addition, the wide corners along the route (outlined in section 2.1) increase the crossing distance further, measuring approximately 17m (see fig. 2.2.2).

The difficulty of crossing due to cars turning corners at high speeds was experienced during the walkability audit.

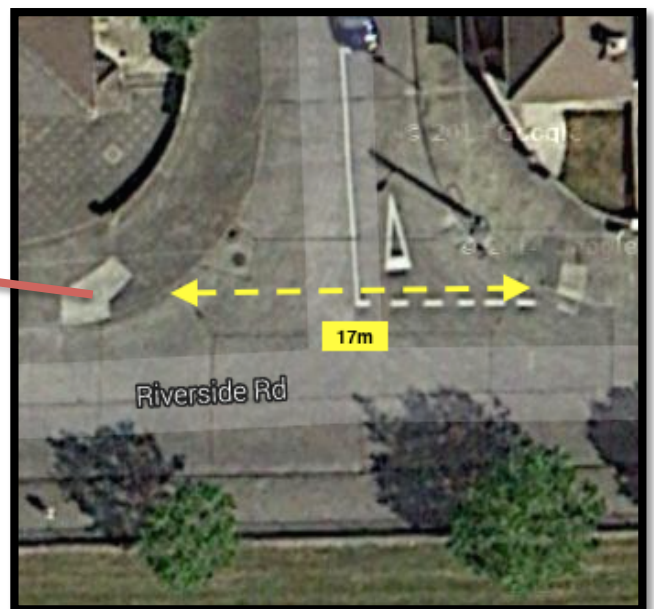


Figure 2.3.2: Adapted Google Maps Satellite Image of carriageway width at Riverside Road

Northside Partnership Healthy Communities Walkability Audit

Section 2.3: Roundabout

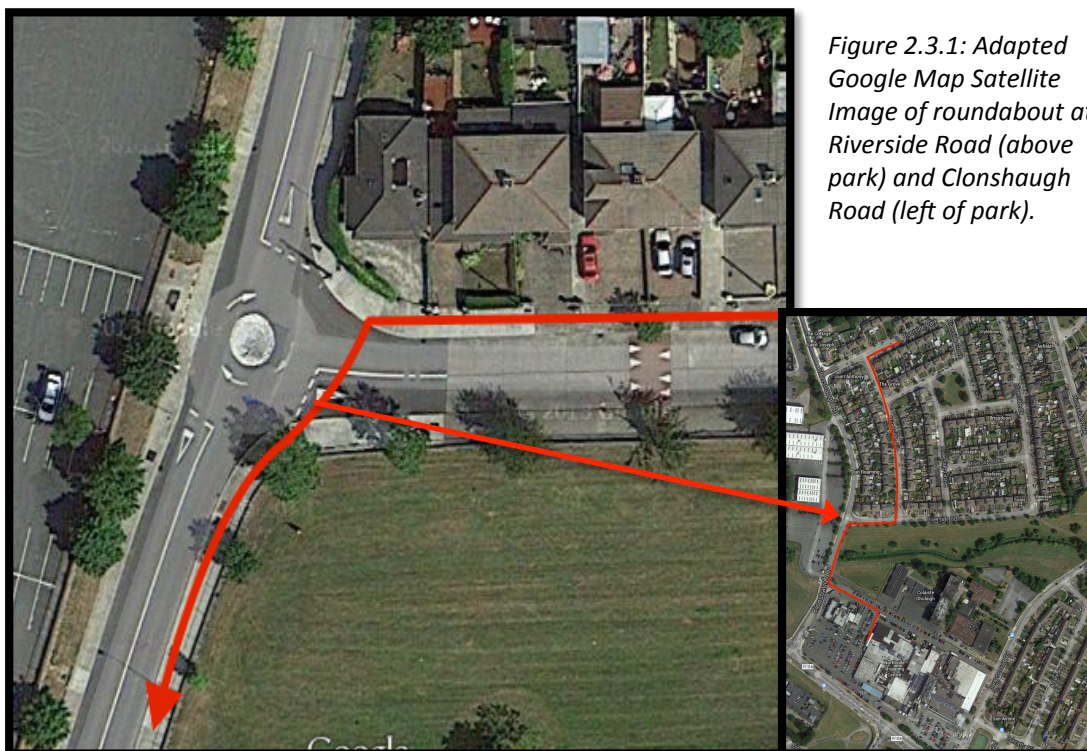


Figure 2.3.1: Adapted Google Map Satellite Image of roundabout at Riverside Road (above park) and Clonshaugh Road (left of park).

The roundabout shown in figure 2.3.1 poses a problem for pedestrians along the route. Firstly, it does very little to restrict car movement, as cars can drive over it. Secondly, there are no pedestrian crossing points. Thirdly, the wide carriageway and corner radii increase the crossing distance, creating an even greater barrier for pedestrians. In relation to junctions, DMURS states:

'[compact roundabouts] may be considered where vehicle flows are not sufficient to warrant full signalisation, such as on *Links*, and pedestrian activity is more moderate, such as in *Suburbs* and *Neighbourhoods* provided they are appropriately fitted with the appropriate pedestrian crossings' (p. 106) (emphasis added).

While the addition of pedestrian crossings could be one measure to address the issue, roundabouts are generally problematic for both pedestrians and cyclists as they are difficult to navigate; therefore, a different type of junction should be considered for this intersection.

