Draft Transport Strategy for the Greater Dublin Area

Park and Ride Report

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TP Technical Advisory Services Framework

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Author: Colm O'Dea
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Jacobs Engineering Ireland Limited

Merrion House
Merrion Road
D4 Dublin
 Ireland
T +353 1 269 5666
F +353 1 269 5497
www.jacobs.com

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Contents

Executive Summary

This report was commissioned by the National Transport Authority to examine the role of Park and Ride in the Greater Dublin Area Transport Strategy up to the year 2035. The purpose of this report was to review Park and Ride policies and best practices locally and internationally to provide recommendations for Park and Ride within the Greater Dublin Area. The information obtained was used to identify suitable areas for new Park and Ride facilities or the expansion of existing facilities within the GDA.

Research was conducted using previous GDA studies and Case Study analysis for successful Park and Ride facilities in 7 metropolitan cities. Engagement with Local Authorities and Transport Operators was also undertaken to collect planning and policy information relating to future Park and Ride locations. The 2035 Transport Strategy for the GDA was consulted to identify future public transport schemes that were included in the development of recommended locations.

Following a review of these research methods, a recommendation for Park and Ride Policy was established for the Greater Dublin Area. It was found that Park and Ride in the GDA must be divided into two facility categories, rail based and bus based. These are then divided further by usage category, strategic or local. Strategic facilities generally refer to those located on the outskirts of urban areas before congestion commences. Local sites are located closer to the origin of the trip, intercepting cars at the beginning of their journeys. It was established that rail is usually the most practical mode for strategic sites whereas local sites could be supported through a combination of modes.

The recommended facilities were obtained using 4 phases of identification. Phase 1 included developing an inclusive Park and Ride site list using existing locations, potential locations identified through stakeholder engagement and potential locations identified through public transport network expansion. Phase 2 involved the evaluation of the road network characteristics and constraints. Using a Saturn Model, the growth in Queued Flow and Demand Flow was estimated from 2011 to 2023 during the AM peak hours within a Do Nothing Scenario. This showed significant increases within the M50, on the M50 and on the corridors towards the M50. Phase 3 comprised of a demand modelling evaluation, using a spreadsheet-based logit model. This model compared the cost of travelling via each Park and Ride site to carrying out the whole journey by car. Phase 4 combined the identified sites into a refined list, eliminating the various locations that came out as unsuitable in Phase 2 and 3. The refined list was analysed against specific criteria. The specific criteria were established for Rail Strategic, Rail Local and Bus Strategic facilities. The criteria were categorised into Demand, Location, Public Transport Service and Policy. The recommended sites meet at least 2/3rds of these criteria.

From this evaluation, a refined list of 18 proposed locations has been established for further consideration. The 10 suggested sites for new Park and Ride facilities are included in Table 1.1. Prospective expansions of 8 existing facilities include the Park and Ride locations summarised in Table 1.2.

Strategic	Local
- Charlestown - Cherrywood M50/M11/N11 - Lucan - Lucan West - N2 - Swords North - Woodbrook/Bray	- Ballymun North - Cherrywood - Swords South

Table 1.1 : Recommended locations for new Park and Ride facilities

Strategic	Local
• Carrickmines	• Balbriggan
• Greystones	• Malahide
• M3 Parkway	• Maynooth
• Red Cow	• Rush and Lusk

Table 1.2 : Recommended upgrades to Existing Park and Ride facilities

These recommended locations should be considered closely as they have been identified as key areas with high demand and a strong likelihood for success. Park and Ride at these locations would provide increased opportunity to shift away from single occupancy vehicles to the public transport network. This is in keeping with the Greater Dublin Area Strategy, as growth within the city centre must be accommodated through modes other than the car.
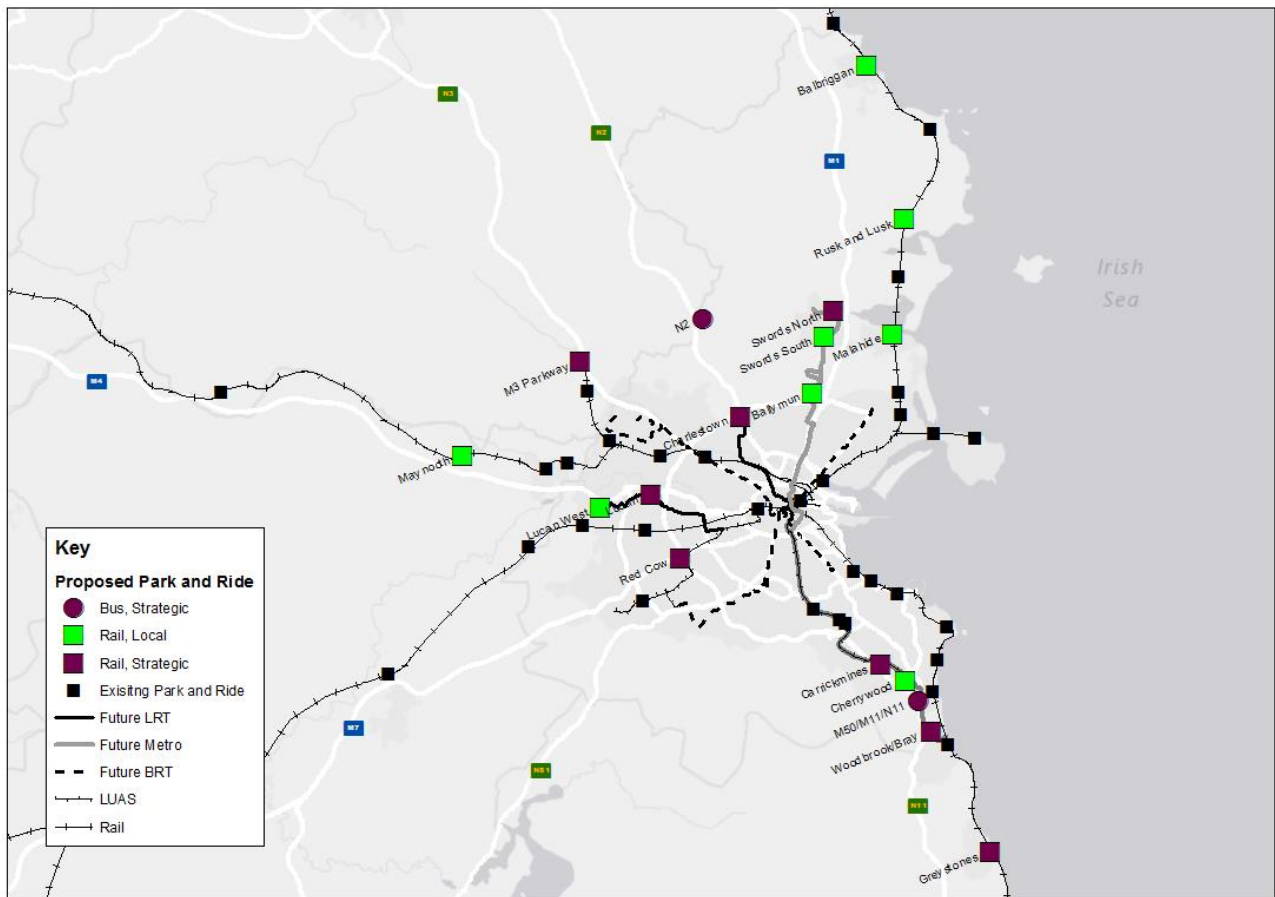

Figure 1-1: Existing and Identified Rail and Bus Based Park and Ride Sites

1. Introduction

1.1 Overview

The National Transport Authority (NTA) is preparing a new transport strategy for the Greater Dublin Area (GDA) which will consider the future of the transport system in the GDA for the period up to year 2035. As a means towards informing the direction of the new strategy the NTA has defined eight Study Areas to be assessed for this review in order to understand more fully the 2035 travel demand coming from the Study Areas into Dublin City Centre, and the public transport services that will be required to effectively meet that demand. To complement these studies, the NTA has also commissioned assessments regarding Park and Ride and Demand Management.

Jacobs Engineering Ireland (Jacobs) and SYSTRA provide consultancy services to the NTA through a Public Transport Technical Advisory Services Framework. By this means Jacobs and SYSTRA were commissioned by the NTA to undertake a desktop transport assessment of Park and Ride and Demand Management Policy within the GDA.

This report focuses on Park and Ride.

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 and Ride facilities;
- Discuss and record any current proposals for new Park and Ride facilities or modifications to existing Park and Ride facilities with relevant stakeholders;
- Develop recommendations on suitable best practices and policies for the GDA;
- Identification of possible areas within the GDA where new Park and Ride facilities may be suitable;
- Identification of existing facilities that may be suitable for expansion; and
- Recommendation of Park and Ride policy to be included in Transport Strategy.

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

- The report does not take account of or review the financial viability of any new or existing facilities;
- Data has been sourced from the relevant stakeholders (where available). Confirmation and verification of this data has not been carried out; and
- The report does not consider or assess informal parking and its requirements.

1.3 Structure of the Report

The report is structured as follows:

- Section 2 is a discussion of the integration of Park and Ride within the overall GDA strategy;
- Section 3 recommends Park and Ride policy for the GDA based on the results from case study analysis given in Appendix A and Appendix B;
- Section 4 recommends Park and Ride assessment criteria;
- Section 5 is a discussion of existing park and ride facilities and capacity;
- Section 6 is a summary of stakeholder engagement;
- Section 7 is a discussion of future transport schemes being considered as part of the future GDA Transport strategy;
- Section 8-9 provides detail regarding site selection and criteria and ends with proposed Park and Ride locations;
- Appendix A details Park and Ride policy and best practises. This includes a local and international assessment as well as previous studies conducted within the GDA; and
- Appendix B performs case studies of 7 cities with successful Park and Ride programmes.

2. Integration of Park and Ride within the GDA Strategy

Park and Ride, as identified in the Greater Dublin Area Strategy, serves to provide increased opportunity for transfer to the public transport network. The facilities are meant to help encourage a mode shift away from single occupancy vehicle, and toward rail, light rail, BRT or bus.

The road network within the Greater Dublin Area is constrained in such a way, that growth in demand to the city centre over the life of the GDA strategy must be accommodated through modes other than the car.

Park and Ride can be both formal and informal and can be considered an intermodal transfer facility. They can serve an important role in a transport network as they provide opportunity for transfer between the single occupancy vehicle to other modes of travel. Park and Ride can also support transfer with other modes such as bicycle, pedestrian, and carpool. Park and Ride facilities can successfully encourage a mode shift away from the single occupancy vehicle if properly integrated into a comprehensive transport network. Based on research undertaken by Colin Buchannan 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, Park and 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 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 and Ride as a component of the GDA strategy is a 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 or bus transfer. Park and Ride can strengthen the public transport system and support a more robust public transport network if implemented without compromising access for other modes of travel.

The Park and Ride strategy has been developed to complement and enhance the schemes that have developed as part of the GDA Transport Strategy. A constrained road network, an increase of parking costs within the city centre, and an increase in tolling on the motorways will significantly increase the costs of driving to the City Centre in the future. Increased public transport services, coupled with projects that enhance access to the public transport network will successfully cater for the increased demand that is generated by the growing population and economy. Park and Ride is a component of these improvements that are necessary to remove trips from the constrained road network.

The following is a summary of the GDA strategy and a description of how the Park and Ride Strategy relates.

- **Swiftway BRT -** Three BRT routes have been studied for possible future implementation. Shown in the figure below are Clongriffin to Tallaght, Blanchardstown to University College Dublin. There was also a Swords/Airport to City Centre alignment proposed. This option has not been mapped because of the overlap between this and Metro North. There is a possibility that this will be implemented as an interim measure between the existing and the future Metro North scheme. There are no Park and Ride locations identified based on the implementation of future BRT. This is based on results from demand forecasting exercises that indicate that capacity on BRT will be full on these services.

- **Metro North –** Proposed from Swords to the City Centre and could also connect to Metro South. There are three Park and Ride locations based on the provision of this service. A strategic location at the Northern Terminus would attract demand from the M1. Additionally there are two local Park and Rid sites identified, one in Swords, and one in Ballymun. These would attract demand locally and from immediately adjacent communities.

- **Metro South –** Proposed to follow the existing Luas alignment with the possibility of a Bray extension and connection to the DART. Three Park and Ride locations have been identified to complement the Metro South service; Carrickmines which will draw demand from the N11/M11, Cherrywood which will serve future demand from the Cherrywood SDZ, and Bray which will serve growth in the Bray area. Although the Bray location may be able to attract demand, further study will be required for site identification and traffic impact analysis.

- **Luas West –** This is proposed to intersect with the Luas Red Line at the Blackhorse station and extend west to Lucan. There are two Park and Ride locations identified to complement this service. Precise locations have not been identified for either and further study would be required for traffic impact analysis. One strategic location that could be in the vicinity of the Liffey Valley Shopping Centre, directly off of the N4. A second local park and ride facility would be located off of the R120.

- **Finglas Luas –** This proposed line will extend the current Luas from Broombridge north to Charlestown. This service is anticipated to operate with spare capacity in 2035. A strategic Park and Ride facility has been identified along the North Road, Charlestown, to complement this future service.

- **Core Bus Network –** The proposed core bus network comprises of the major radial bus routes into Dublin City Centre. The proposed upgrades involve the provision of full bus lane priority in both directions along all the radial routes inside the M50. There are three locations that would complement the Core Bus Network. However further study would be required to determine the viability of bespoke bus services related to these locations. This would be on the N2 possibly in Navan, on the N7 possibly at Brown's Barn or Garter's Lane Gap, and at the M50/M11/N11 interchange. Any consideration of bespoke bus services for park and ride would have to be assessed against the primary purpose of the core bus network and the safeguarding of capacity for scheduled services serving local catchments along these routes and any additional demand associated with interchange between services or between modes, for trips made across the wider network.

- **Demand Management Measures**:

  - Encourage land use policies which support the provision of new development in locations and at densities which enable the efficient provision of public transport services;

  - Seek the application of maximum parking standards for all new developments, with the level of parking provision applied being based on the level of public transport accessibility;

  - Reductions in the availability of workplace parking in urban areas where appropriate public transport is available;

  - Introduce demand management measures, to address congestion issues, on the M50 and radial national routes to maintain necessary capacities to fulfil their strategic functions;

  - Implement on-street parking controls and charging to reduce commuter parking, contributing to a great parking turnover for non-commuting purposes;

  - Introduction of parking charges at out-of-town retail centres to reduce congestion potential; and

  - Facilitate the expansion of workplace travel plans for large employers, travel planning information for residential areas, travel plans for education campuses and car club schemes and car sharing.

Implementation of these demand management measures will increase the costs (including time) associated with travelling by car and consequently makes public transport more attractive. Park and Ride facilities provide the infrastructure that will help support the transition from car to public transport.

3. Recommended Park and Ride Policy for the Greater Dublin Area Strategy 2035

3.1 Best Practice Policy in GDA Context

Drawing on the best practice guidance and the findings of case study review, relevant policy has been distilled for the development and assessment of a Park and Ride strategy for the Greater Dublin Area. The recommended policy is as follows.

An essential prerequisite of Park and 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 GDA. This means that Park and 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, thus adding to the GDA congestion.

Park and Ride within the Greater Dublin Area shall complement the primary objectives of the Public Transport mode that it supports. In the case of rail services this is to cater for demand within the local walking catchment (about 1 km) of each station, the local cycling catchment, demand arising from interchange with bus, and where appropriate, demand arising from interchange with Park and Ride if location and available capacity merit this.

The primary objective of bus services is to cater for demand from within local walking catchment (about 500 metres) of each stop and also interchange between bus or rail services. In certain limited instances, park and ride may be considered, where location, service type and available capacity merit this.

The future role of Park and Ride in the GDA is expected to:

- Maximize the demand potential and public transport ridership throughout the public transport network;

- Promote access to public transport for pedestrian and cycling as well as motor vehicles;

- Provide easy interchange for route to route transfers and overall public transport system optimization at appropriate locations without worsening road congestion, or increasing car travel distance;

- Minimize the cost to public agencies and promote the use of joint use facilities;

- Implement suitable charging structures for Park and 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.

Park and Ride facilities in the GDA can be divided into two facility types, rail based, and bus based. They can further be identified by usage category - strategic, and local.

Local 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 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 also located on the main orbital route to the city and close to strategic radial routes prior to congestion commencing. 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 abstraction from existing public transport services. The strategic category is based on location of the service, rather than the scale of demand. An example of such sites would be the Red Cow Luas Park and Ride.

Analysis of the likely catchments (new and existing) along with the public transport capacity available to accommodate park and ride-related demand suggests that rail is generally the most feasible mode to support strategic park and ride. This general conclusion is driven largely by:

- the likely distances involved from peripheral sites, for which rail is likely to offer the only attractive onward journey time, comparable to private car even when the interchange and waiting time penalties are considered;

- the need for a consistent and reliable public transport component, which is challenging in the circumstances posed by many of Dublin's radial road corridors, and therefore bus-based park and ride may be ineffectual;

- in the case of dedicated shuttle bus links, the potential policy conflict that may arise with the provision of improved scheduled bus services, associated with the allocation of scarce available road capacity, even where QBCs exists; and

- Limited capacity on existing bus services, particularly faced with significant growth in demand on many corridors, whereas some rail routes may be capable of accommodating park and ride traffic within existing (or planned future) capacity.

Of course this is only a general rule, and there may well be circumstances where either rail is not available or where the apparent disadvantages of bus-based Park and Ride for longer journeys can be mitigated or overcome.

In the case of both strategic and local Park and Ride, the key quality features that will attract car users must not be compromised, namely:

- Journey speed (including minimizing wait times through high frequencies);

- Journey reliability;

- Journey quality (in-vehicle experience, waiting facilities at both ends of the route, Wi-Fi, etc);

- Site location (conveniently close to a strong traffic flow which is adversely impacted by congestion); and

- Adequate information provision, marketing and signage.

3.2 Rail Based Park and Ride Policy for the GDA

The primary objective is to consider the GDA rail network as a basis for Park and Ride facility locations, aiming to expand and enhance rail based Park and Ride facilities within the GDA. The following list outlines the rail based Park and Ride Policy developed for the GDA.

- The GDA rail network in general, operates at a high frequency during the peak hours. Park and Ride facilities at key strategic and local locations can expand the rail catchment and attract new public transport users. Consider Park and Ride Facilities at rail stations with high frequency service;

- Existing rail stations generally offer good links to the pedestrian, cycle and bus networks. Provision of Park and Ride facilities must not compromise this access;

- Rail based Park and Ride should be considered in locations where there is available capacity on the public transport service and where it will not absorb capacity which would otherwise be available to public transport users linking from other modes, including those within walking catchment;

- Optimize the rail station facilities to act as an intermodal transfer facility between the single occupant vehicle and rail;

- Without compromising service or access for other users, attract car users by ensuring that the key quality features are present at proposed Park and Ride sites: competitive journey time, journey reliability, journey quality, convenient location, and adequate information provision; and

- Identify rail services and stations where there will be available capacity. Consider the provision of Park and Ride facilities where users are not sufficiently able to access the station through walking, cycling, or bus interchange, and where the primary objectives of the public transport service will not be compromised by increasing motor vehicle access.

Strategic Rail based Park and Ride Policy

- These locations should:

  - intercept trips before they enter the congested urban area;

  - have easy access to/from key radial routes without impacting congestion on local road networks;

  - comply with and complement local area objectives and complement the primary objectives of the rail service; and

  - have adequate available capacity to accommodate the additional demand without displacing public transport users accessing the station by other modes of travel.

- Park and Ride facility identification should be followed by a systematic evaluation process analysing the critical aspects of the public transport service provided, the location of the site in relation to the public transport and Roadway network, and the success of the site as reflected by parking demand.

Local Rail based Park and Ride Policy

- These locations should:

  - intercept trips close to the journey origin;

  - not be located along a key radial route or a main access route;

  - comply with and complement local objectives and the primary objectives of the public transport service;

  - not cause congestion on the local road network or impact station access for other modes of travel such as walking, cycling or bus;

  - have adequate available capacity to accommodate the additional demand without displacing public transport users accessing the station by other modes of travel; and

- Park and Ride facility identification should be followed by a systematic evaluation process analysing the critical aspects of the public transport service provided, the location of the site in relation to the public transport and Roadway network, and the success of the site as reflected by parking demand.

3.3   Bus Based Park and Ride Policy for the GDA

Bus based Park and Ride has limited applicability in the GDA due to journey times, available capacity on bus services, frequency of service, land use patterns and organizational/financial hurdles. For this reason, only a policy for strategic bus based Park and Ride is recommended. Park and Ride needs a consistent and reliable public transport service, which is challenging in the circumstances posed by many of Dublin radial road corridors, and therefore bus-based park and ride may be ineffectual. Service types that must be in place to justify consideration of a bus based park and ride include a Bus Rapid Transit Service (BRT), or a frequent express service along a route with a dedicated bus lane. Care is required, as the demand attracted to a bus based Park and Ride could impact the aim of the service, if for example the demand at the Park and Ride takes up all capacity on the service, which is intended to provide capacity for communities along the corridor. If dedicated bus services are provided for the Park and Ride facilities, again care must be taken if these shuttle services could impact, or be impacted by existing bus services.

