

Appendix E

Park & Ride Location Analysis



Straitéis Iompair na Gaillimhe
Galway Transport Strategy



Modelling Services Framework
Galway Transport Strategy
Assessment for the Role of Park & Ride

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National Transport Authority,
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1 Introduction

1.1 Overview

Galway City Council and the National Transport Authority are preparing the Galway Transport Strategy for Galway City which will consider how to meet the future transport needs of the City. To complement this study, the NTA has commissioned SYSTRA and Jacobs to prepare an assessment regarding Park & Ride the findings of which are presented in this report.

Park & Ride facilities are often integral parts of the transport network of large towns and cities. When planned and designed effectively within an integrated transport plan, Park & Ride can extend the catchment of the public transport network to dispersed populations that would otherwise be infeasible to serve, reduce car volumes in congested urban areas and increase public transport usage making it more viable.

1.2 Scope of the Report

The scope of the report is as follows:

- Review current research, local/international best practices and policies for Park & Ride facilities;
- Discuss and record any current proposals for Park & Ride facilities;
- Develop recommendations on suitable best practices and policies for Galway;
- Identification of possible areas within the GDA where Park & Ride facilities may be suitable; and
- Recommendation of Park & Ride policy to be included in the Transport Implementation Study.

The following considerations have not been taken into account in the preparation of this report:

- This report does not take account of the financial viability of recommendations as to do so requires further design and planning.
- The report does not assess informal parking and its requirements.

1.3 Background

Ideally, everyone would have access to Galway's public transport network within a short walk. Within the urban area of Galway City, this aim should be achievable with few exceptions. However, beyond the urban area, given the distribution of trip origins and destinations, it is impractical to provide direct access to a high quality public transport network for everyone. In this case, the option of Park & Ride may be appropriate. Park & Ride serves to provide increased opportunity for people to access the public transport system.

Park & Ride facilities help encourage a mode shift away from low occupancy vehicles on congested networks. The road network within Galway City is constrained. Park & Ride has the potential to play a role in relieving congestion in the dense urban centre by transferring incoming trips from private cars to more sustainable modes such as bus and bicycle.

Jacobs and SYSTRA, on behalf of the National Transport Authority, recently completed an “Assessment for the Role of Park & Ride in the Greater Dublin Area Transport Strategy”. In preparing the assessment, a desktop review of previous relevant studies and international best practice was undertaken. Based on this review of research undertaken in Dublin and the UK¹ Park & Ride can deliver the following benefits:

- Bring economic vitality and improve overall accessibility in a town or city centre;
- Reduce road traffic congestion on radial routes;
- Improve mobility by reducing congestion, thereby increasing the attractiveness of town and city centres to visitors and shoppers;
- Meet shortfalls in projected parking capacity in an urban area;
- Increase the effective catchment area of the public transport network;
- Transfer distance commuting trips from private car to public transport;
- Improve access for those living on the city edge and in low density suburbs; and
- Maximise the growth of public transport patronage.

Park & Ride as a component of the Galway Transport Strategy is a potential means of increasing the accessibility of the transport network to a population that might not otherwise access the network through modes such as walking or cycling. Thereby, Park & Ride will remove from the constrained road network in the City Centre car trips that would otherwise have no viable alternative.

Within the Department of Transport, Tourism and Sport’s Smarter Travel policy, there are two specific actions which related to Park & Ride:

- Action 14
“Provide Park and Ride facilities at the edge of major and intermediate urban centres and at important public transport nodes, with efficient transport connections to the urban centre.”
- Action 22
“We will prepare a plan to fast track the establishment of park and ride facilities along major public transport nodes at the periphery of major urban areas and at key public transport locations and nodes. We will also broaden the scope of park and ride to include facilities for other modes such as taxis and bicycles (including cycle hire and repairs) so that these options are available to commuters”

¹ Source: research undertaken by Colin Buchanan for the Tayside and Central Transport Partnership (TACTRAN) Park and Ride strategy, the 2002 Dublin Transportation Office (DTO) report “Bus Based Park & Ride – A Pilot Scheme”, and the 2004 report “ Rail Park and Ride Strategy for the Greater Dublin Area” by the DTO

2 What Makes Park & Ride Successful?

The planning of Park & Ride facilities is complex and there are schemes which have exceeded expectations in terms of demand and others which have failed to attract users. There are many factors which influence whether or not a Park & Ride location will be successful.

Catering for trips that are relatively unattractive by car

Park & Ride tends to be most effective where traffic congestion and parking problems are worst. Park & Ride should be provided slightly in advance of the congestion.

Location

Park & Ride is most appropriate at the fringe of large urban areas in proximity to the strategic road network. The distance from the Park & Ride site to the ultimate trip destinations should be sufficient to make the switch worthwhile both from the user perspective and to meet overall objectives such as reducing the environmental impact of transport.