Northside Partnership Healthy Communities Walkability Audit

Section 2.4: Surface Quality



Figure 2.4.1: Adapted Google Maps Satellite Image showing patchy paving on Riverside Ave.



Figure 2.4.2: Photograph of paving on Riverside Ave.



Figure 2.4.3: Photograph of paving on Riverside Ave.



Figure 2.4.4: Photograph of paving on Riverside Avenue.



Figure 2.4.5: Photograph of paving on Riverside Ave.

The quality of the paving is generally poor and could potentially cause people to fall. While most of the broken and uneven pavement occurs on Riverside Ave. (see figure 2.4.2 – 2.4.5), the paving for the entire route is patchy and generally unattractive.

Northside Partnership Healthy Communities Walkability Audit

Section 2.5: Park Permeability

Figure 2.5.1: Google Maps Satellite Image of the entry points (1 & 2) and barriers to entry to the Stardust Memorial Park.

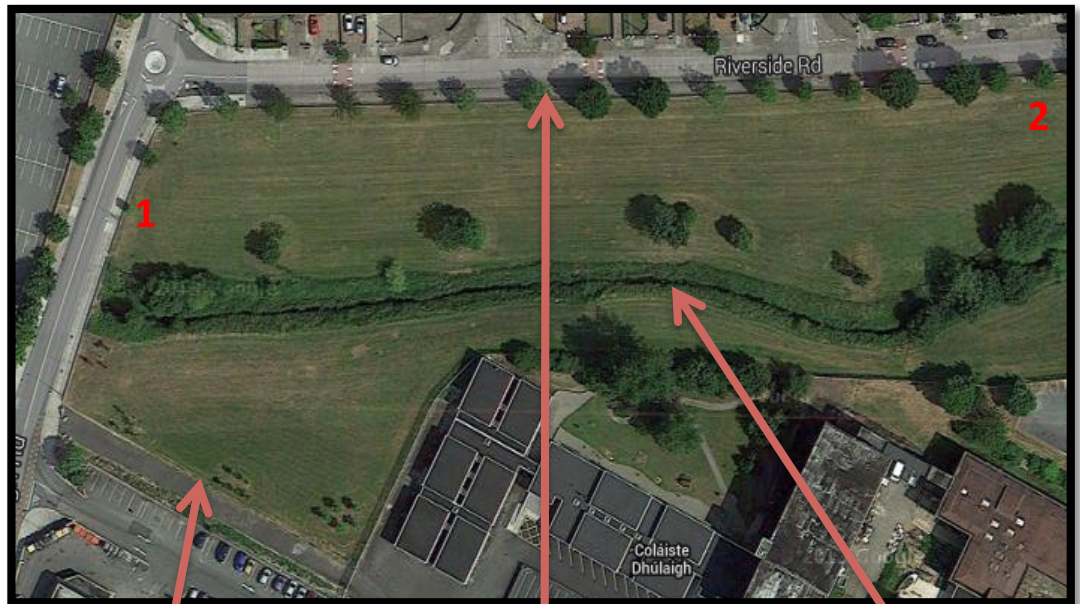


Figure 2.5.2: Photograph of barrier to entry to the Stardust Memorial Park from Northside Shopping Centre



Figure 2.5.3: Photograph of barrier to entry to the Stardust Memorial Park from Riverside Ave.



Figure 2.5.4: Photograph of stream in the Stardust Memorial Park.

The Stardust Memorial Park is situated along the 500m route, yet it is not feasible to use the park when walking to the NSC. While there are some entrance points (see fig. 2.5.1 points 1 & 2), the fence reduces the permeability of the park (see fig. 2.5.2 and 2.5.3). Moreover, the stream (see fig. 2.5.4) also inhibits movement through the park.

Section 2.6: Litter

The extent of the litter observed along the route does not pose a major barrier to walking; however, it can appear quite unattractive. There are also instances of dog fouling.

There is only one bin visible along the entire route, including inside the park (see fig. 2.6.1). There are also no bins or bags provided for dog litter.

There is also a substantial amount of litter (and uncollected rubbish bags) in the park (see fig. 2.6.3 and 2.6.4), much of which is visible from the outside.

*Figure 2.6.1:
Adapted Google
Maps Satellite
Image showing
only visible bin
along the 500m
route.*