Strategic Bus based Park and Ride Policy

- These locations should:

    - intercept trips before they enter the congested urban area;

    - have easy access to/from key radial routes without impacting congestion on local road networks;

    - comply with and complement local area objectives and complement the primary objectives of the bus service;

    - have adequate available capacity to accommodate the additional demand without displacing public transport users accessing the bus services by other modes of travel;

- Park and Ride facility identification should be followed by a systematic evaluation process analysing the critical aspects of the public transport service provided, the location of the site in relation to the public transport and road network, and the success of the site as reflected by parking demand. Bus service frequency and journey time as compared with a motor vehicle trip are important factors which often limit the viability of bus based facilities; and

- Attract car users by ensuring that the key quality features are present at recommended Park and Ride sites: competitive journey time, journey time reliability, journey quality (i.e. in-vehicle experience and waiting facilities), convenient location, and adequate information provision such as marketing and signage.

4. Recommended Park and Ride Criteria for the GDA 2035

4.1 Review of Case Study Park and Ride Criteria

Appendix A and Appendix B review 7 Case Studies and Park and Ride Policy Best Practice in a number of metropolitan areas. From this analysis, criteria to identify locations for Park and Ride improvements have been developed. In general, it has been found that cities with successful Park and Ride facilities have implemented almost all of the following elements listed in Table 4-1 below. This has been developed to highlight packages of criteria that were used successfully within each of the representative Case Studies. It is clear that implementing the majority of these items is required for a successful programme. However some exceptions can be seen.

For example, Scotland and Auckland which have placed Park and Ride within urban areas and not just on the periphery. They have been affected by not being able to provide all day high frequencies and competitive journey times with car for a number of their sites. Where they have been successful they have focused on longer distance journeys from towns outside the main urban area where land has been available to create large sites such as at Fort Road Bridge.

The ability to implement city centre parking and congestion strategies does not appear in all strategies. However it does appear as key criteria for success as it is applied in three very successful case study cities, Stockholm, Portland and Perth. Whilst Stockholm has a congestion charge, Perth and Portland have been able to increase city centre parking charges to a high level.

Notable within the table is which criteria were met by all Case Study Cities. All cities located Park and Ride where there was sufficient demand. Convenient access to main roads was provided in all cities. All 7 of the Case Study Cities provided Park and Ride at locations with competitive journey times to the car. All cities located the sites outside of radial route congestion and at locations with unconstrained access and egress. Lastly, Park and Ride sites in the successful Case Study cities complemented the existing public transport network.

Criteria for Success	Generate sufficient demand	PT journey time to be competitive with car journey time	Location at the edge of built up areas	Locate close to key radial routes	Located outside Radial Route Congestion	Located on or near main access routes	Uncongested access and egress.	Located away from residential areas	High frequency PT service	High quality PT service	Free capacity on PT service	Connected to the existing PT services	Sufficient land availability	Strong priority measures in place for PT service	Complementary to existing PT network	Consideration of fare boundaries	Consider multi-purpose locations	Adequate Parking policy at facility and target destination
City																		
Stockholm	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Adelaide	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	
Scotland	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓			✓		✓	
Auckland	✓	✓		✓	✓	✓	✓			✓	✓	✓			✓	✓	✓	
Portland	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Vancouver	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Perth	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
Proposed Criteria for Dublin	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Table 4-1 : Criteria Analysis for Case Study Cities

4.2   Criteria for Park and Ride Assessment

Moving forward to the Park and Ride recommendations for the GDA Transport Strategy, the criteria detailed in Table 4-2,

Table 4-3 and Table 4-4 were used to identify and evaluate rail and bus based Park and Ride locations. Implementation of these criteria has been proven to have the most influence on delivering a successful Park and Ride programme. The recommended sites meet at least 2/3rds of the criteria.

Policy Mode		Evaluation Criteria
RAIL STRATEGIC	Demand	Generate Sufficient Demand
	Location	Locations at the edge of built up areas.
		Locate close to key radial routes.
		Locate away from residential areas.
		Locate on or near main access routes.
		Uncongested access and egress.
		Sufficient land availability.
		Does not degrade rail access for other modes
	Public Transport Service	Complementary to existing public transport network
		High frequency public transport service.
		High quality in-service experience and waiting facilities.
		Available capacity on public transport service.
		Connected to the existing public transport services.
		Public Transport journey time to be competitive with the equivalent journey taken by car, to certain destinations such as the City Centre.
		Does not conflict with objectives of public transport service such as walking and cycling to and from services.
	Policy	Consideration of fare boundaries.
		Adequate Parking-policy at facility and destination. This could include parking fees or regulations limiting supply within the City Centre.

Table 4-2: Rail Based Strategic Assessment Criteria

Policy Mode		Evaluation Criteria
RAIL LOCAL	Demand	Generate Sufficient Demand
	Location	Located close to journey origin
		Uncongested access and egress
		Sufficient land availability.
		Does not degrade rail access for other modes
	Public Transport Service	Complementary to existing rail network
		High frequency rail service.
		High quality rail service.
		Available capacity on rail service.
		Rail journey time to be competitive with car journey time.
		Does not conflict with objectives of rail service.
	Policy	Consideration of fare boundaries.
		Strong priority measures in place for public transport service.
		Adequate Parking policy at facility and destination.

Table 4-3: Rail Based Local Assessment Criteria

Policy Mode		Evaluation Criteria
BUS STRATEGIC	Demand	Generate Sufficient Demand
	Location	Locations at the edge of built up areas.
		Uncongested access and egress.
		Sufficient land availability.
		Does not degrade public transport access for other modes
	Public Transport Service	Complementary to existing public transport network
		High frequency public transport services BRT or Express Bus with dedicated Bus Lane.
		High quality in-service experience and waiting facilities.
		Available capacity on public transport service.
		Public Transport journey time competitive with the journey taken by car, to certain destinations such as the City Centre.
		Does not conflict with objectives of public transport service such as walking and cycling to and from services.
		Does not degrade public transport access for other modes.
	Policy	Consideration of fare boundaries.
		Strong priority measures in place for public transport service.
		Adequate Parking-policy at facility and destination. This could include parking fees/regulations limiting supply in the City Centre.

Table 4-4: Bus Based Strategic Assessment Criteria

5. Existing Park and Ride Facilities

5.1 Overview of the existing facilities

The existing Park and Ride facilities within the GDA have been compiled and are illustrated in Figure 5.1. The site data has been gathered from the freely available information and also through discussions with the relevant service providers and/or local authority. There are a total of 10,886 spaces at Park and Ride sites throughout the GDA. The majority of these sites are rail based. There are 4 Park and Ride lots along the Luas Green Line, and two Park and Ride lots on the Luas Red Line – a total capacity of 2200 vehicles. The remaining sites are located at rail stations. The largest site is at the M3 Parkway station with a capacity of 1200 vehicles. There is also a large Park and Ride Facility at the Red Cow Luas station, with a capacity of 727 vehicles. The M3 parkway Park and Ride is located immediately after a motorway toll which significantly impacts on its attractiveness due to cost required to be paid on motorway that keeps people in their cars. The strategic importance of this facility would significantly increase if the toll location was altered. Table 6.1 : Irish Rail Park and Ride Facilities still outstanding details the existing Park and Ride facilities in relation to public transport mode, location category, Park and Ride category (strategic/rail), capacity, usage and the service frequency during the peak hours.
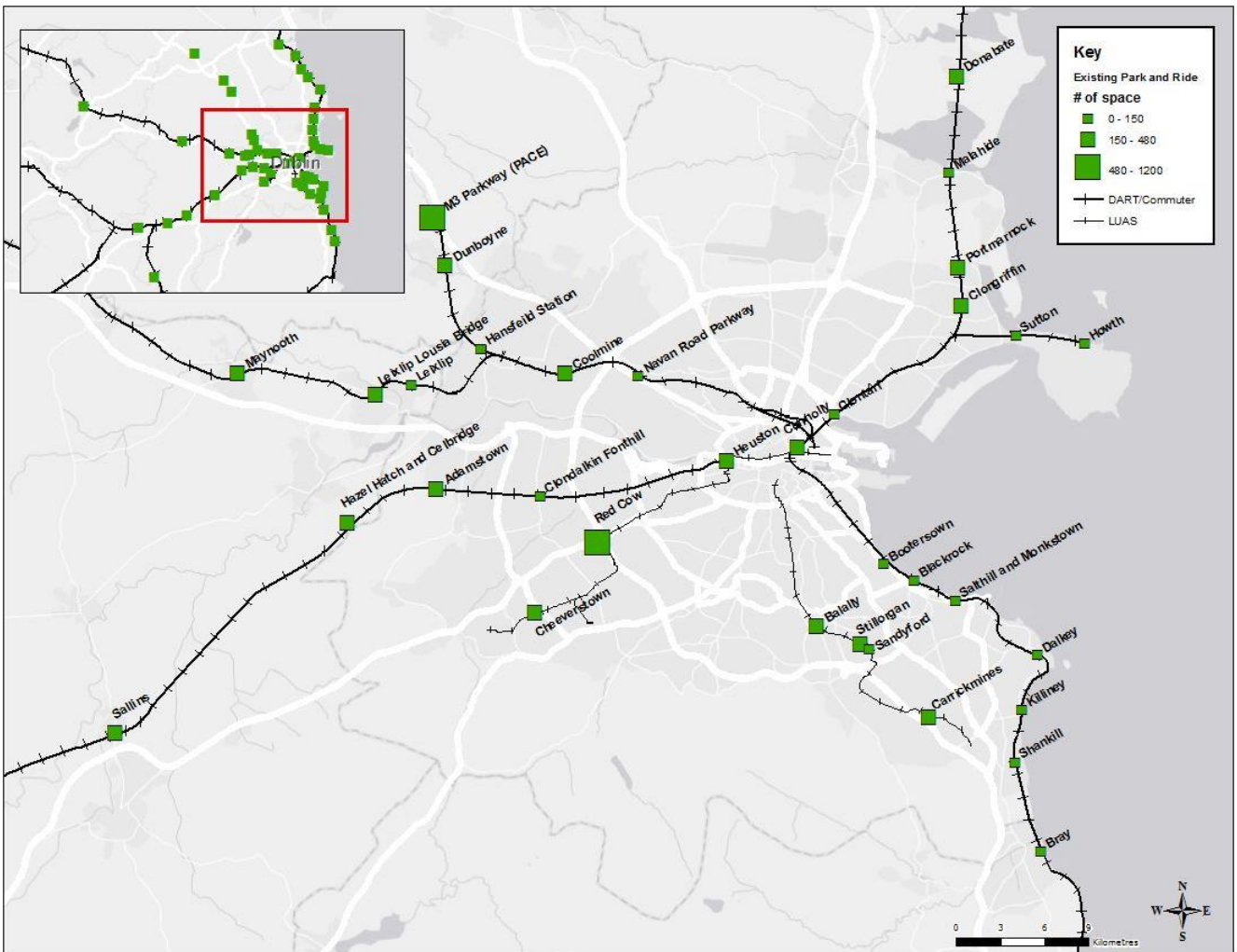

Figure 5.1 : Existing Park and Ride Locations

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Location	Rail/Bus	Mode	Location Category	P&R Category (Strategic / Local)	2015 P&R Capacity	Trains Per Peak Hour
Adamstown	Rail	Train	UL	Local	200	7
Athy	Rail	Train	RL	Local	90	4
Balally	Rail	Luas	UL	Local	421	4
Balbriggan	Rail	Train	RL	Local	99	7
Blackrock	Rail	DART/Bus	UL	Local	70	18
Bootersown	Rail	DART	UL	Local	130	18
Bray	Rail	DART/Train	RL	Local	100	16
Carrickmines	Rail	Luas	PS	Strategic	352	15
Cheeverstown	Rail	Luas	UL	Strategic	312	6
Clondalkin Fonthill	Rail	Train	UL	Local	150	6
Clongriffin	Rail	DART/Train	UL	Local	400	7
Clontarf	Rail	DART	UL	Local	117	15
Coolmine	Rail	Train	UL	Local	170	11
Connolly	Rail	Train/DART	UL	Local	460	
Dalkey	Rail	DART	UL	Local	70	15
Donabate	Rail	Train	UL	Local	210	9
Drogheda	Rail	Train	RL	Local	300	10
Dunboyne	Rail	Train	RL	Local	300	7
Enfeild	Rail	Train	RL	Strategic	120	4
Gormanston	Rail	Train	RL	Local	137	6
Greystones	Rail	DART/Train	RL	Strategic	400	10
Hansfeild Station	Rail	Train	UL	Local	60	7
Heuston	Rail	Train/Luas	UL	Local	480	
Hazel Hatch and Celbridge	Rail	Train	RL	Local	400	9
Howth	Rail	DART	UL	Local	10	9
Kilcoole	Rail	Train	RL	Local	15	2
Kildare	Rail	Train	RL	Local	260	10
Killiney	Rail	DART	UL	Local	4	13
Laytown	Rail	Train	RL	Local	23	6
Leixlip	Rail	Train	RL	Local	40	8
Leixlip Louisa Bridge	Rail	Train	PS	Local	270	8
M3 Parkway (PACE)	Rail	Train	PS	Strategic	1200	7
Malahide	Rail	DART/Train	UL	Local	130	14
Maynooth	Rail	Train	RL	Local	180	11
Monasterevin	Rail	Train	RL	Local	43	4
Mullingar	Rail	Train	RL	Local	60	4
Navan Road Parkway	Rail	Train	PS	Local	103	10
Newbridge	Rail	Train	RL	Local	253	9
Portmarnock	Rail	DART/Train	UL	Local	278	12
Red Cow	Rail	Luas	PS	Strategic	727	20
Rusk and Lusk	Rail	Train	RL	Local	260	8
Sallins	Rail	Train	RL	Local	260	11
Salthill and Monkstown	Rail	DART	UL	Local	100	15
Sandyford	Rail	Luas	UL	Local	47	20
Shankill	Rail	DART	UL	Local	100	14
Silver Tankard	Bus	Bus	RL	Local	20	
Skerries	Rail	Train	RL	Local	200	9
Stillorgan	Rail	Luas	UL	Local	341	20
Sutton	Rail	Train	UL	Local	120	9
Garlow Cros	Bus	Bus	RL	Local	25	
Ross Cross	Bus	Bus	RL	Local		

Table 5.1 : Details of Existing Park and Ride Locations

6. Stakeholder Engagement: Summary of Discussions Regarding Possible Future Park and Ride

Planning and policy information relating to possible future Park and Ride locations has been collected from the GDA Local Authorities and Transport Operators as described in the following section and Section A.5.

Stakeholder engagement was undertaken with the following local authorities/bodies:
- Dublin City Council;
- Fingal County Council;
- South Dublin County Council;
- Dun-Laoghaire Rathdown County Council;
- Meath County Council;
- Kildare County Council;
- Wicklow County Council;
- Rail Procurement Agency; and
- Irish Rail.

The outcome of this engagement highlighted that no stakeholders are considering or requesting the implementation of Express Bus services in conjunction with the proposed Park and Ride facilities.

6.1   Dublin City Council (DCC)

Dublin City is regarded as the urban centre of the GDA and therefore Park and Ride facilities would not be an appropriate strategy within the DCC area. There are no plans for the provision of any new facilities or modifications to existing facilities within the DCC area. DCC noted that they would support the provision of appropriate Park and Ride facilities that would lead to better management of the traffic and congestion into the DCC area.

6.2   Fingal County Council (FCC)

FCC noted that they have no current plans for the implementation of any new Park and Ride facilities or modifications to existing facilities. They highlighted that a number of previous proposed facilities had been shelved as part of the Metro North scheme. This included Lissenhall, Fosterstown and Metro Park. They also noted that a planned facility at Clongriffin Train Station had not been completed as the development associated with the station had stalled. Lastly, FCC noted that in the past Blanchardstown Shopping Centre car park has been used by people to access the bus service to the city centre. During holiday periods, such as Christmas, this had led to issues with commuter parking competing with retail parking. This had eased in the recent times due to the downturn in the economy, but it would be expected to re-emerge upon a return to growth.

6.3   South Dublin County Council (SDCC)

SDCC indicated that they are not aware of any proposals for new Park and Ride facilities or modifications to existing facilities. They noted that sites at the Lucan Spa Hotel area and the Kingswood area had previously been considered, but due to the lack of competitive onward travel times by the available public transport services the sites were no longer considered. SDCC noted that some ad hoc Park and Ride had been witnessed in the Templeogue and Rathfarnham areas, but once pay and display was introduced this stopped. Nevertheless the behaviour indicated that a Park and Ride site might be feasible at these locations since a demand had been noted. Lastly, similar to Blanchardstown Shopping Centre, SDCC noted that ad hoc Park and Ride has been witnessed in the Liffey Valley Shopping Centre car park adjacent to the bus stop facilities.

6.4   Dun Laoghaire-Rathdown County Council (DLRC)

DLRC noted that they are not aware of any proposals for new Park and Ride facilities or modifications to any existing facilities.

6.5 Meath County Council (MCC)

MCC are not aware of any current plans for new Park and Ride facilities or modifications to any existing facilities. MCC noted that to date Park and Ride facilities have been provided in a more reactive manner than strategic: i.e. where ad hoc Park and Ride had been noted Park and Ride facilities had been provided to improve safety. MCC noted that a strategic facility had been due to be constructed on the Navan inner relief road but this never came to fruition. MCC also noted that they were in the very early stages of a proposal for a new bus station for the Navan area. They would expect that a Park and Ride facility would form a part of this proposal if it is to be taken forward.

6.6 Kildare County Council (KCC)

KCC indicated they would not be able to respond to Park and Ride queries in their area. Therefore any information on future proposals for Park and Ride facilities within the KCC area was not obtained for this report.

6.7 Wicklow County Council (WCC)

WCC noted that Wexford Bus have sought planning permission for the construction of a 78 space Park and Ride facility at junction 20 of the N11. Permission was granted but it is currently being reviewed by An Bord Pleanala. WCC noted that a study which includes parking is currently being carried out on Bray Train Station. They are still waiting for the outcome of this report. WCC also noted that the existing Greystones Train Station P&R is approaching capacity. WCC are considering in carrying out a review to increase the provision at the station. Lastly, they noted that a transport interchange was intended at Rathnew. This was to be associated with future development but as this development has yet to occur, the facility has not been put in place.

6.8 The Railway Procurement Agency (RPA)

The RPA noted that the existing Park and Ride facility at Carrickmines is a temporary facility for which planning permission expires in October 2016 and the lease agreement with the land owner expires in November 2016. The RPA intends to seek an extension to the planning permission for the temporary facility and has entered negotiations with the land owner with a view to extending the lease. RPA also intends to seek planning permission for a permanent 350 spaces Park and Ride site at this location with a view to constructing it in 2018/2019. The RPA do not note any other plans for new facilities or alterations to existing facilities on the current Luas network.

6.9 Irish Rail (IR)

IR noted that up on till 2011 they had been engaged in a programme to upgrade a number of Park and Ride facilities on the rail network. This ceased as capital investment was no longer available. Since that time no further assessment has been made by IR on the needs for Park and Ride improvements. IR noted that the remainder of the works which were not completed in 2011 may give the best indication of what IR might consider implementing if and when the opportunity arises. Table 6.1 below lists works identified by IR that were still to be completed as part of their previous capital investment programme within the GDA area

Station	Upgrades Description
Maynooth	Upgrade upside & new car park 38 spaces on downside – planning granted by An Bord Pleanala 12 July 2011
Bray	100 space extension & re-configuration of existing car park
Skerries	Small 50 space extension
Sallins and Naas	100 space extension upside
Balbriggan	Small 60 space car park extension

Table 6.1 : Irish Rail Park and Ride Facilities still outstanding

6.10 Locations of Planned Park and Ride

A total of 21 sites were identified by the stakeholders above as desirable Park and Ride sites. These sites are generally earmarked as sites with good potential or awaiting financial approval. A few of these sites have been approved through the planning stage. The sites are identified by location, public transport mode, relevant authority and category type. Table 6.2 lists the location of these sites with a map of the sites on the following page, Figure 6.1.