Availability of parking throughout the day

The Park & Ride needs to be appropriately sized so that users have confidence in finding a space. Peak occupancies of more than 95 per cent should be avoided and a design factor of 80 to 85 per cent would be desirable to minimise impacts of spillover parking and to provide certainty of space availability to potential users.

Suitably Sized

Unduly large or small facilities generally should be avoided. There are some disadvantages to large Park & Ride sites. In some instances, the walk distance from parking spaces to the public transport service can be significant adding time, cost and inconvenience to the journey. Traffic problems can also arise in the vicinity of large Park & Ride sites due to the volume of car trips. It is usually better to have a number of smaller Park & Ride sites in different locations rather than one large one. However, care must be taken in sizing sites to avoid parking availability issues (see above).

Frequent departures provided for by high quality public transport

The public transport system associated with the Park & Ride facility should be of a 'turn-up-and-go' service, thereby requiring a frequency of at least every ten minutes.

Competitive journey times

Park & Ride will be more attractive if it can offer improved journey times as compared to the equivalent trip by car. However, it is not essential that the journey time is quicker. Rather the Park & Ride journey time should be sufficiently competitive so as to favour of Park & Ride overall (i.e. when taking into account various aspects of the journey options such as reliability, parking availability and charges in the urban centre).

Competitive fares that are attractive versus parking in the urban centre

An important factor in the success of a Park & Ride location is the relative cost of parking in the urban centre versus the cost of using the Park & Ride facility (i.e. the combined cost of parking at the Park & Ride site and the transit fare to the urban centre).

Part of a wider sustainable transport improvement program

A successful Park & Ride is an integral component of urban transport policy and should be developed as part of an overall sustainable transport improvement program. The most successful schemes are integrated into an overarching demand management strategy, including the cost and availability of parking.

3 Types of Park & Ride

Park & Ride can be provided in many different forms:

Local Park & Ride sites are generally located closer to the origin of the trip than to the destination. They intercept car trips close to the start of the journey. The primary function of local sites is to serve the demand for public transport within a local catchment, where non-car modes do not present a feasible or attractive alternative for interchange, and where the use of alternative modes to the car is not feasible at the point of origin.

Strategic Park & Ride sites are generally located on the outskirts of the contiguous built up area, or prior to the start of where significant congestion levels occur on the strategic road network. These sites are generally located on the main orbital routes to the city. The primary function of such sites is to intercept car trips from the adjacent radial route, attracting trips from a number of origins. Their location is such that it should minimise detracting from public transport services. An example of such sites would be the Red Cow Luas Park & Ride in Dublin.

3.1 Dedicated Park & Ride Services

Dedicated Park & Ride services are generally supported by bus based express routes with limited stops between the Park & Ride site and the urban centre. From the demand analysis prepared as part of the Galway Transport Strategy it can be seen that Galway has a very dispersed trip pattern with major trip destinations spread across the city. A limited stop services is unlikely to cater for Galway's trip patterns.

As with all Park & Ride sites, a frequent level of service is crucial to success. To operate a dedicated Park & Ride service with a turn up and go frequency (e.g. every 10 minutes), a site of the order of 500 to 700 spaces would be required to support passenger throughput and to be efficient and effective.

3.2 Rail Based Park & Ride

The rail network in Galway currently comprises InterCity services on the Galway-Dublin and Galway-Limerick rail lines. There are two existing stations within the study area at Galway Ceannt and Oranmore. Both stations have existing Park & Ride facilities with 140 spaces located at Oranmore and 60 spaces located at Galway Ceannt. It is considered that the capacity of these Park & Ride facilities is adequate and no further rail based Park & Ride is considered within this assessment.

4 Previous Study Recommendations

4.1 Galway Metropolitan Smarter Travel Area Action Plan

The Galway Metropolitan Smarter Travel Area Action Plan included consideration of Park & Ride on radial routes into the City. The following locations, illustrated in Figure 4-1, were identified as being potentially suitable as Park & Ride sites:

- Órán Mór Transportation Hub at Garraun;
- Suburban rail stations, including potential future stations at Roscam and Renmore;
- Parkmore/Doughiska;
- Cappagh Road;
- the N17; and
- other appropriate locations in the County.