*Figure 2.6.2:
Photograph
of litter on
Riverside
Ave*



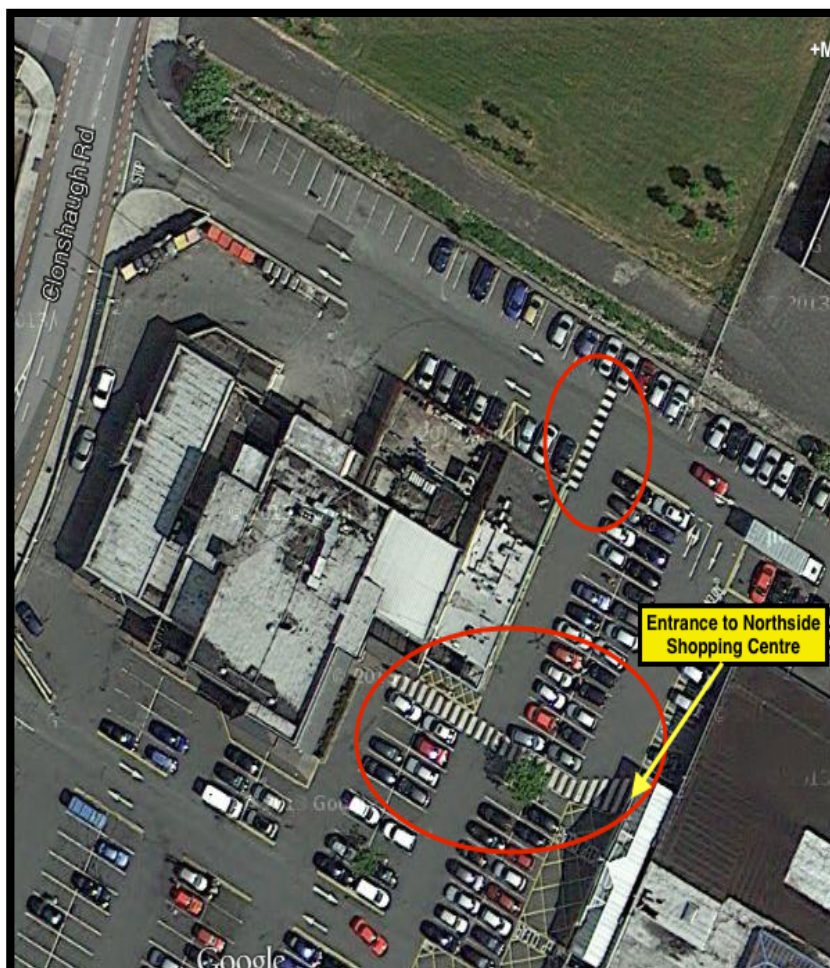
*Figure 2.6.3:
Photograph
of litter in the
Stardust
Memorial
Park.*



*Figure 2.6.4:
Photograph of
uncollected
rubbish bags in
the Stardust
Memorial Park.*

Section 2.7: Northside Shopping Centre Car Park

Figures 2.7.1 & 2.7.2: Photographs of car park at Northside Shopping Centre.



Figures 2.7.3: Adapted Google Maps Satellite Image of Northside Shopping Centre car park.

As can be seen in figures 2.7.1 – 2.7.3, there are no footpaths or walkways for pedestrians apart from the 3 crossings which are highlighted in figure 2.6.3. This makes walking very difficult, particularly during busy times.

While this audit is primarily concerned with walkability, it was also observed that there is a lack of cycling facilities (e.g. lanes and parking spaces) at the shopping centre.

Section 2.8: Permeability Index



Figure 2.8.1: Adapted Google Maps Satellite Image showing Pedestrian Route Directness.

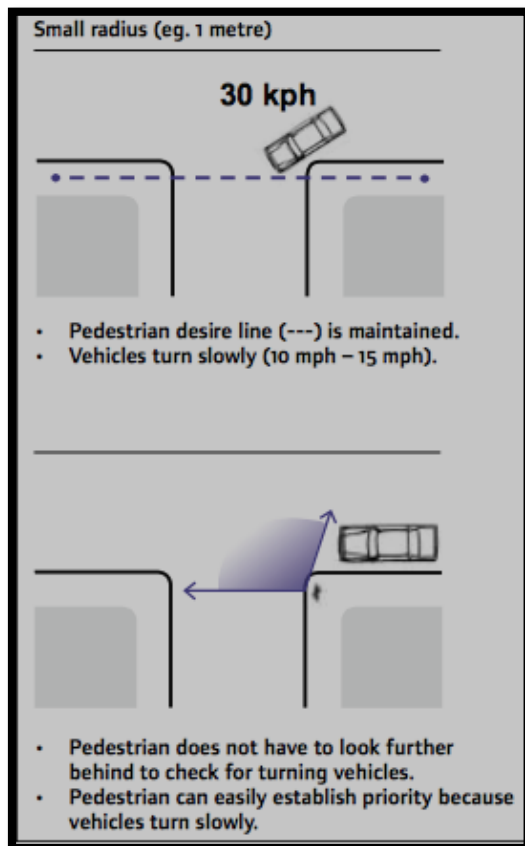
The permeability of the route was calculated using Pedestrian Route Directness (PRD), as shown in figure 2.8.1 (Randall and Baetz, 2001).

The PRD for this route is 1.46. A score of 1.5 or under is considered acceptable for a distance of under 700m (Randall and Baetz, 2001).

Nevertheless, providing access through the Stardust Memorial park could be one measure to both increase pedestrian mobility and make more use of the space.

The next section recommends measures for increasing the safety and amenability of the 5 minute route, thus making it more walkable.

2.9 Recommendations



Recommendation 2.9.1

Decrease corner radii to 1m to slow motorised vehicles to under 30km/h when turning. This should be done to a high standard, ensuring that the surface is even and not patchy, as can be seen in other retrofitted corners in the area.

Figure 2.9.1: The benefit of tighter corner radii (Adamstown Street Design Guide, year).

Recommendation 2.9.2

In order to improve the pedestrian environment, it is recommended that the carriageways be narrowed to at least 5-5.5m (as per the DMURS guidelines) or install other traffic calming measures, such as chicanes (see fig. 2.9.2).