Authority	Location	Public Transport Mode	Public Transport Service
FCC	Lissenhall	Bus Future Metro	Dublin Bus 33, 33A, 33B, 33N, 33X, 41N. Future Metro North
FCC	Fosterstown	Bus Future Metro	Dublin Bus 33, 33A, 33B, 33N, 33X, 41N. Future Metro North
FCC	Blanchardstown Shopping Centre	Bus Future BRT	Dublin Bus: 17A, 37, 39, 39A, 76A, 220, 236, 238, 239, 270 Blanchardstown Centre Bus terminus
SDCC	Templeogue	Bus	Dublin Bus 54A, 65, 150
SDCC	Rathfarnham	Bus	Dublin Bus15B, 16, 16C, 17
SDCC	Liffey Valley Shopping Centre	Bus	Dublin Bus 40
SDCC	Clondalkin Village	Bus	Dublin Bus 13, 51D, 69
SDCC	Walkinstown Roundabout	Bus	Dublin Bus: 9, 27, 56A, 77A, 77X,
SDCC	Garters Lane LAP	Bus Future LRT	Luas City West, Dublin Bus 69
SDCC	Lucan N4	Bus	Dublin Bus 25X, 66, 66A, 66B, 66X, 67, 67X
SDCC	N7 Brown's Barn	Bus	Bus Eireann 126, 130
MCC	Navan Inner Relief Road	Bus	Bus Eireann 109, 109A
MCC	Navan Rail/Bus Station	Bus	Bus Eireann 109, 109A
Wicklow	N11 Junction 20	Bus	Bus Eireann 740
Wicklow	Greystones Station	Train	Train
Wicklow	Rathnew	Bus	Bus Eireann 133
Irish Rail	Maynooth	Train	Train
Irish Rail	Bray Station	Train	Train
Irish Rail	Skerries	Train	Train
Irish Rail	Sallins & Naas	Train	Train
Irish Rail	Balbriggan	Train	Train

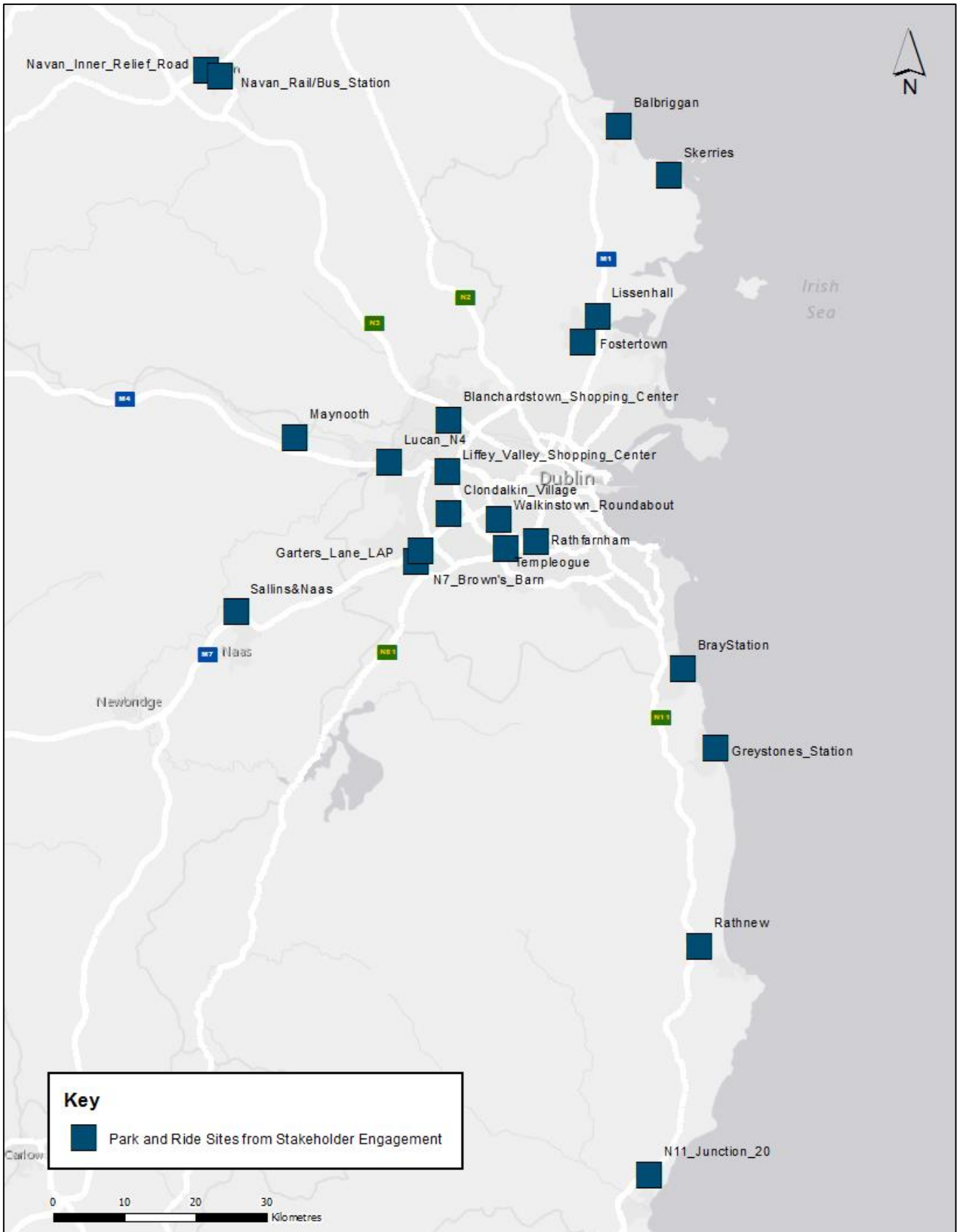**Table 6.2 : P&R Locations Identified through Stakeholder Outreach**

Figure 6.1 : Park and Ride Facilities Identified Through Stakeholder Outreach

7. Future Transport Schemes – 2035 Strategy Transport Network

As the 2035 public transport strategy for the GDA evolves, a number of public transport schemes are being evaluated. It is recommended that Park and Ride facilities are included in the early phases of project development and modelling. This will ensure that public transport facility catchment and intermodal effectiveness is maximised, as is its connectivity to the existing road network and public transport network.

Future Rail and BRT public transport network expansion for consideration in the 2035 GDA Transport Strategy are as follows:

- Swiftway BRT: Three BRT routes have been studied for possible future implementation. Shown in the figure below are Clongriffin to Tallaght, Blanchardstown to University College Dublin. There was also a Swords/Airport to City Centre alignment proposed. This option has not been mapped because of the overlap between this and Metro North. Based demand and capacity forecasts show that these services are operating at or over capacity in the future year. For this reason, park and ride is not proposed based on these services;

- Metro North –Proposed from Swords to the City Centre and could also connect to Metro southeast. This service will operate with spare capacity in 2035 as a metro service.

- Metro South – Proposed to follow the existing Luas alignment with the possibility of a Bray extension and connection to the DART. This service will operate with spare capacity in 2035;

- Outer Orbital Bus Scheme – This proposal would incorporate bus services between 5 and 10 minute frequencies from Donaghmede to Blanchardstown, Blanchardstown to Tallaght, Tallaght to Dundrum, and Dundrum to Dun Laoghaire. This service will operate with spare capacity in 2035;

- Luas West – This is proposed to intersect with the Luas Red Line at the Blackhorse station and extend west to Lucan. This service will operate with spare capacity in 2035;

- Finglas Luas – This proposal will extend the Luas from the current northern terminus at Broombridge north to Charlestown. This service will operate with spare capacity in 2035; and

- Core Bus Network – The proposed core bus network comprises of the major radial bus routes into Dublin City Centre. The proposed upgrades involve the provision of full bus lane priority in both directions along all the radial routes inside the M50.
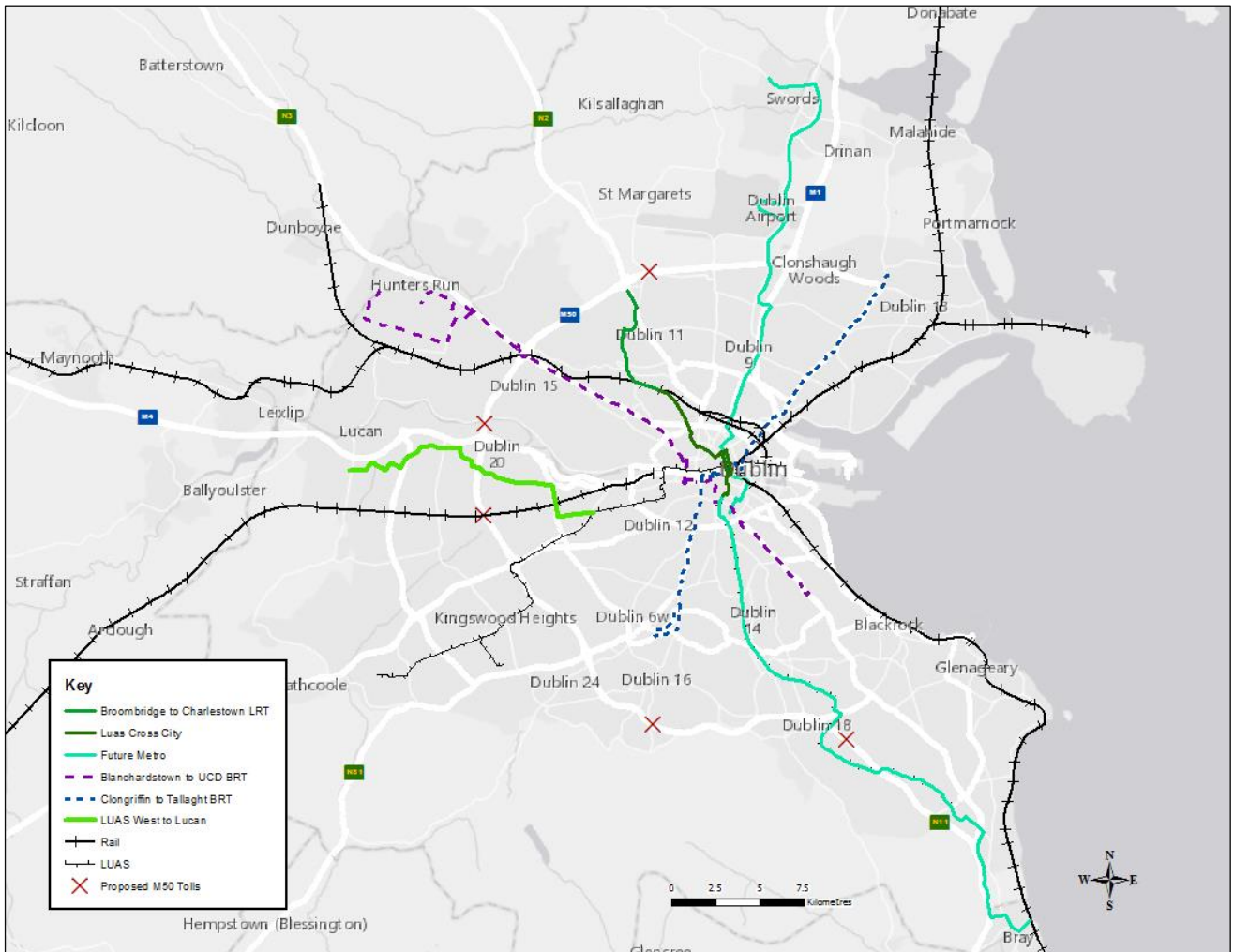
Figure 7.1 : Public Transport Network Expansion

8. Facility Identification

The initial phases of Park and Ride facility identification for the GDA 2035 Transport Strategy was inclusive of a wide range of possible sites. The sites were then narrowed based on, demand modelling, road network congestion and constraints, and lastly, the selection criteria identified in Section 4. This section describes

- Phase 1: the development of Park and Ride site list;
- Phase 2 : Forecasting locations of peak hour delay/congestion on the road network;
- Phase 3: Park and Ride demand modelling for existing and future scenarios; and
- Phase 4: Evaluating the remaining sites against the GDA Criteria for Park and Ride Assessment.

8.1   Phase 1: Development of Inclusive Park and Ride Site List

The initial phase of Park and Ride facility identification included the locations from the following sources:

1. Existing rail and bus based Park and Ride sites as described in Section 5. These sites were included to evaluate if public transport access and demand could be increased if facilities were expanded or enhanced.
2. Potential rail and bus based Park and Ride identified by local authorities and relevant stakeholders as detailed in Section 6. These are sites that stakeholders have identified as having potential to be successful based on the local knowledge of travel patterns, congestion and public transport level of service.
3. Potential rail and bus based Park and Ride sites identified because of their relationship with Public Transport Network Expansion under consideration in the GDA 2035 Transport Strategy, as described in Section 7.

The map in Figure 8.1 shows the location of all the sites included in the initial phase of evaluation.
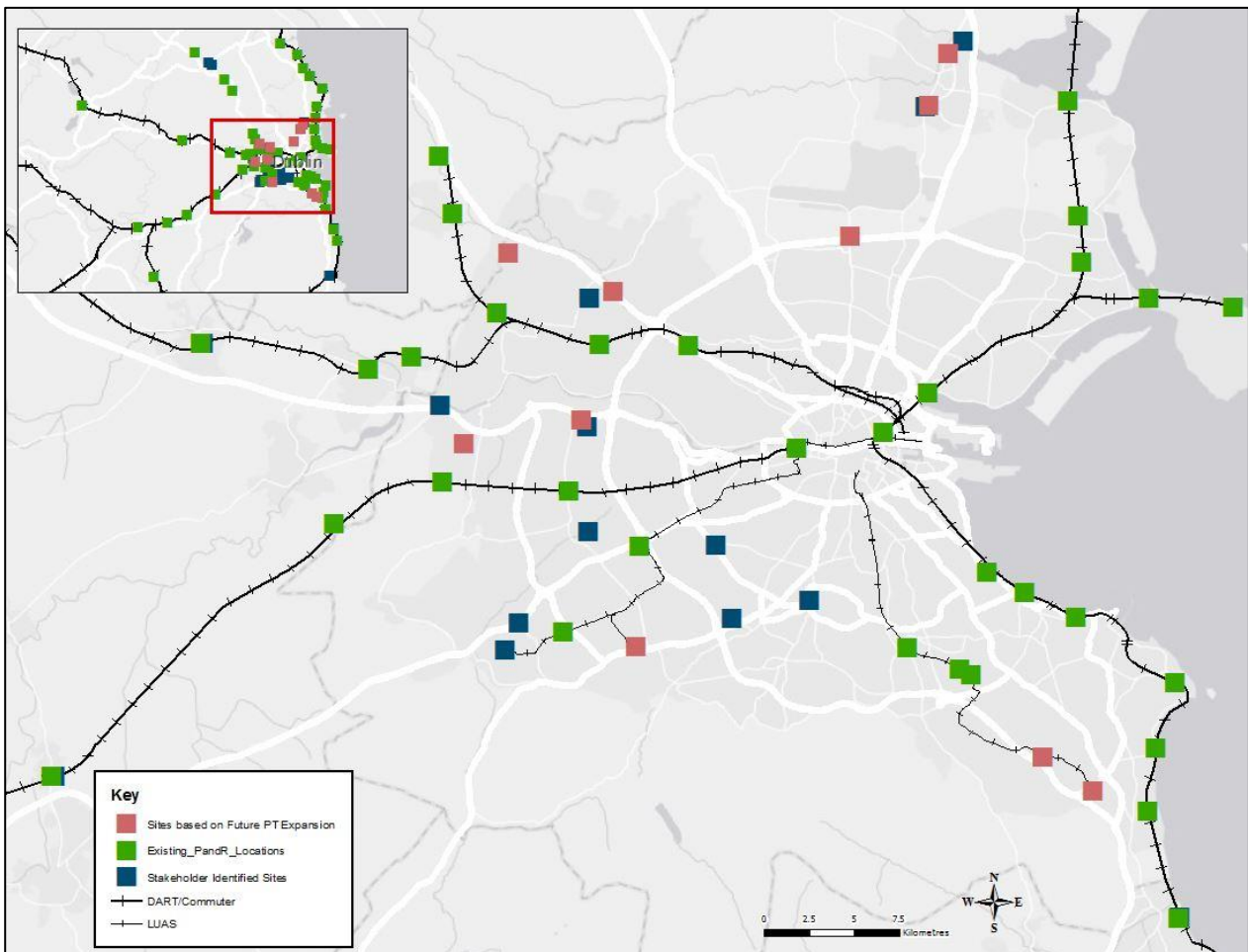
Figure 8.1 : All Phase 1 P&R Sites

8.2   Phase 2: Evaluation of Road Network Characteristics and Constraints

Figure 8.2 shows the changes in queued flow from 2011 to 2023 during the AM peak that occurs within a Do Nothing Scenario. It also shows the location of all evaluated Park and Ride sites in relation to the road network segments projected to have significant congestion. Queued flow is defined as the difference between the traffic demand and the actual traffic flow able to pass through a junction. The green bandwidths represent the varying increases in delay. The thicker the bandwidth the greater the increase in delay is. Figure 8.2 shows the model forecasts minor queued flow increases within the M50 and significant growth in queued flow on the M50 and on the corridors towards the M50; in particular the M7, M3 and M1. Specifically:

- from North Donabate onto the M1 towards the M50;

- from Ashbourne onto the M2 towards the M50;

- from Naas onto the N7 towards the M50; and

- from North Blessington onto the N81 towards the M50.

The *Criteria for Park and Ride Assessment* suggests that strategic Park and Ride sites be located at the edge of congested radial routes. Journey time for public transport often only becomes competitive if trips are intercepted before congested road segments, on which vehicles travel at low speeds due to traffic volumes exceeding the roadway capacity. Figure 8.2 highlights the Park and Ride locations that are under consideration in relation to the additional queued flow outputs from the Saturn Model. The figure shows that all locations inside the M50 would not be successful because of congestion on the M50 and the radial routes approaching the M50. Figure 8.2 also highlights that Park and Ride on the M1, N3, N4, M11 could be successful. These locations could facilitate significant journey time reductions if rail based services, or bus based services with significant priority could be provided.
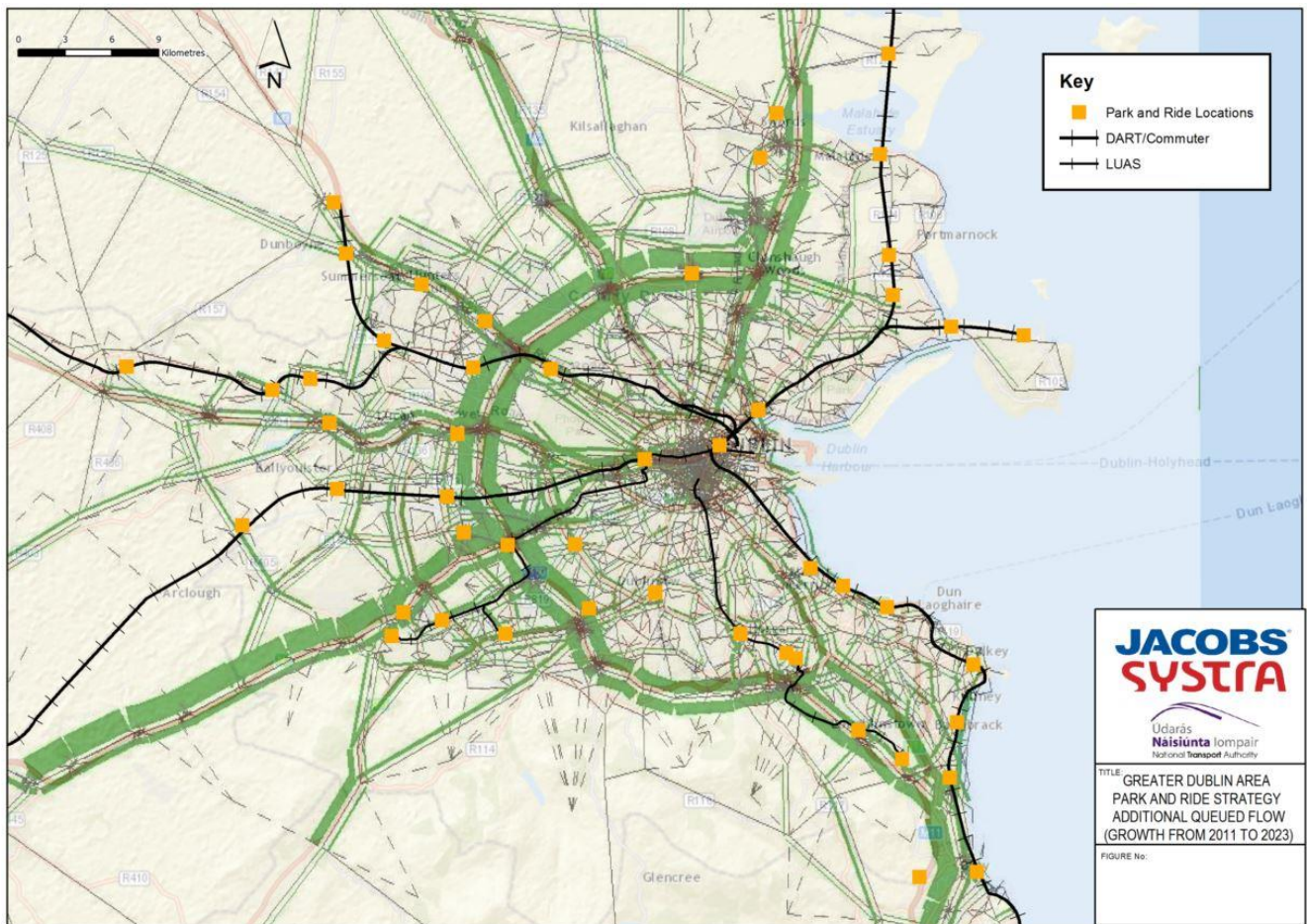
Figure 8.2 : Park and Ride Strategy – Additional Queued Flow

Figure 8.3 illustrates the growth in Demand Flow from 2011 to 2023 during the AM peak that occurs within the Do Nothing Scenario. The Demand Flow is the total traffic flow that wishes to travel along a link during a period. The largest traffic flow increases are experienced on the M50 and the arterial routes towards the city centre particularly on the M7, M4, M3, M2 and M1.