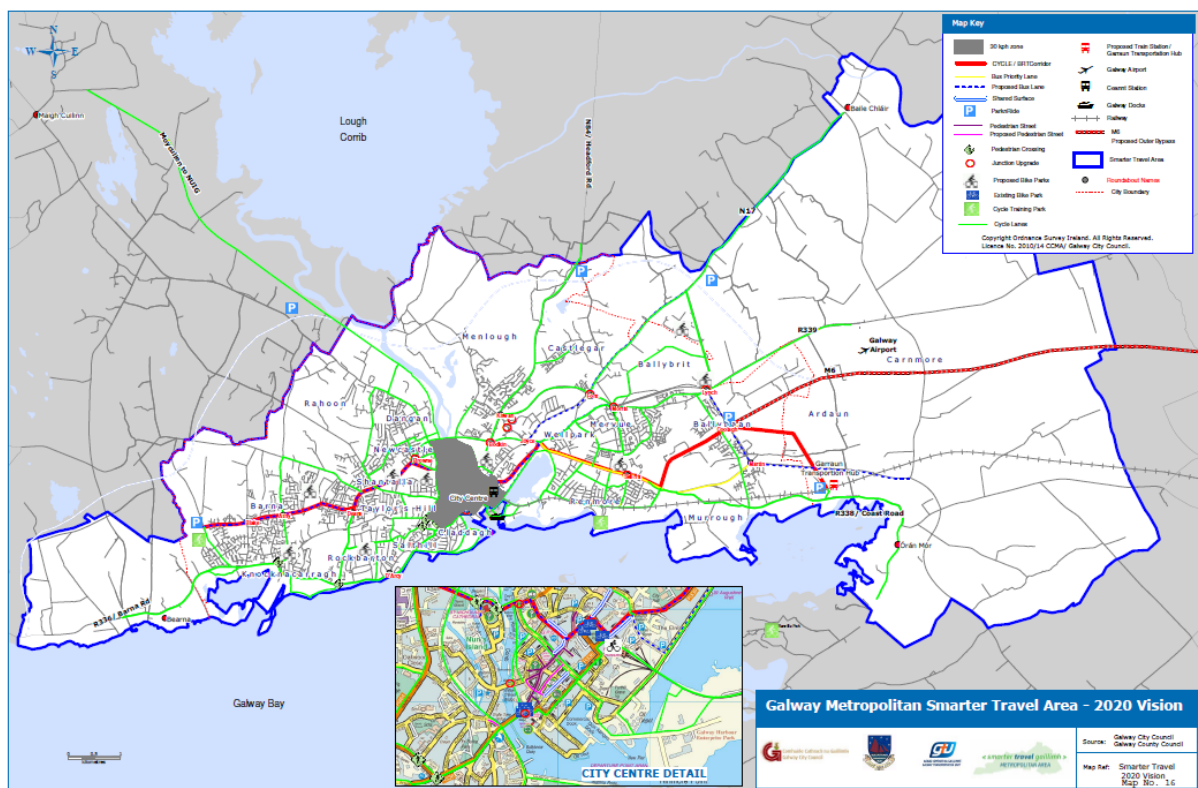


Figure 4-1 Galway Metropolitan Smarter Travel Area Action Plan

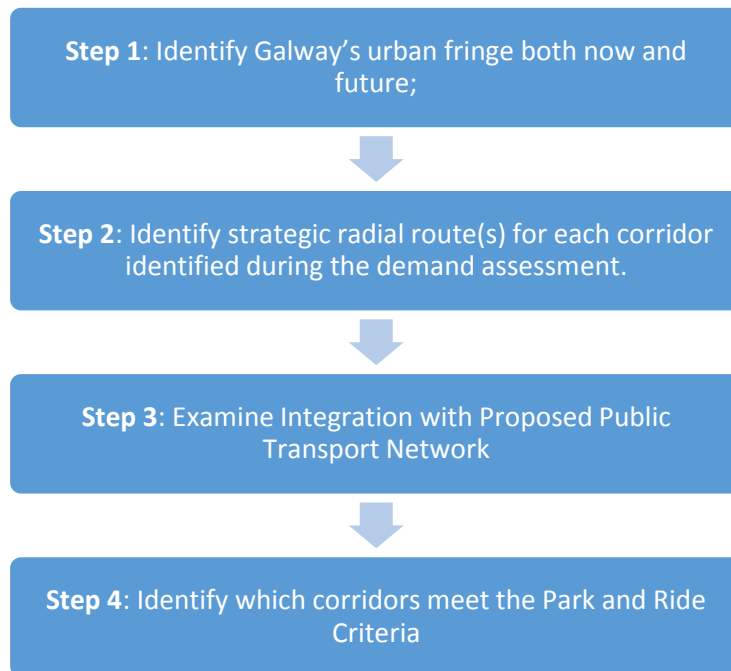
5 Recommended Park & Ride Criteria for the Galway Transport Strategy

Drawing on best practice guidance and considering the successful elements of Park & Ride as presented in Section 2, criteria to identify locations for Park & Ride have been developed. The Table below summarises the evaluation criteria recommended for Galway.