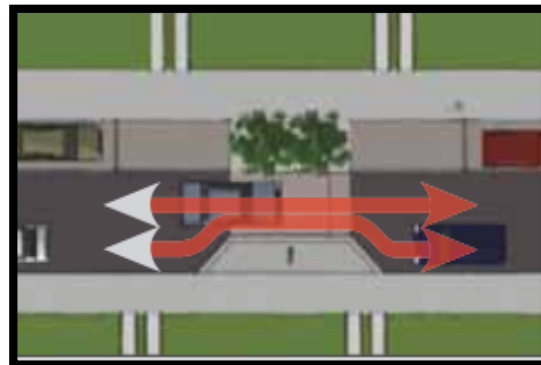


Figure 2.9.2: An example of traffic calming (DELGC, 2013).

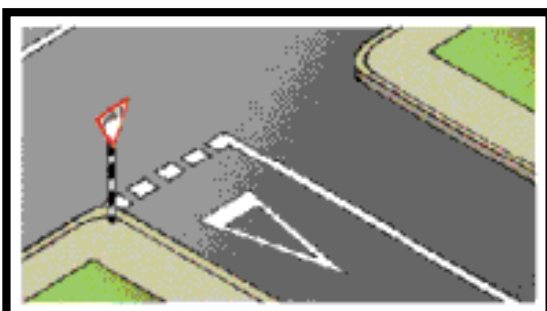


Figure 2.9.3: A stop and yield junction (Driving School Ireland, 2013)

Recommendation 2.9.3

Replace the roundabout with a stop and yield junction (see fig. 2.9.2) and install the appropriate pedestrian crossings.

Northside Partnership Healthy Communities Walkability Audit

2.9 Recommendations

Recommendation 2.9.4

Resurface the paving to increase the safety and attractiveness.

Recommendation 2.9.5

To increase pedestrian mobility, more access points to the park and a crossway over the stream should be provided (see fig. 2.9.4). This can be seen in the eastern part of the Stardust Memorial Park (see section 3). In addition, the park should be well maintained so as to attract more users.

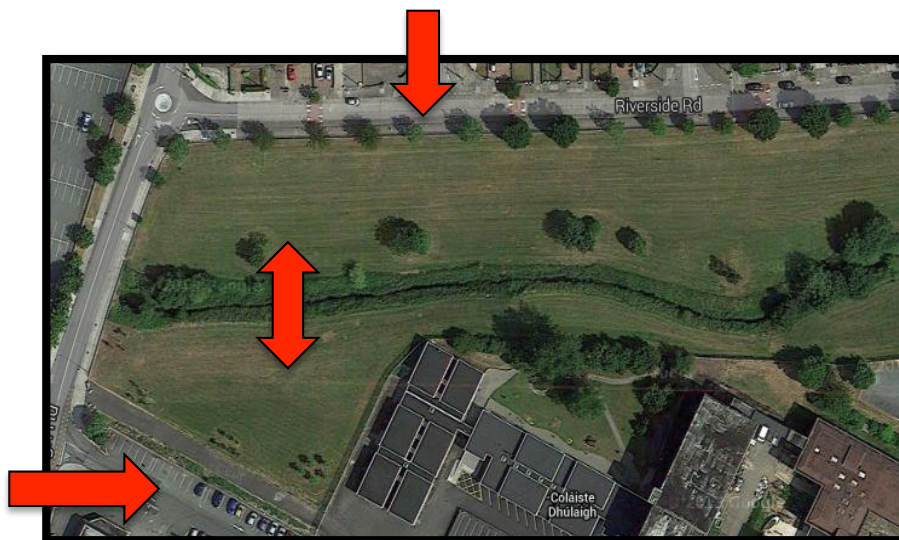


Figure 2.9.4: Proposed locations for increasing access through the park.

Recommendation 2.6

Provide adequate bins and facilities for dog litter and ensure that the street and park are cleaned on a regular basis.

Recommendation 2.7

Provide walkways to increase pedestrian mobility through the car park.

Northside Partnership Healthy Communities Pilot Area
10 Minutes Pedestrian Catchment Analysis

Dublin Institute of Technology
DT118 MSc. Sustainable Development
Lin Zhao D09117835
April 2015



10 Minutes Pedestrian Catchment Map



3.1 Pedestrian Crossing

1. **Roundabout no traffic lights**, located at the entrance of the Northside Shopping Center, 90% vehicle stop for pedestrian.