Park and Ride Assessment Criteria also suggest that facility locations should be in areas where sufficient demand can be generated and where sufficient capacity exists, over and above that required to meet demand arising from non-park and ride users. The identified locations can generate sufficient demand as an attractive alternative to use of congested arterial routes, particularly in the cases of the M1, N3, and M11.
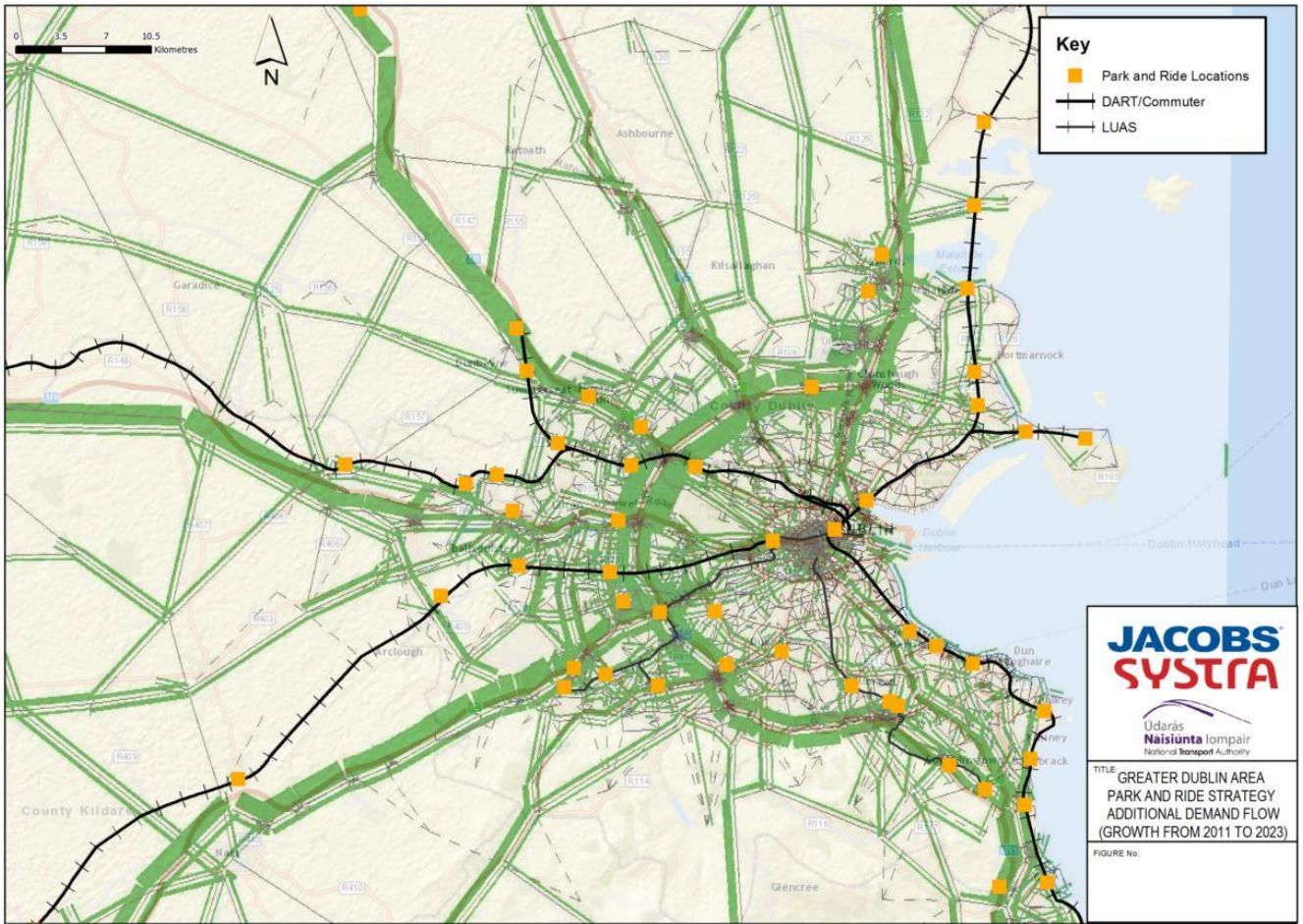
Figure 8.3 : Park and Ride Strategy – Additional Demand Flow

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8.3   Sites Not Carried Beyond Initial Evaluation

Table 8.1 outlines the identified sites which were not brought forward past initial evaluation in this study. These sites include those identified through stakeholder engagement and the existing Park and Ride facilities that are not recommended for upgrade. Each site is annotated with an explanation for their exclusion in the higher levels of this assessment.

Location	Justification for Exclusion
Adamstown	Existing facility is adequate, lack of demand for additional spaces.
Athy	Removed due to presence inside a town centre.
Balally	Removed due to presence within the M50. Additional spaces could increase congestion in the local area.
Blackrock	Removed due to presence within the M50. Additional spaces could increase congestion in the local area.
Blanchardstown East	Removed due to lack of available capacity on the proposed BRT route.
Blanchardstown West Little Pace	Removed due to lack of available capacity on the proposed BRT route.
Booterstown	Removed due to presence within the M50. Additional spaces could increase congestion in the local area.
Cheeverstown	Removed due to presence within the M50. Additional spaces could increase congestion in the local area.
Clondalkin Fonthill	Removed due to presence within the M50 and lack of demand due to proximity to Clondalkin Village Park and Ride site.
Clondalkin Village	Removed due to its equal proximity of 1.5km (approx.) to both the Red Cow 727 space facility and Clondalkin Fonthill 150 space Park and Ride facility. The potential also exists to attract commuters and consequent congestion away from these facilities and into Clondalkin Village, a largely residential area with some narrow one way streets.
Clongriffin	Removed due to presence within the M50 and potential to cause unnecessary congestion within area.
Clontarf	Removed due to presence within the M50 and potential to cause unnecessary congestion within area.
Connolly	Removed due to presence within city centre.
Coolmine	Removed due to lack of available capacity on the proposed BRT route.
Dalkey	Removed due to presence within the M50/M11 and potential to cause unnecessary congestion within area.
Donabate	Would conflict with local objectives and access for other modes.
Drogheda	Existing facility is adequate, lack of demand for additional spaces.
Dunboyne	Removed primarily due to close proximity to M3 Parkway Park and Ride. Existing Dunboyne facility is also adequate for the level of demand.
Enfield	Removed due to existence of other Park and Ride facilities closer to Dublin along the same corridor.
Garlow Cross	Removed due to proximity of other Park and Ride facilities such as Navan Parkway.
Garters Lane	Removed due to existence of other Park and Ride facilities closer to Dublin along the same corridor, particularly the Red Cow facility.
Gormanstown	Existing facility is adequate, lack of demand for additional spaces.
Hansfield Station	Existing facility is adequate, lack of demand for additional spaces.
Hazel Hatch/Celbridge	Existing facility is adequate, lack of demand for additional spaces.
Heuston	Removed due to presence within City Centre.
Howth	Would conflict with local objectives and access for other modes.
Kilcoole	Removed due to existence of other Park and Ride facilities closer to Dublin along the same corridor, particularly Greystones.
Kildare	Existing facility is adequate, lack of demand for additional spaces.
Killiney	Removed due to presence within the M50/M11 and conflicts local objectives and access for other modes.
Laytown	Removed due to existence of other Park and Ride facilities closer to Dublin along the same corridor.
Leixlip	Removed due to existence of other Park and Ride facilities closer to Dublin along the same corridor.
Leixlip Louisa Bridge	Removed due to existence of other Park and Ride facilities closer to Dublin along the same corridor.
Monasterevin	Removed due to existence of other Park and Ride facilities closer to Dublin along the same corridor.
Mullingar	Removed due to presence inside a town centre with existence of other facilities closer to Dublin along the same corridor.

Location	Justification for Exclusion
N11 Junction 20	Removed due to its distance from Dublin, existence of other Park and Ride facilities closer to Dublin along the same corridor and low level of transit service in the area.
N7 Brown's Barn	There is a facility possibly warranted on the N7, it has not been identified whether there is sufficient demand to justify additional bus services or whether this specific location will be optimal.
Navan Inner Relief Road	Removed due to existence of other Park and Ride facilities closer to Dublin along the same corridor, particularly the M3 Parkway facility.
Navan Parkway	Removed due to its presence inside the M50 circle, proximity to central areas of Dublin and potential to entice commuters to drive as close as possible to Dublin City if introduced. The lower levels of flow and demand from within the M50 identified in Saturn modelling and higher levels along and outside the M50 will warrant a higher focus of Park and Ride Facilities outside the M50.
Navan Rail/Bus Station	Removed due to existence of other Park and Ride facilities closer to Dublin along the same corridor, particularly the M3 Parkway facility.
Newbridge	Removed due to existence of other Park and Ride facilities closer to Dublin along the same corridor.
Portmarnock	Removed due to existence of other Park and Ride facilities closer to Dublin along the same corridor.
Rathfarnham	Removed due to its presence inside the M50, proximity to central areas of Dublin and potential to entice commuters to drive as close as possible to Dublin City if introduced. The lower levels of flow and demand from within the M50 identified in Saturn modelling and higher levels along and outside the M50 will warrant a higher focus of Park and Ride Facilities outside the M50.
Rathnew	Removed due to its distance from Dublin, existence of other Park and Ride facilities closer to Dublin along the same corridor and low level of transit service in the area.
Ross Cross	Removed due to distance from Dublin and existence of other facilities closer to Dublin with better transit services.
Sallins	Removed due to existence of other Park and Ride facilities closer to Dublin along the same corridor.
Salthill and Monkstown	Removed due to existence of other Park and Ride facilities closer to Dublin along the same corridor.
Sandyford	Removed due to presence within the M50 circle.
Shankill	Removed due to existence of other Park and Ride facilities closer to Dublin along the same corridor.
Silver Tankard	Removed due to existence of other Park and Ride facilities closer to Dublin along the same corridor.
Skerries	Removed due to existence of other Park and Ride facilities closer to Dublin along the same corridor, particularly Malahide.
Stillorgan	Removed due to presence within the M50.
Tallaght	Removed due to the ability of the Cheeverstown Park and Ride site to sufficiently accommodate strategic Park and Ride from both the N81 and potentially the N7. Tallaght has sufficient bus access to generate demand through the walking, cycling and bus catchments.
Templeogue	Removed due to its presence inside the M50, proximity to central areas of Dublin and potential to entice commuters to drive as close as possible to Dublin City if introduced. The lower levels of flow and demand from within the M50 identified in Saturn modelling and higher levels along and outside the M50 will warrant a higher focus of Park and Ride Facilities outside the M50.
Walkinstown Roundabout	Removed due to its presence inside the M50, proximity to central areas of Dublin and potential to entice commuters to drive as close as possible to Dublin City if introduced. The lower levels of flow and demand from within the M50 identified in Saturn modelling and higher levels along and outside the M50 will warrant a higher focus of Park and Ride Facilities outside the M50.

Table 8.1 : Sites Excluded Beyond Initial Evaluation

8.4   Phase 3: Park and Ride Demand Modelling Evaluation

The Park and Ride model is a spreadsheet-based logit model. The model examines the cost of travelling via each Park and Ride site compared to making the whole journey by car. The cost of travel via each Park and Ride site is calculated as the cost to travel by car from the trip's origin zone to the Park and Ride zone, plus the cost to travel by public transport from the Park and Ride zone to the trip's destination zone. An interchange penalty is added to represent the time taken to park the car and walk to the public transport stop.

The logit model is hierarchical as there is a choice between car and Park and Ride and then a further choice between individual sites. The choice between the individual sites is calculated first, to give the proportion of Park and Ride users which go via each site. This also allows the calculation of a "composite" cost via any Park and Ride site. The second choice function then works out the proportion of all trips which are made by Park and Ride by comparing the cost of car with the composite cost from the first choice model. The number of trips made via an individual Park and Ride site can then be worked out by multiplying the demand by the proportion from both choice models. All calculations are done separately for every combination of origin and destination zone.

In order to reduce the number of calculations, catchment areas are used to remove trips which are unlikely to use a particular site. Each Park and Ride site has an origin catchment and a destination catchment. Only trips which start in the origin catchment and end in the destination catchment will be considered for that site. Where a trip falls within the catchment of multiple sites then that trip will still get a choice between those sites.

The modelling exercise indicates that throughout the GDA in the 2035 "Do Nothing" Scenario we could expect to attract in the order of 12,000 public transport trips through the provision of Park and Ride. The current supply of Park and Ride is 10,886, leaving a park and ride facility gap of just over 1000 spaces. Demand generated inside the M50 has been removed from consideration in this calculation due to the primary goal of encouraging public transport within the M50.

Figure 8.4 shows the general location of demand potential with an overlay of the Park and Ride sites under consideration.

Also included is the list of existing and proposed locations, with an estimate of future demand based on the above described logit model in Table 8.2. This is a conservative estimate of the demand. With the addition of the demand management elements of the "Do Strategy" Scenario the costs associated with driving into the city centre will increase and demand for Park and Ride could increase.

Table 8.2 outlines the potential of each site depending on the modelled demand and initial or estimated capacity levels. Sites with greater demand levels than capacity are looked in further detail as potential Park and Ride locations.

Many of these sites are placed inside the M50, an area that is generally avoided within this study. Existing sites such as Shankill, Salthill and Monkstown, Balally, Booterstown, Blackrock, Clontarf and Clongriffin demonstrate higher demand numbers than capacity levels. Since they are located well within the M50, they should not be considered for Park and Ride if a modal shift from walking or cycling was to arise.

Some of these locations that show large demand levels should not be ignored. In particular, the existing nearby Park and Ride sites at Stillorgan and Sandyford, show an accumulated demand of 804 and an implied occupancy level of 207 per cent. These sites are located inside the M50, just off Junction 14, with excellent links to the existing Luas line. The modelling exercise shows that trips coming from the M50 aim to get as close to the city centre as possible before using Park and Ride facilities. Due to their proximity to the M50, these sites are ideal for this and would generate sufficient demand. One or both of the existing facilities should be considered for future upgrade, provided they do not degrade active mode shares within the local area.

Table 8.2 shows a number of sites further away from Dublin with large demand levels. Specifically, the modelled demand for Silver Tankard is 161, much greater than the current 20 space capacity. The site is situated along the R147 with ample Greenfield space. It is currently served by the frequent 109 bus service from Cavan to Dublin City Centre daily. Silver Tankard Park and Ride has the greatest modelled demand along this corridor, which indicates its potential upgrade. Sites such as Monasterevin and Mullingar show high modelled demand levels but are difficult to justify for Park and Ride due to their distance from Dublin City Centre.

The proposed sites outlined in Section 8.5 all show high demand from this modelling exercise. Each site has more demand than there is capacity demonstrating their likelihood for success.
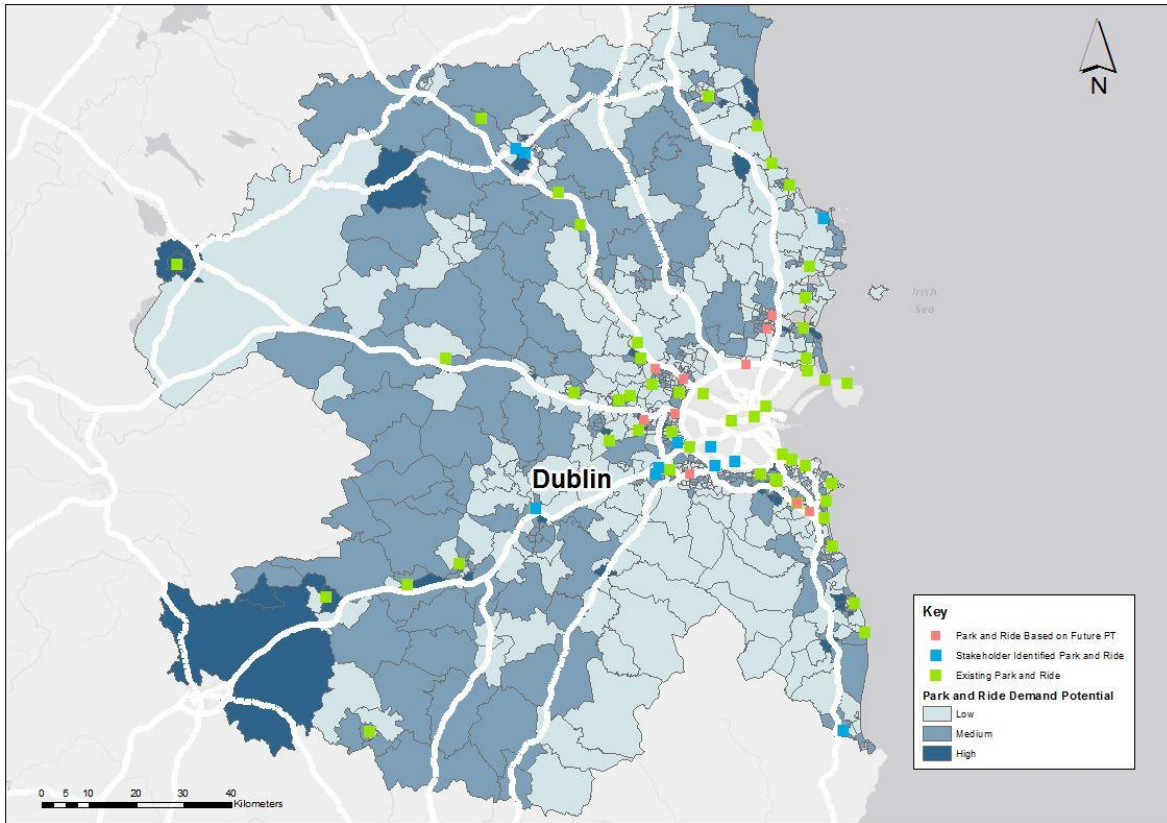
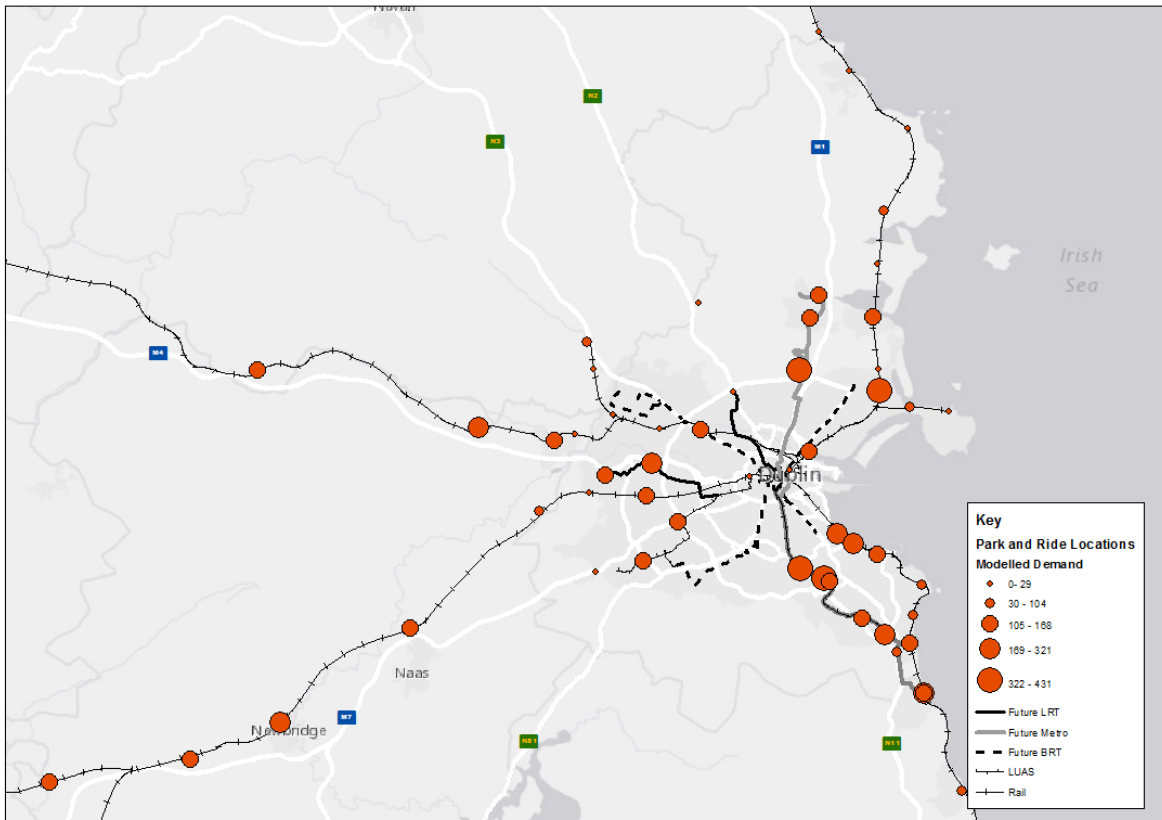Figure 8.4 : Park and Ride Demand Potential

Figure 8.5 : Modelled Demand for Park and Ride Sites

Location	Modelled Demand	Capacity	% Occupied	P&R Status	Surplus
Adamstown	35	200	18%	Existing	-165
Athy	88	90	98%	Existing	-2
Balally Park and Ride	749	421	178%	Existing	328
Blackrock	306	70	437%	Existing	236
Booterstown	392	130	301%	Existing	262
Cheeverston Park and Ride	121	312	39%	Existing	-191
Clondalkin Fonthill	128	150	85%	Existing	-22
Clongriffin Station	621	400	155%	Existing	221
Clontarf	181	117	155%	Existing	64
Coolmine	24	170	14%	Existing	-146
Connolly	881	460	192%	Existing	421
Dalkey Station	54	70	78%	Existing	-16
Donabate Station	45	210	22%	Existing	-165
Drogheda Station	65	300	22%	Existing	-235
Dunboyne Train Station	41	300	14%	Existing	-259
Enfield	155	120	130%	Existing	35
Gormanston	30	137	22%	Existing	-107
Hansfeild Station	23	60	39%	Existing	-37
Heuston	817	480	170%	Existing	337
Hazelhatch Station	93	400	23%	Existing	-307
Howth Station	22	10	217%	Existing	12
Kilcoole	36	15	241%	Existing	21
Kildare Train Station	136	260	52%	Existing	-124
Killiney Station	56	103	54%	Existing	-47
Laytown	30	23	131%	Existing	7
Leixlip	18	40	44%	Existing	-22
Leixlip Louisa Bridge	124	270	46%	Existing	-146
M3 Parkway	88	1200	7%	Existing	-1112
Monasterevin	151	43	352%	Existing	108
Mullingar	489	60	815%	Existing	429
Newbridge Train Station	251	253	99%	Existing	-2
Portmarnock Train	20	278	7%	Existing	-258
Red Cow Park and Ride	151	727	21%	Existing	-576
Sallins Train Station	140	260	54%	Existing	-120
Salthill and Monkstown	191	100	191%	Existing	91
Sandyford	151	47	321%	Existing	104
Shankill Station	162	100	162%	Existing	62
Silver Tankard P&R	161	20	805%	Existing	141
Skerries Train Station	8	200	4%	Existing	-192
Stillorgan Park and Ride	653	341	191%	Existing	312
Sutton Station	62	120	52%	Existing	-58
Garlow Cross	132	50	264%	Existing	82
Ross Cross	2	50	4%	Existing	-48
Swords North	168	100	168%	Proposed	68
Swords South	160	350	46%	Proposed	-190
Ballymun North	431	100	431%	Proposed	331
Blanchardstown Interchange (East)	423	100	423%	Proposed	323
Blanchardstown West (Little Pace)	251	100	251%	Proposed	151
Lucan Interchange (East No1)	319	100	319%	Proposed	219
Lucan (West)	152	100	152%	Proposed	52
Tallaght Interchange	276	100	276%	Proposed	176
Cherrywood Interchange	321	100	321%	Proposed	221
Bray West	74	100	74%	Proposed	-26
Carrickmines Park an Ride (Retain Existing)	141	100	141%	Upgraded	41
Navan	142	100	142%	Upgraded	42
Kilmoon (small)	35	100	35%	Upgraded	-65
Bray	183	100	183%	Upgraded	83
Malahide	141	100	141%	Upgraded	41
Rusk and Lusk	104	100	104%	Upgraded	4
Greystones	100	100	100%	Upgraded	0
Maynooth	282	100	282%	Upgraded	182
Balbriggan	29	100	29%	Upgraded	-71

Table 8.2 : Park and Ride Location Demand Modelling Results

8.5 Phase 4: Application of Evaluation Criteria to Identified Park and Ride Sites

A refined list of Park and Ride sites likely to be successful was developed based on modelled demand and relationship with the road network (phase 2 and 3 above). All locations inside the M50 were eliminated for consideration because of the results of road network constraints. All bus based Park and Ride proposals that are not related to future improvements relating the service quality and frequency were also eliminated.