| Essential | Evaluation Criteria |
|--------------------------|--|
| Demand | Potential to Generate Sufficient Demand |
| Location | Locations at the edge of built up areas |
| | Locate close to key radial routes |
| | Locate away from residential areas |
| | Uncongested access and egress |
| | Sufficient land availability |
| | Does not degrade access for other modes |
| | Located at sufficient distance from destinations to make transfer worthwhile and to meet objectives |
| Public Transport Service | Complementary to the planned public transport network |
| | Available capacity on service |
| | Supported by high frequency public transport service |
| | Public transport journey time to be reasonably competitive with the equivalent journey by car |
| | Does not conflict with objectives of public transport service such as walking and cycling to and from services |

6 Facility Identification

A series of steps were followed in identifying areas with potential to locate successful Park & Ride sites:



6.1 Step 1: Identify Galway's Urban Fringe

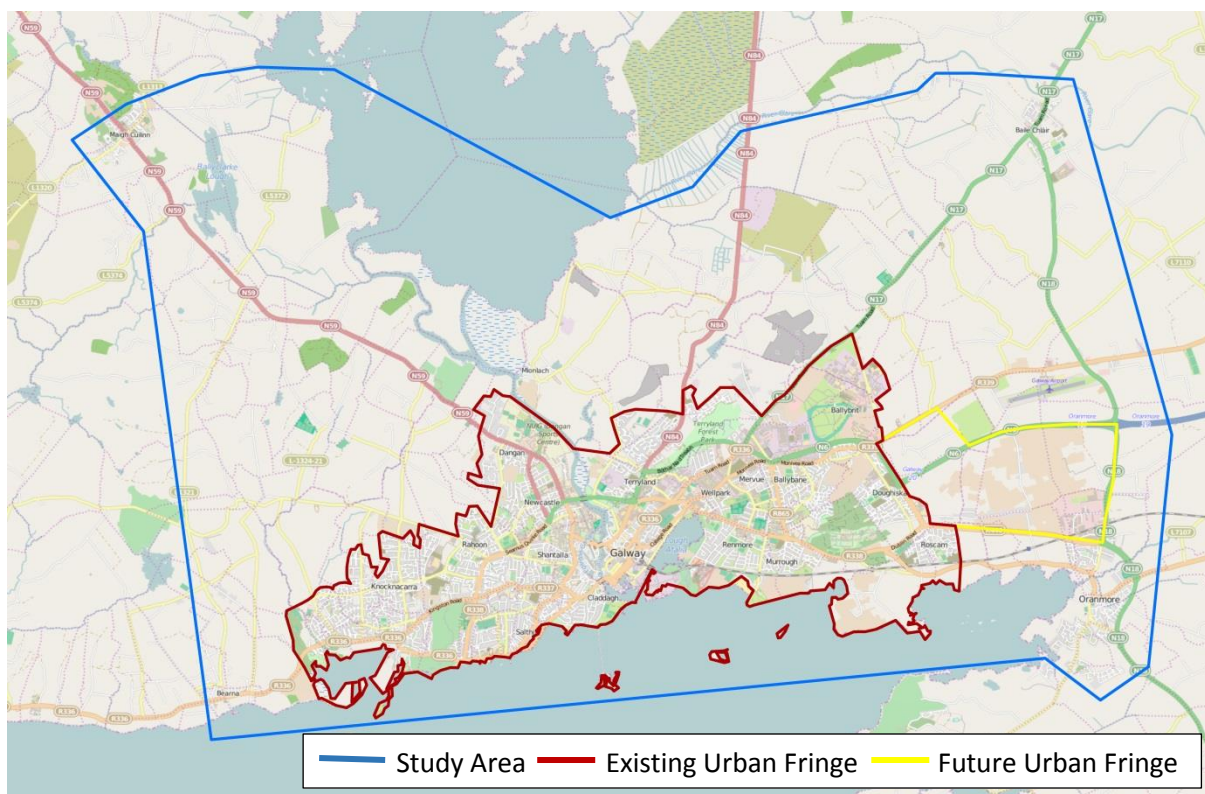