2. **136.62 meters distance between pedestrian crossing.**

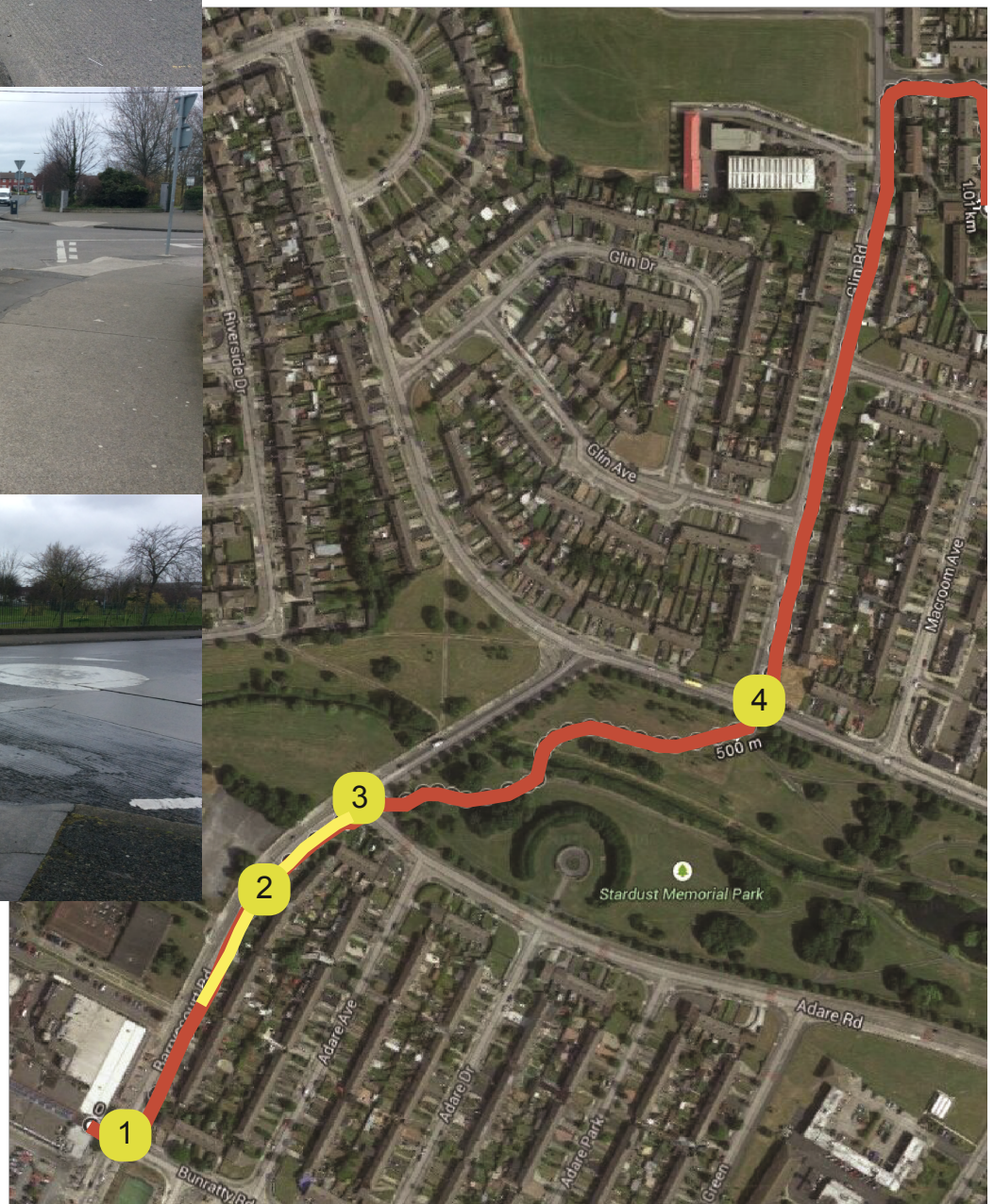
Most of pedestrian go crossing just look at both side without any crossing facility. That could be a security risk.

From Traffic Signs Manual 2010 in the part 9.8.14:

“The minimum recommended distance between uncoordinated mid-block pedestrian crossings, or between a pedestrian crossing and an uncoordinated signal controlled junction is **100M**.”

3. **Roundabout no traffic lights**, located at the main gate of the Stardust Memorial Park, 50% vehicle stop for pedestrian.

4. **Roundabout no traffic lights**, located at the second gate of the Stardust Memorial Park, just 10% vehicle stop for pedestrian.