In this section, these refined locations are evaluated against the criteria adopted in Section 4. This analysis produced a final recommendation for a Park and Ride programme for the GDA 2035 Transport Strategy.

Table 8.3 is a binary analysis of each identified Park and Ride strategic location in relation to the 18 Criteria of successful Park and Ride given in Section 4.2. The table outlines the results from a scoring analysis for both rail and bus based Park and Ride. The scoring system depends upon each location meeting the given criteria and assigning specific symbols to highlight this result. The green circles indicate locations which meet the criteria successfully; the orange circles show the locations which do not meet criteria entirely, while the red circles specify the locations that do not meet the criteria at all. In Table 8.3, there are four areas that are of significant importance highlighted in red text. It is recommended that the chosen locations must:

- generate sufficient demand;

- have uncongested access and egress;

- not degrade rail/public transport access for other modes; and

- not conflict with objectives of public transport services.

Meeting these specific criteria will allow for successful implementation of Park and Ride in each location. Table 8.3 demonstrates clearly that the chosen locations have scored highly in all of these areas.

The locations are then ranked based on their total score, demonstrating a strong likelihood of success. Table 8.3 shows that sites Swords North, Lucan and Carrickmines came out on top and also met the four highlighted criteria. Therefore these locations are highly recommended for further investigation.

Table 8.4 is similar to Table 8.3, applying a score to each location based on the criteria met and weighted by demand level. An equal weighting is applied across all criteria. Table 8.4 outlines the results for the local location assessment criteria adopted in Section 4.2 previously. The key criteria are highlighted in red text as with Table 8.3. It is suggested that the selected sites should:

- generate sufficient demand;

- not degrade rail access for other modes; and

- not conflict with objectives of rail service.

Table 8.4 shows that the chosen sites score well overall in these key criteria, suggesting the possible success of implementation of Park and Ride at these locations. The locations are given a ranking in the same way as in Table 8.3, with proposed sites Swords South, Ballymun North and Cherrywood placing the highest.

P&R Status	Park and Ride Site	PT Mode	Demand	Location							PT Service								Policy			Score
			Generate sufficient demand	Locations at the edge of built up areas	Locate close to key radial routes	Locate away from residential areas	Locate on or near main access routes	Uncongested access and egress	Sufficient land availability	Does not degrade rail/PT access for other modes	Complementary to existing PT network	High frequency PT service (Bus: BRT or Express Bus with dedicated Bus Lane)	High quality PT service	Available capacity on PT service	Connected to the existing PT services	PT/Rail journey time to be competitive with car journey time	Does not conflict with objectives of PT services	Does not degrade PT access for other modes	Consideration of fare boundaries	Strong priority measures in place for PT service	Adequate parking policy at facility and destination	
Strategic Rail — Proposed	Swords North	Metro North	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🔴	95%
	Charlestown	New Luas	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🔴	95%
	Lucan	New Luas	🟢	🔴	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🔴	89%
Strategic Rail — Upgraded	Woodbrook/Bray	Train/ DART/ Metro South	🟢	🟢	🟢	🟡	🟢	🟢	🟡	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🔴	88%
	Red Cow	Luas	🟢	🟢	🟢	🟢	🟢	🟢	🟡	🟢	🟢	🟢	🟢	🟢	🟢	🟡	🟢	🟢	🟢	🟢	🔴	84%
	M3 Parkway	Train	🟡	🟡	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟡	🟢	🟢	🟢	🟢	🔴	81%
	Carrickmines	Metro South	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🔴	95%
Strategic Bus — Proposed	N2	Express Bus	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟡	🟡	🟢	🔴	🔴	🟢	🟢	🟢	🔴	🔴	72%
	M50/M11/N11	Express Bus	🟡	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟡	🟡	🟢	🔴	🔴	🟢	🟢	🟢	🔴	🔴	69%

Table 8.3 : Rail/Bus Based Strategic Location Assessment Criteria

P&R Status	Park and Ride Site	PT Mode	Generate sufficient demand (Demand)	Locate close to journey origin	Uncongested access and egress	Sufficient land availibility	Does not degrade rail access for other modes	Complementary to existing rail network	High frequency rail service	High quality rail service	Available Capacity on rail service	Rail journey time to be competitive with car journey time	Does not conflict with objectives of rail service	Consideration of fare boundaries	Strong priority measures in place for PT service	Adequate parking policy at facility and destination	
			Demand	Location				PT Service						Policy			
			Scoring														
Local Rail	Proposed	Swords South	Metro North	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🔴	100%
		R108 Ballymun North	Metro North	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🔴	100%
		Lucan West	New Luas	🟢	🟢	🟢	🟢	🔴	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🔴	92%
		Cherrywood	Metro South	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🔴	100%
	Upgraded	Malahide	Train/DART	🟡	🟢	🔴	🟡	🟡	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🔴	77%
		Rusk & Lusk	Train/DART	🔴	🟢	🔴	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🔴	84%
		Greystones	Train/DART	🔴	🟢	🔴	🟡	🟡	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🔴	75%
		Maynooth	Train	🟢	🟢	🔴	🟡	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🔴	87%
		Balbriggan	Train	🔴	🟢	🔴	🔴	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🟢	🔴	76%

Table 8.4 : Rail Based Local Location Assessment Criteria

The tables below elaborate on the application of evaluation criteria summarized above. Each table provides detail regarding the site location, Park and Ride category (strategic/local), modal connectivity (bus/rail), and rationale for the site selection.

The following 10 tables outline the proposed locations for new Park and Ride facilities.

Name	Swords North	Location
Mode	Future: Metro North or BRT	
Classification	Strategic Rail	
Ranking	Strong likelihood for success	
Site Description	The site is located east of the Estuary Roundabout adjacent to the R132 on the grounds of a public park. The site has good links to the strategic network as the R132 connects to the R125 which joins the M1 allowing for onward connection to the N1 serving the city centre.	
Rationale for Site Selection	Under current public transport provision, this location does not warrant the installation of a Park and Ride. This site was selected because of the possibility for future Metro or BRT. If the Metro North Terminates here at Lissenhall, this location would meet almost all criteria. Under the Metro North scenario, this site has the potential to offer a competitive journey time into the city centre. Allowing users to bypass congestions on the M1/N1 and the R132. The location was raised during stakeholder engagement. This is a strategic site and would be designed to attract trips from the adjacent radial routes. It is important to acknowledge that Swords BRT may not have the capacity to accommodate the additional trips generated by Park and Ride. Metro North would have to include additional capacity to accommodate these trips. Careful design would have to be implemented to assure attractive access for pedestrians, cyclists and other public transport users.	

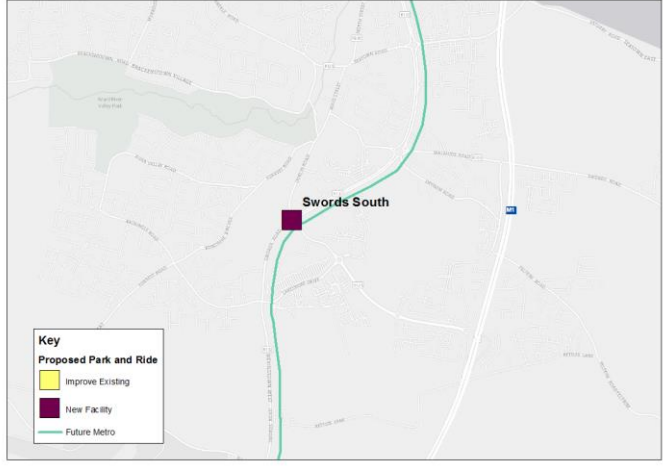**Table 8.5 : Swords North Park and Ride**

Name	Swords South	Location
Mode	Future: Metro North	
Classification	Local Rail	
Ranking	Potential Role Further Study Needed	
Site Description	The site is located east of the Pinnock Hill Roundabout on the grounds of a greenfield site. The site has good links to the strategic road network with the R125 adjacent to the site. The R125 connects to the M1 which allows for onward connection to the N1 serving the city centre.	
Rationale for Site Selection	The site is selected to be included in the development of future transport expansion of either BRT or Metro North. Assuming future Metro is installed, the site meets the majority of the selection criteria for either a strategic or a local site. With a focus on the competitive journey time, high level of public transport services, and strategic location. The location was raised during stakeholder engagement. It is important to acknowledge that Swords BRT may not have the capacity to accommodate the additional trips generated by Park and Ride.	

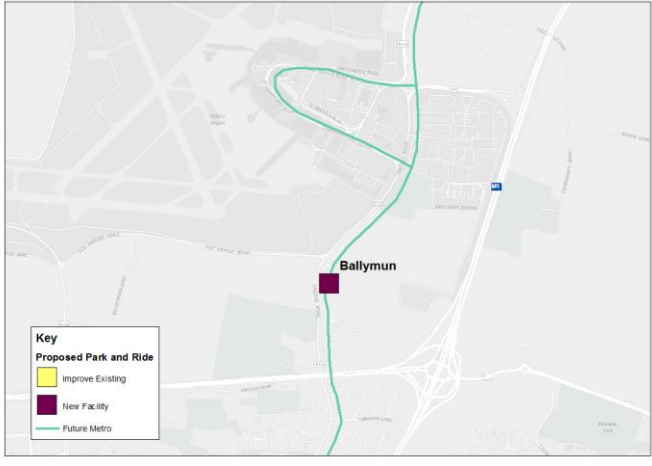**Table 8.6 : Swords South Park and Ride**

Name	Ballymun North	Location
Mode	Future: Metro North	
Classification	Local Rail	
Ranking	Potential Role Further Study Needed	
Site Description	The site would be located north of Jn 4 on the M50 on the R132, possibly on the grounds of a greenfield site. The site has good links to the strategic road network with the M50 adjacent to the site. The M50 allows for onward connection to the city centre.	
Rationale for Site Selection	This site is identified for a local Park and Ride under future conditions with the provision of Metro North. Interestingly, based on the results of the modelling exercise, this site could be successful even under current conditions. Assuming future Metro is installed the site meets the majority of the selection criteria. With a focus on the competitive journey time, high level of public transport services, and strategic location. The location was raised during stakeholder engagement. There is potential for this site to become a public transport hub, with access to metro north, and access from the M50.	

Table 8.7 : Ballymun North Park and Ride

Name	Lucan	Location
Mode	Future: New Luas	
Classification	Strategic Rail	
Ranking	Potential Role Further Study Needed	
Site Description	The potential site would be located on the R120 off the N4. This is an indicative site location and further analysis would be required to determine the physical constraints of providing a new facility at this location.	
Rationale for Site Selection	The proposal is based on the provision of a new Luas line or BRT in the future. The site is adjacent to the N4 route, which has a continuous Bus Lane passing Heuston Station and along the Liffey Quays. This site has potential to generate sufficient demand. This is a strategic site and would be designed to attract trips from the N4. The new Luas would have additional capacity to accommodate these trips. The Liffey Valley Shopping Centre has an extensive parking facility. The site could accommodate multi-level parking but would most likely require a public/private partnership. Careful design would have to be executed to assure attractive access for pedestrians, cyclists and other public transport users. Although this site is located closer to the city centre, the land uses are more suitable to a strategic location.	

Table 8.8: Lucan

Name	Lucan West	Location
Mode	Future: New Luas	
Classification	Strategic Rail	
Ranking	Potential Role Further Study Needed	
Site Description	The location of this site is on the N4 west of Lucan. This is an indicative site location and further analysis would be required to determine the physical constraints of providing a new facility at this location.	
Rationale for Site Selection	The proposal is based on the provision of a new Luas line in the future. The potential site is strategically located outside of the congested segments on the N4 and on the R120. The site is adjacent to the N4 route, which has a continuous Bus Lane passing Heuston Station and along the Liffey Quays. A congested route, the N4 would benefit from a Park and Ride facility as it will result in a competitive and reliable journey time relative to private car usage due to such priority measures. This site has potential to generate sufficient demand. This is a strategic site and would be designed to attract trips from the adjacent radial routes. The new Luas would have additional capacity to accommodate these trips. However careful design would have to be implemented to assure attractive access for pedestrians, cyclists and other public transport users. Although the R120 has efficient access from the N4, a portion of the street is residential and therefore may be incompatible with attracting external trips through a Park and Ride facility.	

Table 8.9 : Lucan West

Name	Cherrywood	Location
Mode	Metro South/Luas	
Classification	Local Rail	
Ranking	Potential Role Further Study Needed	
Site Description	The Park and Ride site is located at the terminus station (Brides Glen) on the green line. The site is a brownfield site located beside the R118 and is adjacent to the N11 and the M50.	
Rationale for Site Selection	This site is identified as a local site to be consistent with the community goals of Cherrywood SDZ relating to walking, cycling and public transport. Increasing congestion from motor vehicles generated outside of the local area is not encouraged. However, Park and Ride will provide convenient access for local trips within 5km. High level of Luas Green line segregation will create competitive journey times and a high level of connection which will be increased upon opening of Luas Cross City. This site should only be considered for inclusion in the strategy as part of the Metro South scheme.	

Table 8.10 : Cherrywood

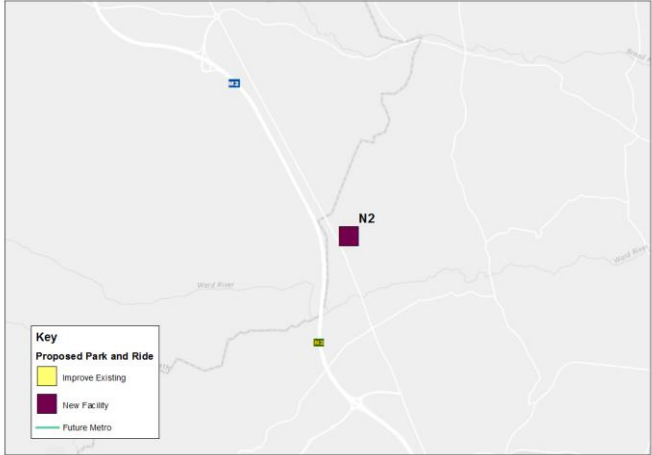| Name	Cherrywood M50/M11/N11	Location
Mode	Future: N11 QBC	
Classification	Strategic Bus	
Ranking	Potential to fulfil a role in the Park and Ride strategy but a precise location has not been identified and analysis regarding the viability of express bus service has not yet been conducted.	
Site Description	Located adjacent to the N11 radial route, this Park and ride would serve longer distance commuters along the N11 corridor as well as new residents within the area around Fassaroe.	
Rationale for Site Selection	This site was selected as a site for further analysis due to the increase in congestion as demonstrated in the 2023 Do Nothing Highways Model. This location is based on the identification of an Express Bus service that would go directly from this location to the City Centre. This is identified as a possibility in relation to possible future development in the Fassaroe area. The area is well connected to the existing highway network at the M50 and N11. Bus priority along the N11 QBC will also add to available public transport priority from this location and provide competitive journey times.	

Table 8.11 : Cherrywood M50/M11/N11

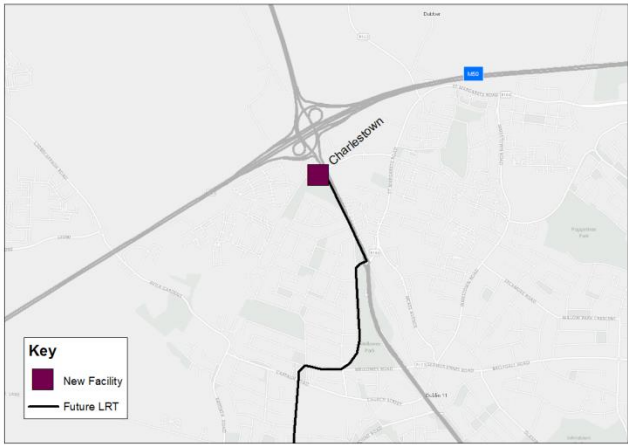| Name	N2	Location
Mode	Express Bus	
Classification	Strategic Bus	
Ranking	Potential to fulfil a role in the Park and Ride strategy but a precise location has not been identified and analysis regarding the viability of express bus service has not yet been conducted.	
Site Description	This is an indicative location to capture trips along the N2 radial corridor. This area is currently served by a number of bus routes.	
Rationale for Site Selection	This site was included for consideration because of congestion forecasted along the N2 in the highway model. This location is based on the identification of an express bus service that would go directly from this location to the City Centre with dedicated bus lanes. It is unknown at this time if there is adequate demand for this service in this location. However it is identified for further study. There are a number of existing Park and Ride facilities along the corridor suggesting that there could be additional latent demand. This site was not modelled using the Demand Modelling Evaluation as described in Section 8.4.	

Table 8.12 : N2

Name	Charlestown	Location
Mode	New Luas	
Classification	Strategic Rail	
Ranking	Potential Role Further Study Needed	
Site Description	The proposed Park and Ride site is located along the North Road. It is inside the M50, located just off Jn 5. The suggested Park and Ride would be positioned on an existing greenfield site.	
Rationale for Site Selection	The proposal of this site is based on the future provision of the new LRT line from Broombridge through Finglas. This future line would connect the existing and cross city Luas. The site is directly accessible from the strategic road network and existing public transport services. The area is served by a number of Dublin Bus routes, 40B, 83, 83A and 9; connecting Charlestown to the City Centre and South Dublin. This site was not modelled using the Demand Modelling Evaluation as described in Section 8.4.	

Table 8.13 : Charlestown

The following 8 tables outline the proposed upgrades to existing Park and Ride facilities.

Name	Carrickmines	Location
Mode	Metro South	
Classification	Strategic Rail	
Ranking	Strong Likelihood for Success	
Site Description	The Park and Ride site is located on the green line. It is easily accessed from the M50. The site currently has a Park and Ride capacity of 352 spaces.	
Rationale for Site Selection	The location of the site in relation to the congestion on the M50 is the main rational for the site location. This site has excellent connections to both the existing highway network and the transport system. This location allows drivers smooth intermodal transition between driving and the Luas Green. Future enhancements to the Luas regarding capacity and frequency will create competitive journey times. The site must be reviewed carefully in relation to the available capacity. Under existing conditions, capacity is not available to accommodate additional Park and Ride trips. However with future Metro South, additional capacity will be available.	

Table 8.14 : Carrickmines

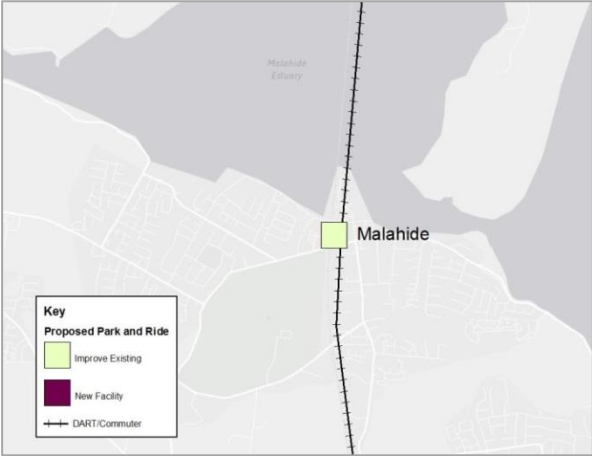| Name	Woodbrook/Bray	Location
Mode	DART/Metro South	
Classification	Strategic Rail	
Ranking	Potential to fulfil a role in the Park and Ride strategy but a precise location has not been identified and analysis regarding the viability of express bus service has not yet been conducted.	
Site Description	This site is located in the Woodbrook area with access from the N11 at Wilford Interchange. This site is identified based on the provison of a new rail station to connect the facility to DART and rail services.	
Rationale for Site Selection	This site was identified based on the future available capacity on the DART line and the possibility of extending Luas/Metro South from Brides Glen to Bray. This service is high quality and high frequency. It is also identified based on the growth in road network demand in the Woodbrook and Bray areas. Care must be taken in this location to be consistent with local requirements and goals relating to congestion on local streets. This site is identified in order to increase access to the DART services without impacting walking, cycling and bus access. Localised traffic impacts would need to be assessed before implementation.	