Figure 6-1 Identification of Galway's Urban Fringe

6.2 Step 2: Strategic Radial Approach Roads to Urban Fringe for Each Corridor

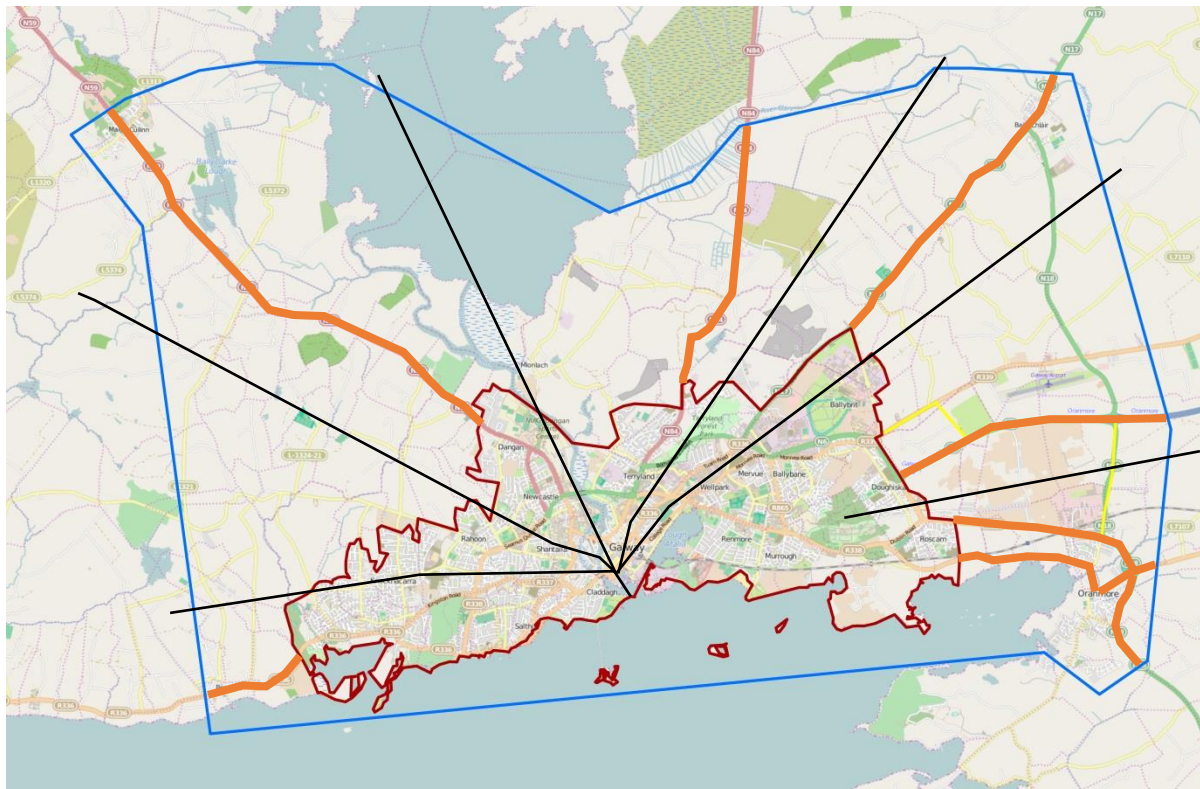


Figure 6-2 Strategic Radial Approach Roads for Each Corridor

Peak Hour Traffic Flows along Strategic Approach Roads at Urban Fringe

The Galway Interim Model was used to ascertain the traffic flows along strategic radial routes as they enter Galway City. A select link analysis was undertaken at the locations shown in Figure 6-3 with the results shown in Table 1.

The distance from the urban fringe to key locations is important, as it is unlikely that people will use the Park & Ride to travel a short distance by public transport given the interchange time. As an indicator, the approximate distance to the City Centre is shown in Table 1. The Moycullen and Headford corridors are the closest to the City Centre in terms of the extent of the urban fringe. These corridors are also relatively close to other key destinations such as University Hospital Galway, University College Galway and Mervue Business Park.