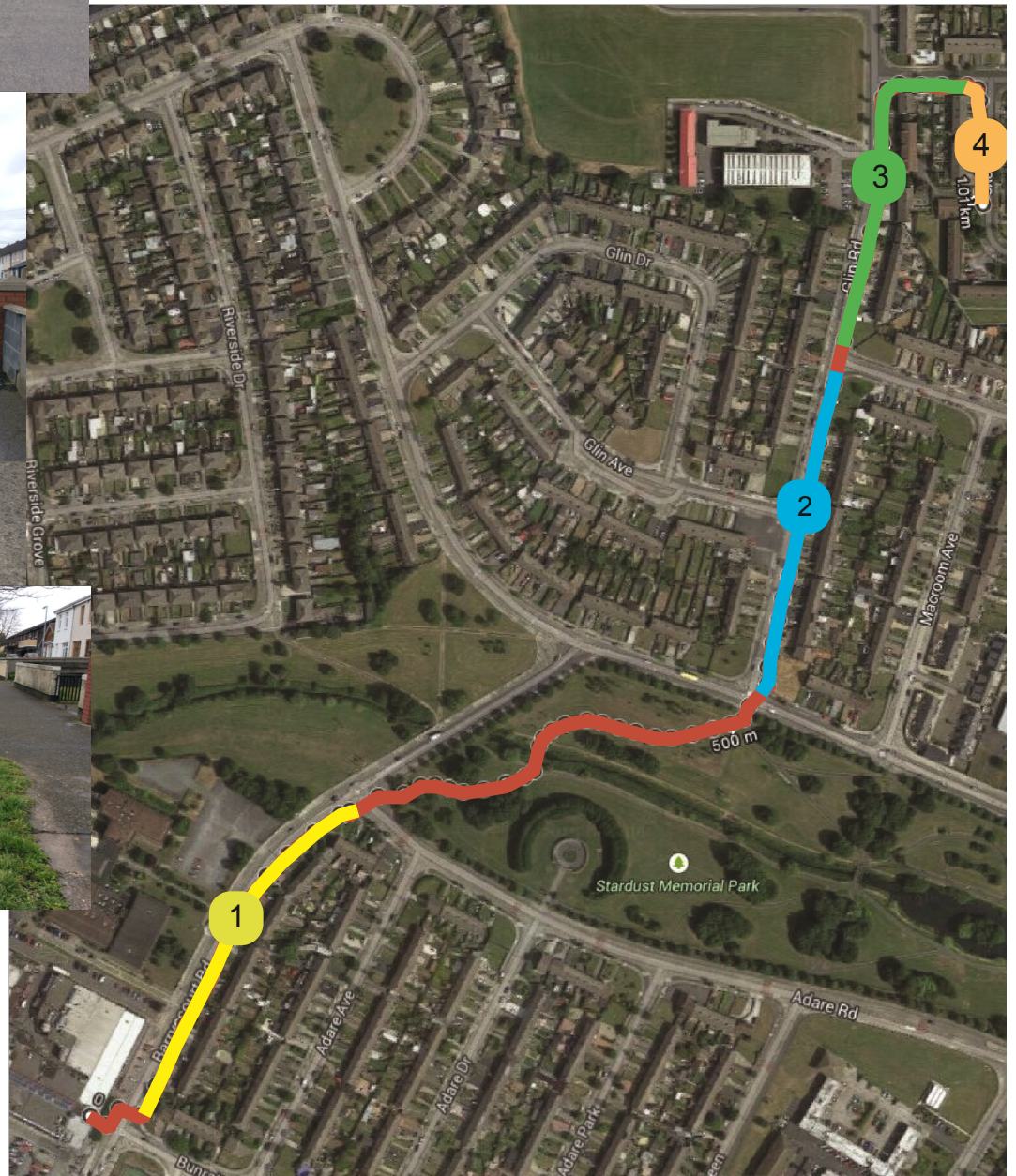
3.2 Parked Cars

All the road along this 10-min Walking Route have **NO** Street parking facilities.

The 10-min walking route been divide for FOUR parts showing in the map.

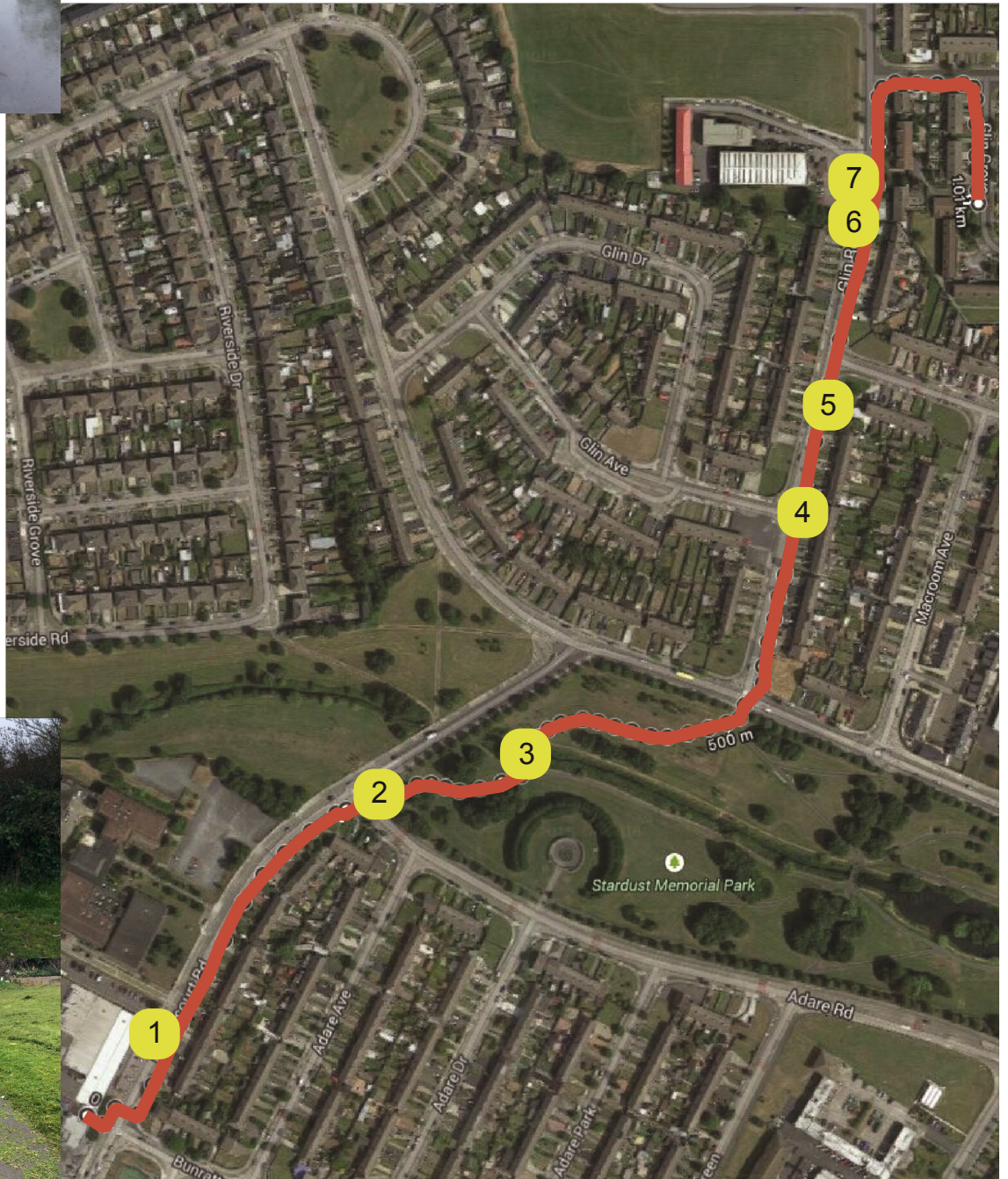
The 1, 2 and 3 parts are road which have certain traffic flow, **car parked on the footpath**.