Table 8.15 : Bray

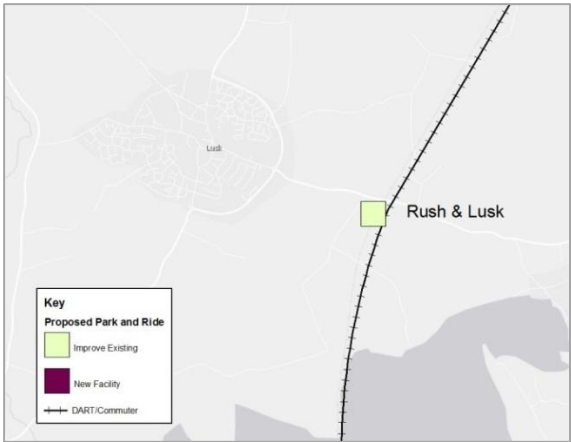| Name	Malahide	Location
Mode	Train/DART	
Classification	Local Rail	
Ranking	Potential to fulfil a role in the Park and Ride strategy but a precise location has not been identified and analysis regarding the viability of express bus service has not yet been conducted.	
Site Description	The Park and Ride site is currently in operation and this proposal seeks to improve the facility by increasing the capacity.	
Rationale for Site Selection	The site is the first stop on the DART Line. High frequency and Direct Dart service during the peak hour makes this site attractive for Park and Ride expansion. Journey times to the city centre are competitive with the car. Care must be taken in this location to be consistent with local requirements and goals relating to congestion on local streets. This site is identified in order to increase access to the DART services without impacting walking, cycling and bus access. There is a vacant site on Gaysard Lane that could be developed into a multi-level car park with complementary residential or office uses. Localised traffic impacts would need to be assessed before implementation.	

Table 8.16 : Malahide

Name	Rush & Lusk	Location
Mode	Train/DART	
Classification	Local Rail	
Ranking	Strong Likelihood for Success	
Site Description	The Park and Ride site is currently in operation and this proposal seeks to improve the facility. There are 260 spaces in this Park and Ride facility and it is operating at capacity.	
Rationale for Site Selection	This site was selected as a site for further analysis due to the increase in congestion as demonstrated in the 2023 Do Nothing Highways Model. The site is located on a main access road for both Rush and Lusk and is away from residential areas with uncongested access and egress. Sufficient land availability as well as high quality and frequency transport at the site will facilitate expansion at this site.	

Table 8.17 : Rush & Lusk

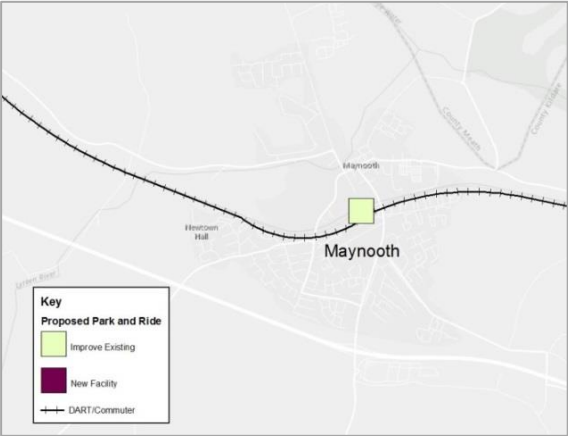| Name	Greystones	Location
Mode	Train/DART	
Classification	Strategic Rail	
Ranking	Potential to fulfil a role in the Park and Ride strategy but a precise location has not been identified and analysis regarding the viability of express bus service has not yet been conducted.	
Site Description	The Park and Ride site, 2km from the N11, is currently in operation and this proposal seeks to improve the facility.	
Rationale for Site Selection	This site was selected as a site for further analysis due to the increase in congestion along the M11 as demonstrated in the 2023 Do Nothing Highways Model. Located on a main access road close to the centre of Greystones, this location facilitates uncongested access and egress and is sufficiently close to residential areas to effectively benefit from expansion. Albeit at a lesser frequency than those at Bray, DART services provide High quality services and the site compliments existing public transport services. Proximity to retail and leisure facilities can demark this location as multi-purpose. Future improvements to the DART will result in available capacity. Park and Ride will serve to increase ridership to fill this capacity. Care must be taken at this location to mitigate congestion on local streets to be consistent with local requirements and goals. This site is identified in order to increase access to the DART services without impacting walking, cycling and bus access.	

Table 8.18 : Greystones

Name	Maynooth	Location
Mode	Train	
Classification	Local Rail	
Ranking	Potential Role Further Study Needed	
Site Description	The Park and Ride site is currently in operation and this proposal seeks to improve the facility.	
Rationale for Site Selection	This site was selected as a site for further analysis due to the increase in congestion as demonstrated in the 2023 Do Nothing Highways Model. Proximity to trip generators in Maynooth including university facilities and a small clinic identify this site as a multi-purpose location. Its location south of the canal on a main access road to the larger residential areas of the town will help to generate adequate demand while a high quality rail service with adequate capacity is already in place. Heavy congestion on the main M/N4 route into Dublin (particularly near Lucan) from the area will result in a competitive journey time relative to car.	

Table 8.19 : Maynooth

Name	Balbriggan	Location
Mode	Train/DART	
Classification	Local Rail	
Ranking	Potential to fulfil a role in the Park and Ride strategy but a precise location has not been identified and analysis regarding the viability of express bus service has not yet been conducted.	
Site Description	The Park and Ride site is currently in operation and this proposal seeks to improve the facility by increasing the capacity.	
Rationale for Site Selection	This site was selected as a site for further analysis due to the increase in congestion as demonstrated in the 2023 Do Nothing Highways Model. Proximity to the retail facilities and Balbriggan beach meant that this location can be considered a multi-purpose location. Heavy congestion on the main M1 route into Dublin from the area will result in a competitive journey time relative to the private car. The town's large residential areas are also close by. Care must be taken to mitigate congestion on local streets in this location to be consistent with local requirements and goals. This site is identified in order to increase access to the train services without impacting walking, cycling and bus access.	

Table 8.20 : Balbriggan
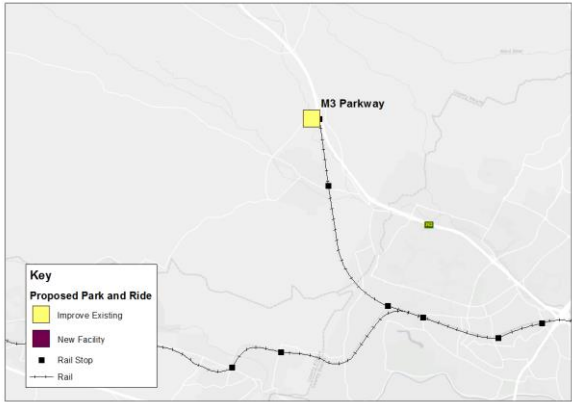
Name	M3 Parkway	Location
Mode	Train	
Classification	Strategic Rail	
Ranking	Potential Role Further Study Needed	
Site Description	This proposal aims to improve the existing Park and Ride facility at M3 Parkway. The site is accessible from the N3 and is situated at the M3 Parkway rail station.	
Rationale for Site Selection	This site was chosen for consideration for further expansion due to its proximity to Dunboyne and the M3 motorway link to Navan and surrounding areas. The current Park and Ride facility serves frequent rail services to the City Centre, terminating at the Docklands. The facility is also served directly by the 111 bus from Cavan to the City Centre.	

Table 8.21 : M3 Parkway
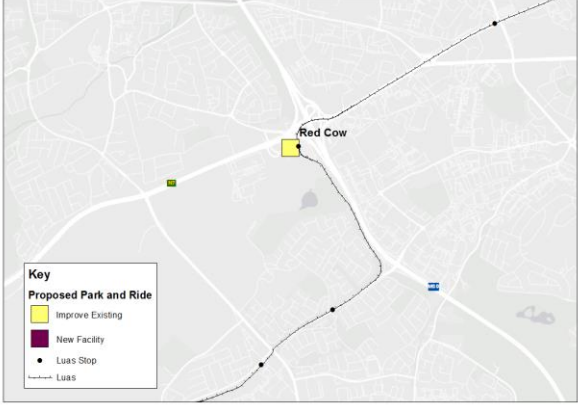
Name	Red Cow	Location	
Mode	Luas		
Classification	Strategic Rail		
Ranking	Potential Role Further Study Needed		
Site Description	The existing Park and Ride site at Red Cow is proposed for upgrade. The existing facility is located outside the M50 at Junction 9.		
Rationale for Site Selection	The Red Cow Park and Ride is recommended for further analysis due to its existence outside the M50. The current facility is located along the Luas Red line. The attractiveness of this Park and Ride facility is expected to increase with the implementation of the Luas Cross City. Congestion within the M50 would be avoided with the use of this facility, thus the journey time would be competitive to that of the private car. Care must be taken be taken to mitigate further congestion in the area which may be caused by the expanded facility.		

Table 8.22 : Red Cow

9. Identified Park and Ride for the GDA

Figure 9.1 shows locations for rail based and bus based Park and Ride that have been identified for inclusion in the GDA Transport Strategy as sites, where investment in new park and ride sites and further investment would be made in existing facilities. The locations are distinguished between the policy categories of strategic sites and local sites. There are 10 sites that are related to the expansion of public transport in the future. These sites should be evaluated and developed only as part of the proposed expansion. They will most likely not be successful under existing conditions.   In addition, eight existing sites have been identified for further investment. Figure 9.1 also outlines the existing Park and Ride locations where further investment is not envisaged for this Strategy.
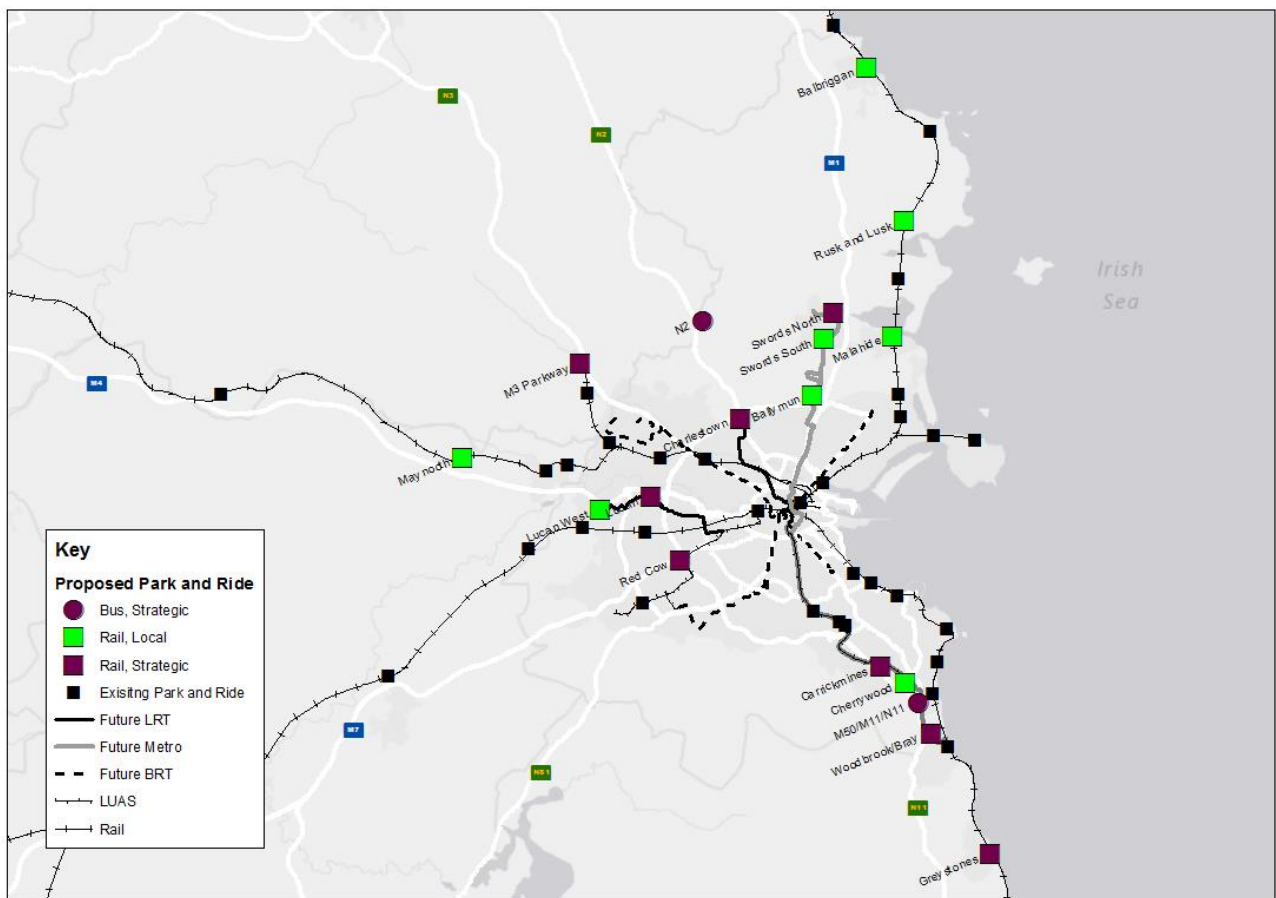

Figure 9.1 : Identified and Existing Park and Ride Locations

9.1 Rail based Park and Ride

Table 9.1 presents the locations of the rail based Park and Ride sites that have been identified for inclusion in the GDA Transport Strategy. These are further distinguished by their facility category (local or strategic) and illustrated in Table 9.1. These sites were chosen based on the criteria outlined in Chapter 8 of the report. This includes demand modelling, 2023 roadway characteristics, and criteria assessment.

It is important to note that the locations associated with Metro North and Metro South have been recommended based on the provision of these services. In the interim, the Metro South is served by the Luas Green Line which is at capacity and could not accommodate additional demand facilitated by Park and Ride. Metro North may be served by a BRT before a metro service. It is projected that this service would be operating at capacity without the provision of Park and Ride. However it is recommended that Park and Ride facilities be considered as the BRT services are being developed.

Category	Name	Targeted Radial Route	Type	Public Transport Mode	Indicative Size
Strategic	Swords North	M1	New	Metro North	200
Local	Swords South	Local / M1	New	Metro North	200
Local	Ballymun	Local/ M1/M50	New	Metro North	350
Strategic	Lucan	N4	New	New Luas	350
Strategic	Lucan West	N4	New	New Luas	200
Local	Cherrywood	Local/M11/M50	New	Metro South	350
Strategic	Charlestown	N3	New	New Luas	150
Strategic	Carrickmines	M50/N11	Retain Temporary Facility	Metro South	150
Strategic	Woodbrook/Bray	M11/N11	Improve Existing	Train/Metro South	200
Local	Malahide	Local / M1	Improve Existing	Train/Dart	150
Local	Rusk and Lusk	Local/M1	Improve Existing	Train/Dart	120
Strategic	Greystones	Local	Improve Existing	Train/Dart	120
Local	Balbriggan	Local / M1/N11	Improve Existing	Train	Under 150
Local	Maynooth	Local/N4	Improve Existing	Train	300
Strategic	M3 Parkway	M3/N3	Improve Existing	Train	1200
Strategic	Red Cow	N7	Improve Existing	Luas	750

Table 9.1 : Identified Rail Based Park and Ride Sites

9.2   Bus based Park and Ride

Table 9.2 presents the existing and proposed locations of bus based Park and Ride sites. These are further distinguished by their classification (local or strategic). These sites were chosen based on the criteria outlined in Chapter 8 of the report. This includes demand modelling, 2023 roadway characteristics, and criteria assessment.

There are only three locations that have been identified for solely bus based Park and Ride. The locations were identified based on the location of future demand growth, location of future congestion, and stakeholder outreach. Indicative locations have been selected; however these locations would require significant further study. Primarily, such studies would focus on determining whether a bespoke/express bus service would be viable financially and operationally.

Category	Name	Targeted Radial Route	Type	Public Transport Mode	Indicative Size
Strategic	N2	N2	New	Express Bus. Possibly worth considering this as a site if there is a dedicated bus lane and express service. Currently served by the 103, 107, 109A.	Under 150
Strategic	Cherrywood M50/M11/N11	M50/M11/N11	New	N11 QBC. Currently served by the 143, 84, 94A and 145.	150-500

Table 9.2 : Identified Bus Based Park and Ride Sites

Appendix A. Review of Park and Ride Policy and Best Practice

A.1 Park and Ride Benefits

Park and Ride can be both formal and informal and can be considered an intermodal transfer facility. They can serve an important role in a transport network as they provide opportunity for transfer between the single occupancy vehicle to other modes of travel. Park and Ride can also support transfer with other modes such as bicycle, pedestrian, and carpool. Park and Ride facilities can successfully encourage a mode shift away from the single occupancy vehicle if properly integrated into a comprehensive transport network. Based on research undertaken by Colin Buchannan 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, Park and 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 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.

A.2 Benchmarked Metropolitan Areas of Interest

For this study, the Dublin Metropolitan Area was benchmarked against cities of similar size, population, and layout. According to the Census 2011 figures, the Greater Dublin Metropolitan Area has a population of 1.8 million people, of which 1.2 million are within the Dublin Urban Area and 530,000 are within the City of Dublin.

The last published study that recorded Park and Ride capacity in the Dublin Metropolitan Area was conducted by the Dublin Transport Office in 2004. At that time there were 6,800 Park and Ride spaces at 45 rail stations out of a total of 85 stations. This would give Dublin a rating of .004 Park and Ride spaces per capita. Bus Park and Ride was not accounted for in this study.

These Park and Ride numbers have been reassessed for this study using readily available information on the Irish Rail and Luas web sites. This review yielded a total 10,800 spaces within 52 rail/light rail stations, and .006 Park and Ride spaces per capita.

Jacobs undertook research for Auckland Transport (AT) in 2014. Included in this research was the table shown in Table A.1 in AT's "Parking Discussion Document" which outlined metropolitan areas of a similar size to Dublin. The can be seen as a good benchmark for Dublin when researching Metropolitan Park and Ride policies.

Table A.1: Rail Park and Ride Provision in Comparative Cities

City	Population	Rail Park and Ride Spaces	Number of Stations	Stations with Park and Ride	% of Total Stations with Park and Ride	Park and Ride Spaces per Station
Wellington	487,700	5,201	49	38	77%	106
Calgary	1,265,100	13,170	36	19	52%	366
Auckland	1,486,000	2,202	41	18	44%	54
Portland	1,583,138	10,239	63	28	44%	151
Perth	1,740,000	16,658	68	48	70%	245
Brisbane	2,043,000	20,745	145	124	85%	143
Vancouver	2,419,700	5,853	55	9	16%	106
San Francisco	3,228,605	49,640	44	33	75%	1,128
Atlanta	3,499,840	24,000	38	23	60%	632
Melbourne	4,077,000	34,461	219	174	79%	157
Dublin	**1,800,000**	**10886**	**85**	**52**	**61%**	**128**
Dublin Ranking (from lowest)	**6th**	**5th**	**9th**	**9th**	**6th**	**4th**

Table A.1 shows that Dublin has developed Park and Ride sites at approximately 60% of its rail stations. This is significantly higher than cities such as Vancouver, Auckland and Portland. Brisbane has the highest number of stations with Park and Ride at 85%, followed by Melbourne and Wellington. This may indicate that there's still scope for expansion.

In order to fully evaluate the differences in Park and Ride policy, the total number of public transport trips needs to also be considered. Table A.2 calculates the number of annual public transport journeys and annual journeys per capita for the GDA in 2013. The table shows that for 2013 Dublin had an average of 99 public transport journeys made per capita. (source: *Rail Statistics for Ireland* NTA June 2014, *Rail Census 2013,* NTA 2014, *Bus Statistics for Ireland – State Funded Services* NTA June 2014)

Table A.2 : 2013 GDA Annual Public Transport Journeys

	Annual Journeys
DART/Commuter	29,127,362
Luas	30,051,000
Dublin Bus	112,490,000
Bus Éireann Dublin Commuter	6,947,460
Total	178,615,822
GDA Population	1,800,000
Journeys per Capita per Annum	**99**

Figure A.1 combines Park and Ride spaces per capita with annual Public Transport trips per capita. Dublin appears to be middle ranked on public transport journeys and Park and Ride per capita. City regions such as Vancouver and the West Midlands have used a limited amount of Park and Ride to increase public transport trips. In contrast cities such as Ottawa and Melbourne appear to actively use Park and Ride in order to increase the number of public transport journeys. Brisbane, though it has significantly developed its Park and Ride system is behind Dublin on the number of public transport journeys per capita.