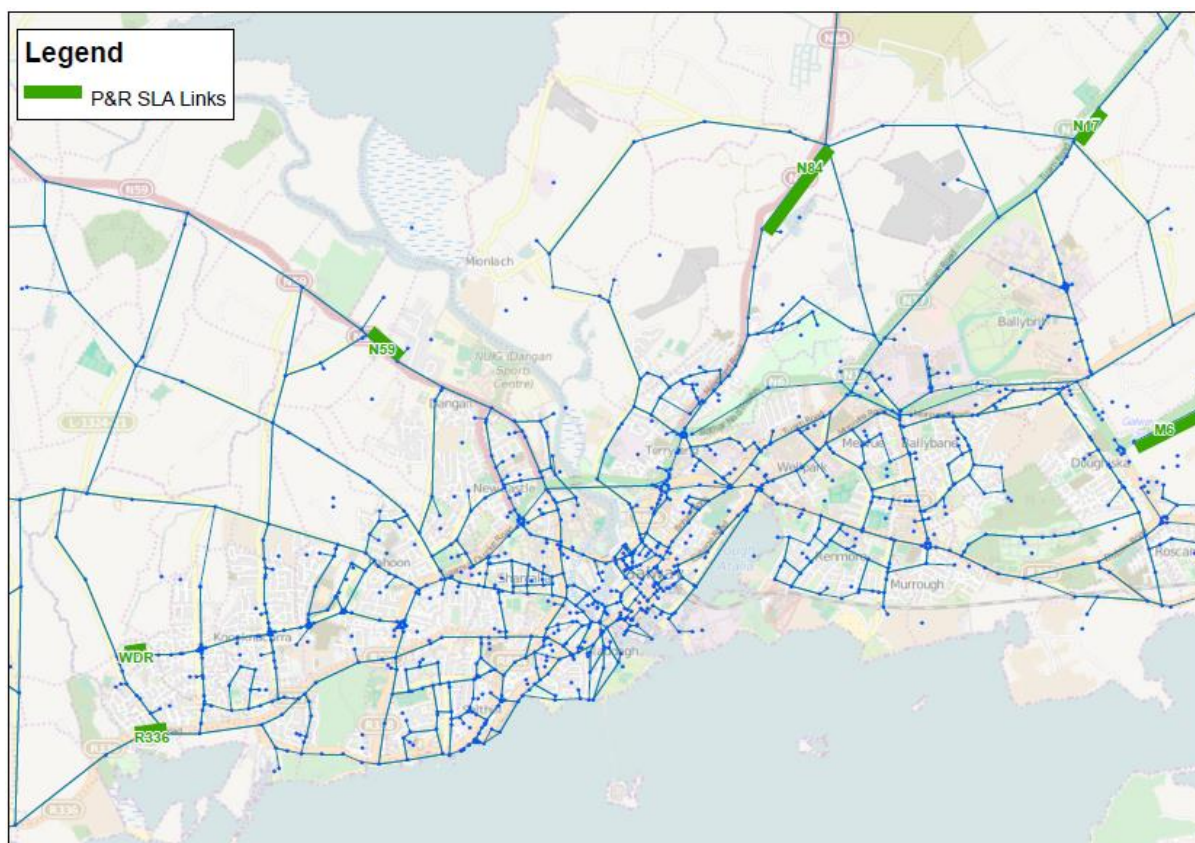


Figure 6-3 Strategic Radial Approaches Select Link Analysis Locations

| Corridor | Strategic Approach Road(s) | Traffic Flow at Select Link (cars) | Approximate Distance to City Centre from Urban Fringe |
|---------------------|---|------------------------------------|---|
| 1 Bearna / 2 Rahoon | No national road, R336 & Western Distributor Road | 900 | 6.5km |
| 3 Moycullen | N59 | 1,400 | 4km |
| 4 Headford | N84 | 1,000 | 3km |
| 5 Baile Chláir | N17 | 1,500 | 5.5km |
| 6 Dublin Road | N6 | 1,400 | 6km |
| 7 Oranmore | N18 / R449 and N18/R338 | Existing P&R | 6.5km |

Table 1 Strategic Radial Approaches Select Link Flow

6.3 Step 3: Examine Integration with Proposed Public Transport Network

Proposals for a revised bus network were examined with consideration of the demand patterns for trips (see Appendix C Galway City Public Transport Network). The proposed bus network routes are shown in Figure 6-4 along with the identified strategic radial approaches.

In order for the Park & Ride to be as attractive as possible, it is preferable for it to be well integrated with the public transport network. The level of integration depends the frequency of the service connections and the number of potential destinations served by the bus network. It is an aspiration of the strategy that all 5 routes will operate at a 15-minute frequency or better during the peak period. Based on existing demand, the red and green routes are likely to operate at a 10 minute frequency or better.

Figure 6-4 shows that the Bearna/Rahoon and Baile Chláir corridors integrate with a number of the proposed routes including both the red and green routes. The Moycullen and Headford corridors can potentially connect with one route each, the yellow and blue respectively. The Dublin corridor integrates with two routes including the green route.