The 4 part is Glin Grove just a few traffic, **car parked on the street**.

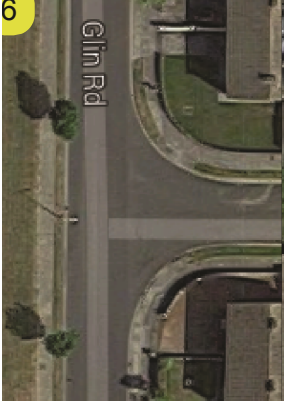
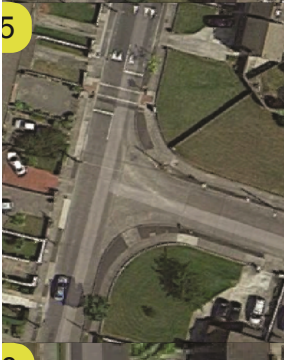
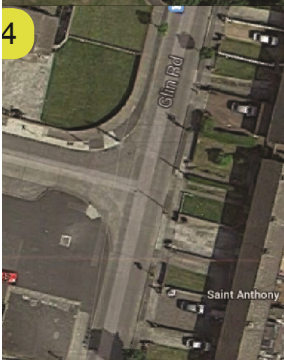


3.3 Footpath Quality and Litter

1. **Poor quality** of footpath.
2. **Litter** among plant.
3. **Litter** under the bridge.
4. **Poor quality** of slope to let cars drive into parking garden.
5. **Poor quality** of footpath.
6. Lush vegetation **blocking** the footpath.
7. **No clean-up** after mowing the lawn, made the footpath dirt and slippery.



3.4 Corner Radii



1. South Corner Radii is 4.5-6m, North Corner Radii is **over 9m**
2. West Corner Radii is 4.5-6m, East Corner Radii is **over 9m**.
3. West and East Corner Radii both **over 9m**.
4. South and North Corner Radii both between 4.5-6m.
5. South and North Corner Radii both **over 9m**.
6. South Corner Radii is 4.5-6m, North Corner Radii is **over 9m**
7. West Corner Radii is 4.5-6m, East Corner Radii is **over 9m**.

3.5 Park Access

According to the closing times of Stardust Memorial Park, there might be a second route for pedestrian to use when park closed.



Closing Times of Stardust Memorial Park		
December & January	5.00pm	
February & November	5.30pm	
● March	6.30pm	● 7.30pm
● October	7.30pm	● 6.30pm
April & September	8.30pm	
May & August	9.30pm	
June & July	10.00pm	
Closing starts half an hour prior to the above times.		
● Note change in times due to daylight savings.		

Route 2 just **7.8 meters** further than Route 1. The distance is not a big problem, but pedestrian like to choose route 1 - go through the park for **safer, environmental friendly and relax.**



3.6 Permeability Index

$$1000/730=1.37$$

The Permeability Index for this 10 Minutes Pedestrian Catchment is 1.37.



3.7 Improved Priority Measure for Pedestrians

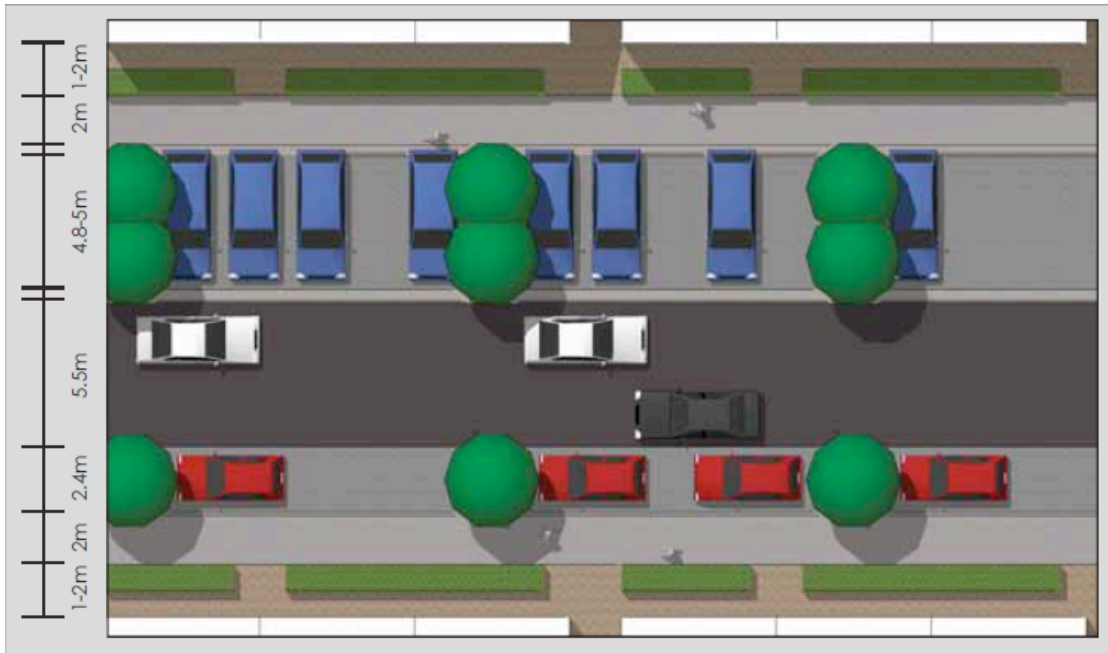
- Random Parked Car in 10 Minutes Pedestrian Catchment