As a result, Dublin may potentially have scope to increase public transport journeys by using Park and Ride. However this needs to be considered against its other public transport provision as having a high number of Park and Ride spaces does not directly correlate with having a high number of public transport journeys.
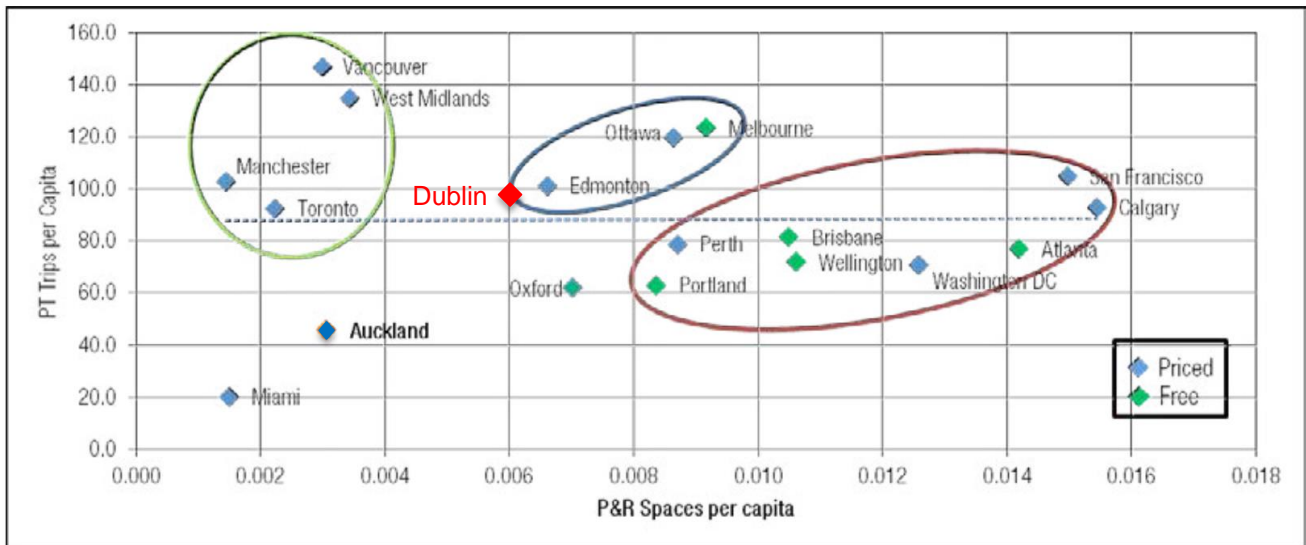
Figure A.1: P&R Spaces per Capita in Relation to Public Transport Trips per Capita on P&R Serviced Modes

A.3 Previous Park and Ride Studies for the GDA

There have been two reports relating to Dublin Park and Ride, both published over a decade ago. The first one was focused on bus based Park and Ride and was completed in 2002. The second report was focused on rail based Park and Ride and was completed in 2004.

A.3.1 Bus Based Park and Ride a Pilot Scheme, A Report to the Dublin Transport Office (DTO) – 2002

This report was commissioned by the DTO to investigate the potential of a bus based Park and Ride strategy within the GDA. The following is a summary of the findings and recommendations contained within the report.

The report stated that although acceptable distances and therefore journey times by bus vary according to the size of the urban area, all successful Park and Ride operations had the following characteristics:

- A maximum distance by bus of 5km;
- A maximum journey time of 15-20 minutes; and
- A maximum overall P&R time including waiting and parking time of approximately 22 minutes.

The report relied on previous best practice developed in the UK and noted that the UK had very few examples of bus based Park and Ride locations similar to Dublin where traffic congestion tended to start much further out from the city centre. The report noted that at the time of writing only three Park and Ride operations in the UK were operated on a completely commercial basis; Cambridge, Oxford and York.

As part of the report 40 sites in the Greater Dublin Area were considered as potential locations for bus based Park and Ride. These sites were sub-divided into two distinct groups (a map was included in the report):

- Outer or 'Satellite' Sites (greater than 20km from Dublin City Centre); and
- Inner Sites (less than 20km from Dublin City Centre and within the built up area surrounding Dublin).

A total of 13 sites fell within the category of Outer or Satellite Park and Ride. Outer or Satellite Park and Ride sites were regarded as more appropriate when:

- Projected demand was low and trip patterns diffuse in nature;

- Bus travel distances were long, rendering it uneconomic to provide an attractive level of frequency with a bespoke service;

- Land for parking was either expensive or unavailable; and

- There were environmental concerns about the local traffic impacts of the construction of large Park and Ride car parks.

Principal disadvantages/weaknesses of satellite Park and Ride locations were:

- Traffic congestion was not necessarily severe enough at the point of the site location;

- The urban centre is less likely to be the ultimate destination; and

- Longer bus journey time which was less attractive to users.

A total of 26 locations fell within the category of Inner Park and Ride sites as defined in the report. The report noted that the demand of Park and Ride operations was affected by:

- Overall distance from city centre;

- Absolute value of total traffic flow; and

- Comparable journey time by bus and car.

The study concludes that conventional bus-based Park and Ride has a limited role in Dublin due to the size of the city. Bus-based Park and Ride is ideally suited to urban areas of less than 200,000 inhabitants and the size (and therefore travel distances) diminish its effectiveness. However, the 2002 study identified three sites with the highest potential car transfers to bus-based Park and Ride: N4/2 – Lucan (Fonthill Road), N3/1 – Castleknock / M50 junction, and N11/1 – Cornelscourt. A pilot scheme was developed in detail for the Fonthill Road site but was never implemented.

A.3.2   Rail Park and Ride Strategy for Greater Dublin Area, Dublin Transport Office – 2004

The aim of the study was to develop a Park and Ride Strategy for the GDA, recommending a set of locations where investment in the provision of additional Park and Ride spaces would contribute to the achievement of the transport objectives.

The report divided the GDA into two parts; the Metropolitan Area and the Hinterland area. The report noted that given the nature of the GDA in terms of the population and employment, there were significant movements from the Hinterland Area into the Metropolitan and city centre areas.

Some characteristics of the GDA network and Park and Ride facilities, according to the above study, were:

- **Road Network:** A series of radial routes from the Hinterland Area boundary to the Metropolitan Area boundary and to the M50;

- **Suburban Rail Network:** The existing suburban rail network within the GDA was sparse, and there were large sections of the GDA that were not served by the rail network. There were 62 rail stations of which 32 locations provide 4,750 Park and Ride spaces;

- **Luas:** Luas Red Line had 23 stops of which two had Park and Ride facilities. The Luas Green Line had 13 stops, of which three had Park and Ride facilities. In total there were five Park and Ride sites on Luas network offering 2,055 parking spaces;

- **Metro:** A light rail system similar to Luas, but completely segregated from other traffic, i.e. it had no on-street sections;

- **Heavy Rail Network:** It consisted of DART, Northern Suburban, South Eastern Suburban, South Western/Arrow and Western Suburban. The report noted the following regarding existing Park and Ride facilities (DART and suburban rail);

  - 37 rail Park and Ride sites in GDA offering 6,805 spaces (a map with the existing and proposed Park and Ride was included in the report);

  - No control mechanisms were in place in GDA to ensure that only rail passengers were using those facilities;

  - Dublin commuters were well catered for with Rail Park and Ride in terms of parking spaces per 1000 population; and

  - Park and Ride facilities offered the opportunity to potential users to use rail for a proportion of their travel.

The key facilities and advantages of the Rail Park and Ride sites for users were:

- Cycle parking;

- Pedestrian access to public transport services;

- Operational requirements for public transport vehicles (taxis, buses, etc.) and ticketing systems; and

- Car passenger drop-off and pick-up facilities.

The report noted that rail capacity was generally insufficient to meet peak hour demand. The evaluation process indicated a requirement for additional Park and Ride, so therefore the proposed facilities and enhancements to the infrastructure (DART and suburban rail – Luas Red and Green Line) were:

- Park and Ride facilities at 22 sites in GDA (7 strategic sites; where the national road meets the rail network and 15 local sites; demand for parking from the surrounding area – a map is included in the report); and

- Sites were allocated based on their location within the GDA; inner sites (inside M50) and outer sites (outside M50).

The main policies and principles of Rail based Park and Ride facilities in GDA included:

- The continuous improvement of rail accessibility and complementary parking controls in the area;

- Improve rail accessibility without increasing road congestion;

- Rail users only should use Park and Ride spaces, and may have to pay to use them;

- Complementary parking controls in the areas around stations may be required;

- Rail fares generally should not be increased to pay for Park and Ride;

- Those who benefit from Park and Ride should contribute to the cost of it; and

- Rail service must be able to serve the demand generated by Park and Ride provision.

A.4   Park and Ride Best Practice Review

The following section details the main points of published best practices guidance for Park and Ride facilities. This exercise will directly inform the development of the GDA Policy for Park and Ride for the 2035 Transport Strategy, provided in Section 4 of the report.

It should be noted that much of the previous Park and Ride research and best practice has focused on the bus-based P&R schemes in small UK cities such as Oxford, Cambridge and York, cities of fewer than 500,000 inhabitants, which may not be transferable to metropolitan areas of the size of the GDA.

Within our analysis of each publication, we have highlighted the best practices that could apply specifically to Dublin.

A.4.1   British Parking Association Parking Practice Notes – TRL Limited - 2005 UK

This document was published by the British Parking Association and TRL Limited to detail what Park and Ride facilities were and how best to setup/operate them. While the document covers rail and Park and Ride sites, its primary focus is on bus facilities. The following summary, based on Parking Practice Notes, February 2005 (TRL Limited), provides a brief introduction to best practices, which can then be related to the Case Studies described below, to provide some strategic guidance to Park and Ride locations around Dublin.

Park and Ride sites should be located:

- At the edge of built-up areas: car traffic must be intercepted directly from inter-urban and rural roads before it comes into the town;

- On or near main access routes: to avoid increased mileage to reach Park and Ride sites. Many Park and Ride sites are near ring-road intersections (Oxford, Swindon, York) or at the periphery of major airports;

- Away from residential areas: to minimise abstraction of passengers from local buses and disturbance to residents;

- Where sufficient land is available: car parks take up a lot of space. A typical Park and Ride site can accommodate 50-100 cars per hectare, so a site of up to 10 hectares may be needed for a viable Park and Ride car park with 500-700 spaces;

- With good road or rail access to town centre: direct, un-congested route right into the town centre, with bus priority as appropriate [Bristol,A4 Bath Road route; Newcastle, Park and Ride from Tyne & Wear Metro stations]; and

- At a multi-purpose location to attract two-way patronage: suit users in both directions, enable multi-purpose trips, provide access without a car to out-of-town commercial centres [superstore, college at York Ascomb Bar].

Characteristics of a successful Park and Ride service:

- Large enough to support a frequent bus service: around 500-700 spaces should be provided to ensure sufficient passenger throughput to justify a turn-up-and-go bus service. Concentrating on short duration parking increases daily usage of the site in terms of the number of users and demand for the bus service. A smaller car park may be acceptable at a rail Park and Ride site, if the station also caters for non- Park and Ride passengers;

- Pattern of bus services: many Park and Ride bus services operate across town, e.g. from a site on the north to one on the south. This avoids the need for terminus sites in the town centre and makes for efficient scheduling. Good town centre penetration is afforded, and the routes may serve several town centre stops [e.g. Oxford, Swindon, York]. Bus services must be reliable;

- Hours of opening: balance must be achieved between length of day wanted by customers [early morning until mid or late evening] and reasonable viability and security. Typical hours: 0700/0730 to 1830/2000, later in a few places [e.g. Oxford 2330] to cater for the evening leisure market;

- Signage and information: Sites must be easy to find and use, clearly signed in advance from access routes and on site [including price, payment system, local and service information]. Recognised Park and Ride signage should be used; and

- Uncongested access: intercept inter-urban and rural traffic before it reaches congested urban area.

Connections to the city centre by public transport could include rail, LRT (Luas), or bus. In the case of buses, essential features of a successful Park and Ride bus service are:

- Modern, clean, pleasant easy access: image and ambience to compete with the car; step-free entry for families and people encumbered with shopping;

- Walk-on service: frequent and reliable — always a bus ready to board;

- Welcoming: bus doors open for passengers to board immediately; customer focused driver

- Centrally located town centre stops: stops must be pleasant, well signed, easily identifiable, conveniently located in the hearts of towns (as well as or better than the town centre car parks) and feature local and tourist information ; and

- Avoid taking passengers away from other bus services: Site Park and Ride terminals so as to minimise opportunities for abstraction from rural and other local buses. Encourage upgrading of local bus network to make diversion to Park and Ride less likely and afford opportunities to integrate Park and Ride with other local services without dilution of quality [e.g. First Group Metro services aim to achieve Park and Ride quality on all key routes, York Park and Ride bus services have been integrated with the new, high quality mainstream network].

The guidance concludes with some dos and don'ts:

- **Don't encourage extra car mileage:** Park and Ride sites to intercept main access routes and discourage circling the ring road to reach the Park and Ride car park. A single site on one access route will be insufficient; a strategy covering all key routes must be prepared;

- **Conserve Green Belt land:** seek sites on lower grade land (York Designer Outlet Park and Ride site is at a former isolation hospital site, now McArthur Glen Designer Outlet retail complex);

- **Not too many sites:** retain green links to rural hinterland; no ring of concrete around the town;

- **Minimise traffic congestion:** avoid routes through known bottlenecks, to ensure free-flowing access;

- **Distance from town centre**: site must be far enough out to make modal change worthwhile, e.g. 2-4 miles; a 10-15 minute bus ride (this may make Park and Ride unattractive for some smaller towns);

- **Multi-use sites:** beware of potential conflict with site's primary business (e.g. evening peak parking demand at cinemas and entertainment complexes);

- **Parking at rail stations:** prevent parking in adjacent streets instead of an official car park. Remedies include yellow lines, junction closures, access restrictions, residents parking zones and part-day parking bans to prevent all-day commuter parking;

- **Financial health warning:** most Park and Ride services are subsidised by parent local authorities: financial viability without external support cannot be guaranteed. Bus services should be awarded on quality not just price.

A.4.2   Park and Ride, Planning and Design Guidelines, Robert J. Spillar, P.E. – 1997 USA

This report was published in the US to provide planning and design guidelines for the development of park-and-ride facilities. The primary focus of the report was the assimilation of reliable methods for selecting optimum locations for park-and-ride facilities in terms of maximizing demand and promoting community integration. Below is a summary of the salient points discussed in the report.

Park and Ride facilities: They could be defined as intermodal transfer facilities between the single occupant vehicle (SOV) and other higher occupancy vehicle (HOV or carpools) modes. Other modes supported by P&R sites were bike, intercity bus, public transport, airport service, carpool, intercity rail etc.

Park and Ride facilities by function consisted of:

- Informal Park and Ride Lots – Public transport stop where motorists could drive their cars and leave them parked on-street. Other informal lots could be locations where carpool or vanpool formation takes place;

- Joint Use Lots – Share facility with another activity such as church, shopping mall etc. They were usually low cost facilities;

- Park and Pool Lots – They were constructed exclusively for the use of carpool and vanpool formation;

- Suburban Park and Ride Lots – They were located at the outer edges of the urban landscape. These facilities relied on the private automobile as the collection and distribution mode;

- Public transport Centres – It was an interchange between local and express public transport services; and

- Satellite parking lots – They were placed at the edge of an activity centre and it was characterised by its proximity to the destination end.

Park and Ride facilities by distance to the destination market consisted of:

- Suburban Park and Ride lots – They were typically between 6.4 and 48.3 kilometres from CBD (Central Business District);

- Remote Long-Distance Lots - Distances between the remote long-distance lot and the primary destination was typically 64.4 to 128.7 kilometres;

- Local Urban Park-and-Ride Lots – They were usually between 1.6 and 6.4 kilometres and these lots filled the gap between the suburban market and CBD within the metropolitan area; and

- Peripheral Park-and-Ride Lots – These lots were located at the edge or periphery of a business district to provide additional parking just beyond the business district core.

Park and Ride facility should be followed by a systematic evaluation process analysing the critical aspects of the public transport service provided, the security attributes of the site and design, the maintenance costs and savings provided by the design, and the success of the site as reflected by parking demand.

One main factor was determining the right location for a proposed Park and Ride facility; optimising the location was quite complicated as site options are limited due to existing land use developments, lack of alternate sites etc. The site selection criteria included; strong patronage demand, providing for integration with the community and reducing implantation costs and financial risk.

For the development and design of a successful Park and Ride facility the following components were considered as significant:

- Designing a community of integrated P&R facility;

- Providing design needs of pedestrians and cyclists;

- Providing design requirements of public transport vehicles; and

- Providing design requirements for cars.

A.4.3   TACTRAN Park and Ride Strategy Best Practice Review

TACTRAN prepared a Regional Transport Strategy setting out a vision and objectives for improving Tayside and Central Scotland transport infrastructure, services and facilities in accordance with the Transport (Scottish) ACT 2005. The above document formed part of the overall strategy and below are the main points regarding Park and Ride implementation and operation.

According to the TACTRAN Park and Ride strategy "Best practice review" of April 2008, its guidance states that Bus, Strategic Bus and Rail based Park and Ride sites should be:

- Well signed;

- Adjacent to a major radial approach route;

- On the edge of the built up area;

- Safe and easy to access;

- Outside any congested area to maximise the advantages of bus priority;

- Located to reduce the likelihood of abstraction from conventional bus services;

- Surrounded by land which could be used for expansion;

- In keeping with surrounding land usage;

- Cost effective and competitive with the cost of central parking and the perceived cost of extra distance which would be driven to reach the centre;

- Adjacent to trip attractors if there is a desire to attract non Park and Ride;

- A site of 500 – 600 spaces is considered necessary for a cost effective, efficient and viable bus operation with 400 spaces being a minimum;

- Offer overall time savings or comparable travel times in combination with reduced journey stress;

- Frequent, reliable, modern, accessible and with well-maintained public transport service identifying the Park and Ride system as a high quality public transport mode;

- In general a ten minute service frequency is considered the minimum for local bus-based Park and Ride;

- Bus type services to have limited stops;

- Service central set down points which are well located and signed in relation to commercial and retail centres;

- A parking restraint policy that has control over a significant proportion of central parking stock together with residential parking schemes; and

- Public transport priority measures in place.

A.5   Current National and Local Park and Ride Policy

The following lists the Local Authorities in and around Dublin City and the Grater Dublin Area that provide policy guidance on the provision of Park and Ride:

- Dublin City Council;

- Dun Laoghaire-Rathdown County Council;

- South Dublin County Council;

- Fingal County Council;

- Meath County Council;

- Kildare County Council; and

- Wicklow County Council.

A.5.1   Dublin City Council

Table A.3 summarises the Park and Ride policy for Dublin City Council.

Table A.3 : Dublin City Council Park and Ride PolicyTable

Council Name	Dublin City Council
Development Plan Adopted	Dublin City Development Plan 2011 – 2017
Summary of Park and Ride Policies/Objectives	
SIO6:	To promote Park and Ride at suitable locations in co-operation with neighbouring local authorities
Sustainable Development: A Strategy for Ireland (1997):	To develop park and ride facilities at carefully chosen locations

A.5.2   Dun Laoghaire-Rathdown County Council

Table A.4 summarises the Park and Ride policy for Dun Laoghaire-Rathdown County Council.

Table A.4 : Dun Laoghaire-Rathdown County Council Park and Ride Policy

Council Name	Dun Laoghaire-Rathdown County Council
Development Plan Adopted	• Development Plan 2010-2016 • Development Plan 2016-2022 (initial draft out)
Summary of Park and Ride Policies/objectives	
Policy T7	Park and Ride: It is Council policy to facilitate the provision of Park and Ride in appropriate locations along strategic transport corridors. Park and Ride locations will generally be chosen on the periphery of the County and at public transport nodes where they can contribute significantly to a modal shift to public transport and at locations that reduce the impact on existing on-street parking demand measures within the County, in particular in residential areas. Temporary Park and Ride sites will also be encouraged as part of the development management process near public transport terminus points to meet any potential shortfall in patronage as a consequence of delays in the development of key growth nodes.

Assessment for the Role of Park and Ride in the
Greater Dublin Area Transport Strategy

JACOBS

A.5.3   South Dublin County Council

Table A.5 summarises the Park and Ride policy for South Dublin County Council.

Table A.5: South Dublin County Council Park and Ride Policy

Council Name	South Dublin County Council
Development plan Adopted	• Development Plan 2010-2016 • Development Plan 2016-2022(initial draft out)
Summary of Park and Ride Policies/Objectives	
Transport 21	Transport21 is the capital investment framework agreed by Government under the National Development Plan for the development of transport infrastructure for the period 2006 to 2015. This framework provides for investment in national roads and public transport and is made up of two investment programmes – a national programme and a programme for the Greater Dublin Area (GDA). • Develop Park and Ride facilities at carefully chosen locations;
Policy T20	Park and Ride Facilities It is the policy of the Council to support and facilitate the provision of Park and Ride facilities in appropriate locations along strategic transport corridors. It is an objective of the Council to facilitate the provision of Park and Ride at the locations listed in Table 1 below. Additional locations will be investigated and may be designated during the lifetime of this plan.
Table 1	
Location	**Proposal**
Clondalkin Village	Investigate the availability of a site for the provision of a multi-storey carpark
Walkinstown Roundabout	Investigate the availability of a site for the provision of a multi-storey carpark
Garters Lane LAP	Facilitate a site to be provided in conjunction with a Luas City West station at this location
Lucan N4	Investigate location on N4/M4
N7	In the vicinity of Browne's Barn

A.5.4   Fingal County Council

Table A.6 summarises the Park and Ride policy for South Dublin County Council.

Table A.6: Fingal County Council Park and Ride Policy

Council Name	Fingal County Council
Development Plan Adopted	• DEVELOPMENT PLAN 2011-2017 • Development Plan 2017 – 2023- consultation start
Summary of Park and Ride Policies/Objectives	
Objective BALBRIGGAN 5	Promote and facilitate the operation of two local interconnecting bus services connecting the residential area to the town centre, commuter rail and bus services and the industrial areas at Stephens's town, and facilitate the provision of a Park and Ride facility at an appropriate location adjacent to the interconnecting bus routes.
Objective SKERRIES 9	Prepare a Master plan for the 'Ballast Pit' lands, to incorporate mixed–use development including community/recreational uses and park and ride facilities to serve the railway station.
Objective TO18	Promote and support the provision of Park and Ride facilities at suitable interchange points within the County.