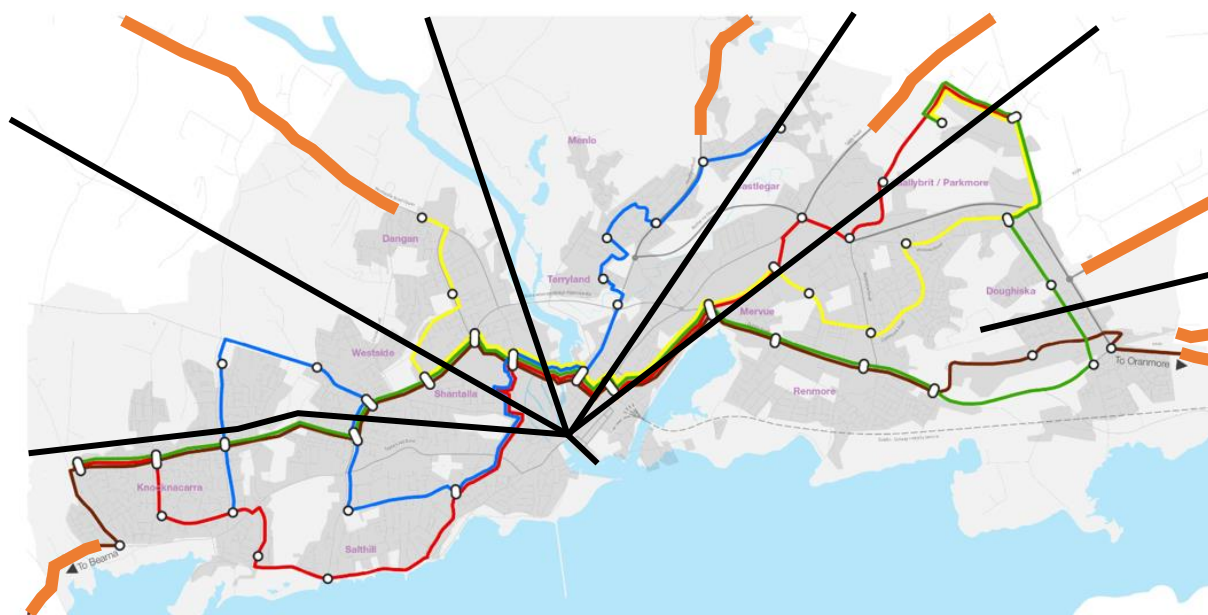


Figure 6-4 Galway City Proposed Bus Network Routes and Strategic Radial Corridors

6.4 Step 4: Identify which Corridors Meet Park & Ride Criteria

Before specific locations are identified for potential Park & Ride sites, the corridors are checked against the evaluation criteria as shown in the table below.

| Essential | Evaluation Criteria | 1 Bearn / 2 Rahoon | 3 Moycullen | 4 Headford | 5 Baile Chláir | 6 Dublin Road |
|--------------------------|---|--------------------|------------------|------------------|------------------|------------------|
| Demand | Potential to Generate Sufficient Demand | ✓ | ✓ | ✓ | ✓✓ | ✓✓ |
| Location | Locations at the edge of built up areas | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Locate close to key radial routes | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Locate away from residential areas | TBC ² | TBC ² | TBC ² | ✓ | TBC ² |
| | Uncongested access and egress | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Sufficient land availability | TBC ² | TBC ² | TBC ² | TBC ² | TBC ² |
| | Does not degrade access for other modes | TBC ² | TBC ² | TBC ² | TBC ² | TBC ² |
| | Distance from destination potentially supportive of P&R | ✓ | x | x | ✓ | ✓ |
| | | | | | | |
| Public Transport Service | Complementary to the planned public transport network | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Available capacity on service | ✓ | ✓ | ✓ | ✓ | ✓ |
| | Supported by high frequency public transport service | ✓✓✓ | ✓ | ✓ | ✓✓✓ | ✓✓ |
| | Public transport journey time (including wait time) to be reasonably competitive with the equivalent journey by car | ✓ | x | x | ✓ | ✓ |
| | Does not conflict with objectives of public transport service such as walking and cycling to and from services | ✓ | ✓ | ✓ | ✓ | TBC ² |

The Bearn/Rahoon, Baile Chláir and Dublin Road corridors best meet the evaluation criteria.

The Moycullen and Headford road meet some of the criteria and would be better suited to smaller scale local Park and Ride. The distance between the urban fringe and key destinations is shortest for these two corridors which will reduce the attractiveness of Park & Ride. These corridors connect with fewer of the proposed bus network routes and they do not integrate with either the red or green routes which are likely to be of higher frequency. When wait time, journey time and transfer penalty are taken into account, and the possibility of offering attractive Park & Ride services that are competitive with the equivalent journey by car is more limited on the Headford and Moycullen corridors.

² TBC: To be confirmed / depending on precise Park and Ride location

6.5 Potential Site Location

On the basis of the previous steps and considering the criteria for successful Park & Ride, Figure 6-5 illustrates areas for further investigation to determine potential Park & Ride locations. Three areas have been identified associate with the following corridors:

- M6;
- N17; and
- Western Distributor Road / R336 Bearna Road

These locations have been brought forward to the modelling assessment (see Galway Strategy Modelling and Appraisal Report).

In addition to the above, there is potential for small scale local Park and Ride along the Moycullen and Headford corridors.