Among this 10 minutes pedestrian catchment just have two car parks located beside the Northside Shopping Centre, among this 10 minutes pedestrian catchment area do not have any on-street parking and loading facilities. Another reason is the parking appeals officer lack of supervision in this area. These two situations made random parked cars all along this 10 minutes pedestrian catchment.

Whilst sustainable transport aim to reduce car dependency, people may wish to own and park a car, even if it is not used on a regular basis. On-street parking and loading refers to spaces that are directly adjacent to and accessible from the main vehicular carriageway. On-street parking, when well-designed can:

- Calm traffic by increasing driver caution, visually narrow the carriageway and reduce forward visibility.
- Add to the vitality of communities by supporting retail / commercial activities that front on to streets through the generation of pedestrian activity as people come and go from their vehicles.
- Contribute to pedestrian / cyclist comfort by providing a buffer between the vehicular carriageway and foot / cycle path.
- Reduce the need or temptation for drivers to kerb mount and block foot / cycle paths.
- Provide good levels of passive security as spaces are overlooked by buildings.

The quantity of on-street parking that is needed in a given area depends on a number of factors, but is most closely related to proximity to Centres, the availability of public transport and the density, type and intensity of land use. Notwithstanding these factors, on-street parking has a finite capacity, depending on the per unit parking requirements. Getting the balance right presents a challenge to designers. If parking is over provided it will conflict with sustainability objectives and can be visually dominant. Conversely, if parking does not cater for user needs or is under provided it may encourage poor parking practices such as kerb mounting, parking on footpaths and within areas of open space.



(Sources: DMURS Chapter4.4.9)

With regard to the design of individual parking/loading spaces:

- The standard width of a space should be 2.4m.
- The standard length of a space should be 6m (parallel spaces).
- The standard depth of a perpendicular space should be 4.8m (not including a minimum 0.3m overhang).
- The depth of angular parking should be 4.2m for 60° angle parking and 3.6m for 45° angle parking.
- The dimensions of a loading bay should be 2.8 x 6m to cater for large vans. Facilities for larger vehicles, such as trucks, should be located off-street.

There is a well-designed taxi car park located the front entrance of Northside Shopping Centre. Showing in the following photo.



References:

Design Manual for Urban Roads and Streets

Google Map

References

Department of the Environment, Local Government and Community (DELGC) (2013), *Design Manual for Urban Roads and Streets*. Available at:

<http://www.environ.ie/en/Publications/DevelopmentandHousing/Planning/FileDownload,32669,en.pdf> [Accessed 28 April 2015].

Department of Transport (2009), *Smarter Travel – A Sustainable Transport Future: A New Transport Policy for Ireland*. Available at:

Driving School Ireland (2013). Junctions and Roundabouts. *Driving School Ireland*. Available at: <http://www.drivingschoolireland.com/junctions.html> [Accessed 30 April 2015].

O'Connor, D., Borschied, M. and Reid, O. (2013) 'An Assessment of Mobility among Key Disadvantaged Communities in North East Dublin', *AESOP-ASCP Joint Congress*, pp. 1-19. Available at:

http://northsidepartnership.ie/sites/northsidepartnership.ie/files/O'Connor%20Borscheid%20%20Reid%20-%20Assessment%20of%20Mobility%20in%20North%20East%20Dublin%20-%20AESOP%20Dublin%202013_0.pdf [Accessed 19 April 2015].

Randall, T. A. (2001), 'Evaluating Pedestrian Connectivity for Suburban Sustainability', *Journal of Urban Planning and Development*, 127, pp. 1-15. Available at:

<http://0-web.b.ebscohost.com.ditlib.dit.ie/ehost/pdfviewer/pdfviewer?sid=ccbbe4a7-ea8f-4e53-b442-f68bd2734a2c%40sessionmgr111&vid=1&hid=102> [Accessed 30 April 2015].

South Dublin County Council (2010), *Adamstown Street Design Guide*. Available at:

<http://www.sdcc.ie/sites/default/files/publications/adamstown-street-design-guide-feb-10-final-net-version2-reduced-size.pdf> [Accessed 30 April 2015].

World Health Organisation (WHO) (2015). Social Determinants of Health. *World Health Organisation*. Available at:

http://www.who.int/social_determinants/en/ [Accessed 28 April 2015].