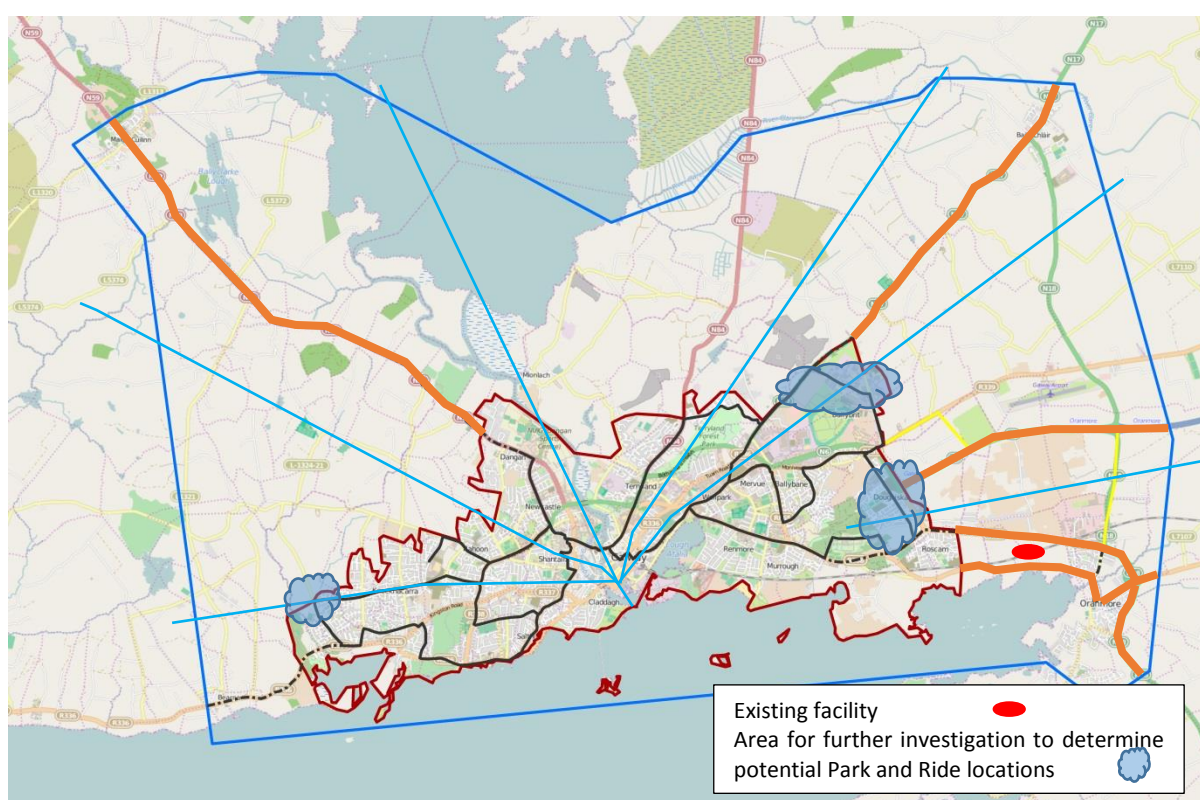


Figure 6-5 Strategic Radial Approach Roads for Each Corridor

6.6 Site Identification Criteria & Environmental Considerations

An environmental assessment has been undertaken on the proposals contained in this report. For details of the environmental constraints and associated mitigation measures developed, please refer to Chapter 9 of the GTS Technical Report.

Suitable sites for Park & Ride facilities will be developed within the existing road corridor and boundary where possible, or on existing brownfield sites in the first instance. Where this is not possible, greenfield sites will be explored. Any site investigation will require consideration of potential environmental impacts.

7 Recommended Park & Ride Policy for the Galway Transport Strategy

An essential prerequisite of Park & Ride provision is that such facilities improve public transport accessibility without unduly worsening road congestion, or increasing the total distance travelled by car within the study area. This means that Park & Ride should be located in areas where the road network has the capacity to absorb the impact of car traffic and should not be located where they might encourage people who would otherwise access public transport locally, to drive further to access a site.

Park & Ride shall complement the primary objectives of the public transport mode associated with it, i.e. to directly serve the transport needs of the trips within its walking and cycling catchment.

The future role of Park & Ride in Galway is expected to:

- Maximise the demand potential and public transport ridership throughout the public transport network;
- Promote access to public transport for pedestrians and cyclists as well as motor vehicles;
- Provide easy interchange for route to route transfers and overall public transport system optimisation at appropriate locations without worsening road congestion, or increasing car travel distance;
- Minimise the cost to public agencies and promote the use of joint use facilities;
- Implement suitable charging / control structures for Park & Ride facilities to make it more likely that those who most need the service (i.e. those outside walking distance and where alternative public transport options are not available), will obtain parking; and
- Link communities to regional transport network.