A.5.5   Meath County Council

Table A.7 summarises the Park and Ride policy for Meath County Council.

Table A.7: Meath County Council Park and Ride Policy

Council Name	Meath County Council
Development Plan Adopted	Development Plan 2013-2019
Summary of Park and Ride Policies/Objectives	
Land Use/Transportation: LU OBJ 2	To reserve an area for Park and Ride facilities adjacent to the R1 "Rail Corridor" reservation identified with a G1 "Community infrastructure" land use zoning objective to ensure that an area is protected for such uses adjacent to the railway line.
Movement and Access: MA OBJ 1	To facilitate the development of a railway station, Park and Ride facility and associated infrastructure as part of the delivery of Phase II of the Navan Rail Line.

A.5.6   Kildare County Council

Table A.8 summarises the Park and Ride policy for Kildare County Council.

Table A.8: Kildare County Council Park and Ride Policy

Council Name	Kildare County Council
Development Plan Adopted	Development Plan 2011-2017
Summary of Park and Ride Policies/Objectives	
NR 9:	To co-operate with other agencies in the provision of additional links between the national road network and public transport especially rail and bus transport including Strategic Park and Ride facilities.
GT 4	To prepare parking strategies and investigate the appropriate locations for vehicular, bicycle and Park and Ride facilities within the county. The Council will seek to provide these.

A.5.7   Wicklow County Council

Table A.9 summarises the Park and Ride policy for Wicklow County Council.

Table A.9: Wicklow County Council Park and Ride Policy

Council Name	Wicklow County Council
Development Plan Adopted	Development Plan 2010-2016
Summary of Park and Ride Policies/Objectives	
PT2	- To promote the development of transport interchanges and 'nodes' where a number of transport types can interchange with ease. In particular to facilitate the development of park and ride facilities at appropriate locations along strategic transport corridors; - to enhance existing parking facilities at and/or the improvement of bus links to the train stations in Bray, Greystones, Wicklow and Arklow; - to promote the linkage of the Luas extension to Bray DART; - to promote integrated ticketing between transport types; - to encourage the improvement of bicycle parking facilities at all transport interchanges; - to improve existing and provide new footpath/footway linkages to existing / future transport interchange locations; - to allow for the construction of bus shelters, particularly where they incorporate bicycle parking facilities.

A.5.8   Greater Dublin Area Draft Transport Strategy 2011-2030

Table A.10 summarises the Park and Ride policy within the Greater Dublin Area Transport Strategy 2011 – 2030.

Table A.10: Greater Dublin Area Draft Transport Strategy 2011-2030 Park and Ride Policy

Name	Greater Dublin Area Draft Transport Strategy 2011-2030
Summary of Park and Ride Policies/Objectives	
Measure INT 2	The Authority will seek the use of the Smartcard ticket over time to pay for other transport services, including Park and Ride, taxi fares and public cycle hire.
Measure INT 5	The Authority will: • Seek the provision of larger Strategic rail based Park and Ride facilities at appropriate points where rail services intersect with National Primary roads outside the M50, with a phased approach to parking provision at each site and monitoring to ensure unintended consequences such as significant additional congestion or car travel do not arise, before further expansion is considered; • Seek the provision of local Park and Ride schemes in outer parts of the Metropolitan area and in the Hinterland area, where they improve public transport accessibility without worsening road congestion, or increasing car travel distance; • Consider the potential for bus-based Park and Ride, particularly close to high quality road corridors leading from Hinterland towns, with good bus priority to commuter destinations in the Metropolitan Area, and will seek the provision of such facilities where appropriate and feasible; and • Seek suitable charging structures for Park and Ride facilities to make it more likely that those who most need the service (those outside walking distance) will obtain parking
Measure ROAD 11	The Authority will: • Support the provision of electric vehicle charging points on-street, at Park and Ride sites and elsewhere as appropriate in the Greater Dublin Area; • Support greater use of electric taxis and goods vehicles, especially in urban areas; and • Support training and provision of information in relation to 'eco-driving' techniques.

Park and Ride

Car Park and Ride facilities help those in outer areas who are not well served by public transport to access public transport connections. It is important that Park and Ride facilities improve public transport accessibility without unduly worsening road congestion, or increasing the total distance travelled by car. In practice, this means that Park and Ride car parks should be located in outer areas where the road network has capacity to absorb the impact of car park traffic. It also means that Park and Ride sites should not be located where they might encourage people who would otherwise access public transport locally to drive further to access a site, adding to congestion. Any necessary improvements to the onward public transport service will need to be identified and developed in conjunction with any decision to proceed with a Park and Ride facility. Complementary parking controls or charging on roads in the vicinity of Park and Ride car parks may be required, particularly in the case where the car park is charged for, or it is oversubscribed. Cycle parking

Name	Greater Dublin Area Draft Transport Strategy 2011-2030
should also be provided at rail stations and tram stops, and provision for carriage of cycles on train services should be made where space is available. More details are included in Chapter 9 Cycling and Walking.	

Appendix B. Review of Park and Ride International Case Studies

The following chapter gives a brief overview of seven locations where Park and Ride has been successfully implemented. These locations have also been deemed to be similar in nature as the GDA, at a sufficient level to inform how Park & Ride could provide a role within Dublin.

B.1   Case Study 1: Auckland Transport

B.1.1   Auckland Transport Park and Ride Criteria

Auckland has a population of approximately 1,486,000 over an area of 4,894 sq/km with 2,202 Park and Ride spaces.

Auckland Transport (AT) is in a similar situation to Dublin in that they are appraising the need to develop further Park and Ride sites. In a report worked on with Jacobs, they concluded that by 2040 they potentially could need an additional 10,000 spaces. The work identified several criteria in order to prioritise Park and Ride investment. These include:

- Park and Ride is planned as an integral part of the public transport network as it extends the public transport customer base and encourages public transport patronage;

- Potential sites are located to intercept commuter trips from catchment areas that have a high Park and Ride potential, based on assessed demand;

- Park and Ride facilities are located to relieve congestion by intercepting commuter traffic, and to ensure that vehicles accessing the facilities do not worsen local traffic congestion;

- New Park and Ride facilities are focused on outer areas where public transport services are limited, or to serve areas that are beyond the walk-up catchment of the rapid and frequent service network;

- Timing of Park and Ride facilities should be planned alongside improvements to public transport services;

- Park and Ride is avoided in metropolitan and town centres, except as part of a staged transition to other uses;

- Park and Ride locations take fare zone boundaries into account; and

- Proximity to a key radial route should minimise the time lost due to using Park and Ride (Higginson, 2001).

B.1.2   Context for GDA

Similar to the Auckland, the GDA may be suitable for a strategy that focuses Park and Ride facilities at outer areas where public transport is limited and outside urban areas whilst taking account of fare zones to avoid trips trying to go to the next station to save on the cost of the train bus ticket and being located close to radial routes and or arterial routes.

Most of the Auckland Park and Ride sites would generally service local urban centres with Park and Ride, as they are generally located at urban public transport stops. Some of these would also have a multi-use parking function.

A Park and Ride site that could be considered to be of a strategic nature would be the Albany Park and Ride site (to the far north). This provides direct access from State Highway 1 (SH1) to large Park and Ride site, and capture trips from State Highway road network before it travels closer to Auckland City Centre. This Park and Ride site is serviced by a segregated, direct, expressway bus service, which has dedicated off and on-ramps from the SH1 motorway. Parking at the Park and Ride is free of charge. This site is well used and is generally at full occupancy by the end of the AM peak period and is considered an excellent example of a Strategic Peripheral Park and Ride. **Error! Reference source not found.** summarises the existing Park and Ride facilities in Auckland.
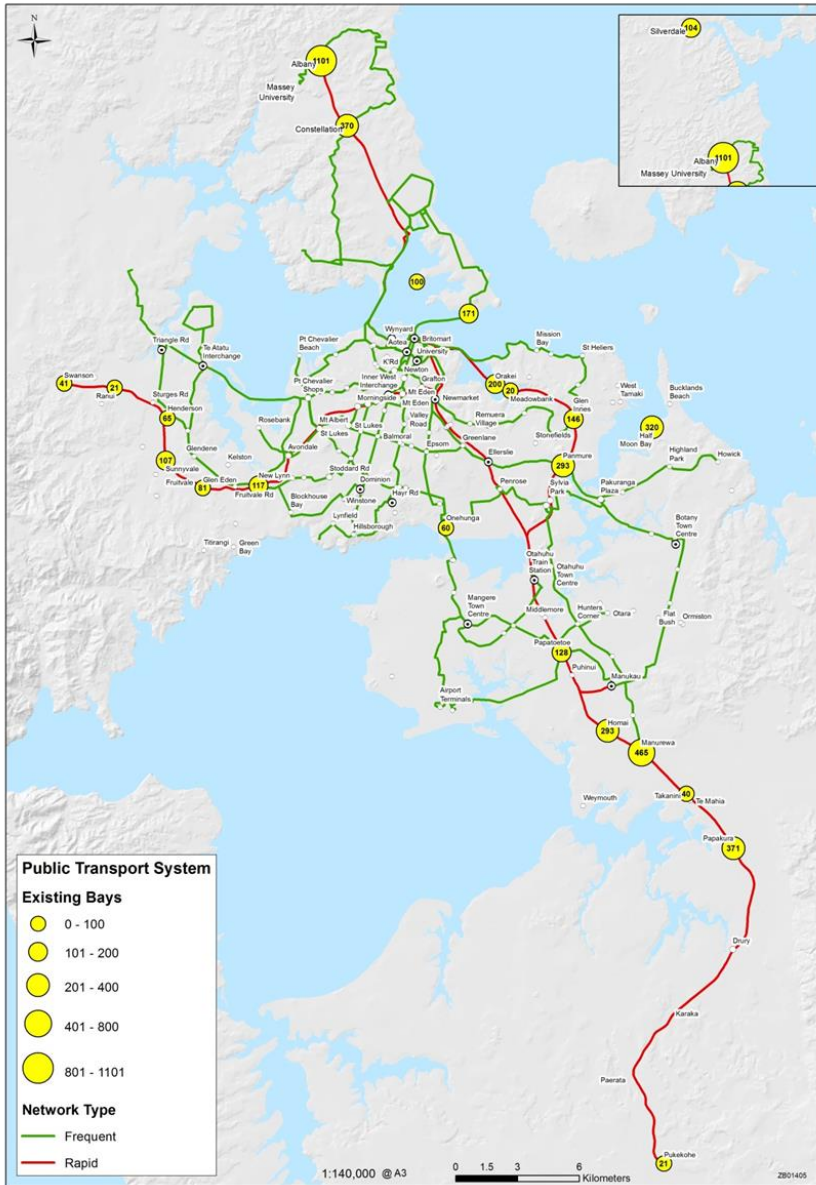
Figure B.1: Park and Ride Facilities in Auckland

B.2 Case Study 2: Portland, Oregon, USA (TriMET, 2009)

B.2.1 Portland Park and Ride Criteria

Portland has a population of 1,583,138 and 10,239 Park and Ride spaces. This is a synopsis of their Park and Ride Policy as presented by the transport operator, TriMET.

Goal 1: Location & Design

Location

- Put Park and Ride where they make sense;
- Regional development;
- Accessible to under-served residents of the transport network; and
- on good services.

Design

- Allow and incorporate Transit Orientated Development (TOD);
- Encourage compatible land uses;
- Park & Ride as land resources for TOD;
- Seek joint development opportunities;
- Seek input from community;
- Leverage public and private partnerships;
- Minimise impacts on neighbourhoods; other services and amenities; and
- Safety, Convenience, and Circulation.

Goal 2: Resources

- Long-range strategy for maximum cost-effectiveness;
- Top priority to shared use Joint development;
- Longer term planning for facilities; and
- Look at full range of sources such as public/private.

Goal 3: Management

- Encourage use by "under-served";
- Manage capacity;
- Use existing space; 24-hour; off-peak; carpool;
- Mitigate impacts to neighbourhoods;
- Consider charging at specific locations if appropriate; and
- Enforcement to support policies.

B.2.2 Context for the GDA

Portland again points towards locating Park and Ride in areas that are attractive for those currently under served by public transport and that promote mixed use sites.

B.3 Case Study 3: Vancouver Park and Ride Policy – 2012

B.3.1 Vancouver Park and Ride Criteria

Vancouver has a population of 2,419,700 and has 5,853 Park and Ride spaces. It also has a high public transport ridership per capita, especially compared to other cities of its size.

The purpose of the Vancouver Park and Ride policy is to bring consistent approach to Park and Ride Management and establish clear planning principles to guide decision makers.

Vancouver identifies Park and Ride as an important form of accessing the public transport network and improving options for customers that cannot effectively or efficiently use other modes to access public transport. Vancouver aims to achieve the following through the implementation of Park and Ride:

- Greater equity in the regional transportation system;
- Cost recovery to contribute to the cost of operation and construction of Park and Ride facilities;
- Revenue Generation;
- Improved efficiency of the regional transportation system;
- Successful opportunities to realise the potential for land development to become more public transport supportive; and
- Support major projects to maximize the return on investment.

Decisions regarding pricing, supply and management will be context sensitive to take into account of the local market characteristics, including consideration of:

- Location
- Type and frequency of public transport service
- Accessibility to the public transport network
- Utilisation patterns of the facility
- Future uses of the land and surrounding lands
- On the supply side, Translink expands and contracts Park and Ride facilities in order to meet the agency's strategic goals
- Park and Ride will only be provided where it is cost effective and can provide efficient access to the public transport network. The level of motor vehicle supply and location of Park and Ride should positively support Translink's goals and objectives and represent the highest and best use of land. Translink will take an overview of the whole transportation system when identifying opportunities to enable the correct level of supply to be delivered.
- All TransLink-controlled Park and Ride facilities will adopt variable paid parking. Variable pricing will be implemented to:
  - Ensure revenue contributes to costs;
  - Encourage efficient travel;
  - Provide incentives for sustainable travel behaviour; and
  - Be convenient and simple for customers to understand.

B.3.2 Context for the GDA

Vancouver looks in particular to develop mixed use sites as well as using Park and Ride to complement the existing public transport network. Sites are located away from urban centres and are aimed at attracting those on the periphery of the transport system. This is particularly relevant for the GDA as Vancouver has been successful in generating high public transport use and have been keen on strong site research before opening.

B.4 Case Study 4: Perth, Australia

B.4.1 Perth Park and Ride Provision

Transperth have released some figures behind their provision and operations:

- Transperth system has 400,000 one way trips per day - 60% of these on the bus system, 40% on the rail system;

- Users pay $2 per day to park at the numerous Park and Ride facilities located at the vast majority of railway stations;

- 20,000 car park spaces are provided on the network and 18,000-19,000 cars use the spaces per day;

- Assuming that each user (note price is per car rather than per passenger, so have assumed some cars have more than one person) makes a return trip on the rail system (only a small proportion of Park and Ride users are likely to use the bus), this means that Park and Ride users generate 40,000 trips, so 10% of total network trips are Park and Ride trips; and

- Key reasons that people use Park and Ride is high cost of parking in CBD and the train is much quicker, with Freeway speeds very slow in peak hour.

B.4.2 Context for the GDA

Perth illustrates the need to control city centre parking in the GDA. It also reinforces the need for Park and Ride journey times to be competitive in comparison with the full car trip.

B.5 Case Study 5: Adelaide, South Australia

B.5.1 Comparison with Dublin

The cities have comparable populations with 1,110,627 people living within the Dublin Urban Area and 1,291,666 living within the Adelaide Urban Area.

Adelaide occupies a larger area than Dublin, albeit with the inner urban core at much higher density with an area of 3,258 sq km in comparison with Dublin's 318 sq km. The surrounding topography of Adelaide results in the city expanding only Northwards and Southwards, becoming more linear over time.

Both are coastal cities and surrounded by a large rural area where many travelling city-bound originate from. Both cities have several motorways leaving the urban area on radial routes with a circular ring road intersecting them, although the ring road in Dublin acts as one road in its own right whereas in Adelaide it is a series of roads which form the ring.

B.5.2   Adelaide Park and Ride Provision

Adelaide has substantial Park and Ride facilities on almost all roads entering the wider urban area with 72 current facilities available, totalling 10,800 parking spaces. The largest park and ride facilities are mostly concentrated in the North west and South west peripheries of the city. The largest park and ride has 1426 spaces (although also serves as parking for a large entertainment complex) and charges AUD 4 per day between 05:00 and 18:30, although entry must be before 17:00 and AUD 12 for parking between 17:00 and 05:00

Park and ride facilities in Adelaide are linked in with the Metrocard, a public transport top-up card with credit loaded, which offers reduced rates on all modes of public transport throughout the city.

Swiping the card at entry of a park and ride facility and then again on any subsequent mode of transport city-bound results in a fare of just AUD 2 per day. Some transport links such as the trams connecting the Entertainment Centre car park to the city are free of charge.

B.5.3   Application of Best Practice

Adelaide has a large number of sites which give good geographical coverage, but this is at a variety of distances from the city centre. Some sites are multi-use, and all have good public transport links; some are of limited size, predominantly those at outer suburban locations. As with Stockholm, most locations are generally on or very close to major roads with good access to and from the Park and Ride facilities. Locations with multiple land uses have been exploited.

B.5.4   Context for the GDA

Elements of the Adelaide approach which the GDA may consider would include ensuring facilities have a good coverage to provide access across the hinterland of the GDA and reduce circulating traffic along routes like the M50. Figure B.2 summarises the Park and Ride facilities in Adelaide. Sites should be located on high capacity public transport services to maximise trips and travel time, close to the major arterial routes to maximise car trip attraction. Finally consideration may be made for sites that may have capacity for dual use parking such as large shopping areas.

TRAIN

Line	Location	Car parks
Belair	Glenalta	22
Belair	Blackwood	154
Belair	Coromandel	99
Belair	Eden Hills	25
Belair	Mitcham	36
Gawler	Gawler Central	85
Gawler	Gawler	290
Gawler	Munno Para	67
Gawler	Smithfield Interchange	437
Gawler	Broadmeadows	20
Gawler	Womma	68
Gawler	Elizabeth Interchange	146
Gawler	Elizabeth South	40
Gawler	Salisbury Interchange	240
Gawler	Chidda	17
Gawler	Parafield	50
Gawler	Parafield Gardens	22
Gawler	Greenfields	14
Gawler	Mawson Interchange	550
Grange	Grange	20
Grange	Seaton Park	10
Grange	Albert Park	21
Seaford	Seaford Interchange	450
Seaford	Seaford Meadows	550
Seaford	Noarlunga Centre	595
Seaford	Christie Downs	156
Seaford	Lonsdale	157
Seaford	Hallett Cove Beach	188
Seaford	Hallett Cove	99

Line	Location	Car parks
Seaford	Marino Rocks	30
Seaford	Seacliff	20
Seaford	Brighton	222
Seaford	Hove	41
Seaford	Warradale	20
Seaford	Oaklands	265
Seaford	Marion	44
Seaford	Ascot Park	15
Seaford	Woodlands Park	40
Outer Harbor	Taperoo	23
Outer Harbor	Largs	10
Outer Harbor	Peterhead	36
Outer Harbor	Glanville	69
Outer Harbor	Ethelton	52
Outer Harbor	Port Adelaide	71
Outer Harbor	Alberton	15
Outer Harbor	Cheltenham	12
Outer Harbor	Woodville	80
Outer Harbor	Woodville Park	48
Outer Harbor	West Croydon	12
Outer Harbor	Croydon	10

BUS

Route	Location	Car parks
Hills	Mount Barker	563
Hills	Aldgate	28
Hills	Crafers	65
O-Bahn	Golden Grove	180
O-Bahn	St Agnes	94
O-Bahn	Tea Tree Plaza	700
O-Bahn	Paradise–Darley Road	400
O-Bahn	Paradise	475
O-Bahn	Klemzig	450
Outer South	Old Reynella	50
Outer South	Panalatinga Rd	96
South	Aberfoyle Park	100
South	Clovelly Park	600

TRAM

Location	Car parks
Brighton Road	80
Glenelg East	35
Glengowrie	40
Morphett Road	66
Plympton Park	45
Glandore	15
Forestville	50
Goodwood Road	62
Entertainment Centre	1,426

Figure B.2: Park and Ride Facilities in Adelaide

B.6 Case Study 6: Stockholm, Sweden

B.6.1 Comparison with Dublin

While Stockholm was not identified in the earlier benchmarking exercise, it is comparable to Dublin in the following manner.

The cities have similar populations. 1,110,627 people reside within the Dublin Urban Area. 1,372,565 people live in the Stockholm Urban Area. Stockholm occupies a slightly larger area than Dublin, but both areas are comparable. Dublin spans 318 sq km. Stockholm spans 381 sq km. Both cities also have a clearly defined circular boundary around their central zones, marked by a ring shaped motorway which joins onto several other regional roads and motorways travelling on radial routes.

Both are coastal cities and surrounded by a large rural area where many travelling city-bound originate from.

B.6.2 Stockholm Park and Ride Provision

Congestion charges are in operation within the inner city between the hours of 06:30 and 18:29. Only Swedish registered vehicles pay the charge. Eco-vehicles are excluded. Road toll cameras register vehicles and an invoice is sent to the vehicle owner at the end of the month. Each trip in or out of the inner city costs SEK 10, 15 or 20 depending on the time of day. There is a daily cap of SEK 60.

On the periphery of the inner city area, there are 23 (although reports range from 21-25) Park and Ride facilities, close to public transport. In order to get the lowest daily charge for using the Park and Ride, motorists must arrive at the facilities between 05:00 and 09:00. The total number of parking spaces available is 3,189. Figure 9-2 summarises the total Park and Ride facilities in Stockholm.
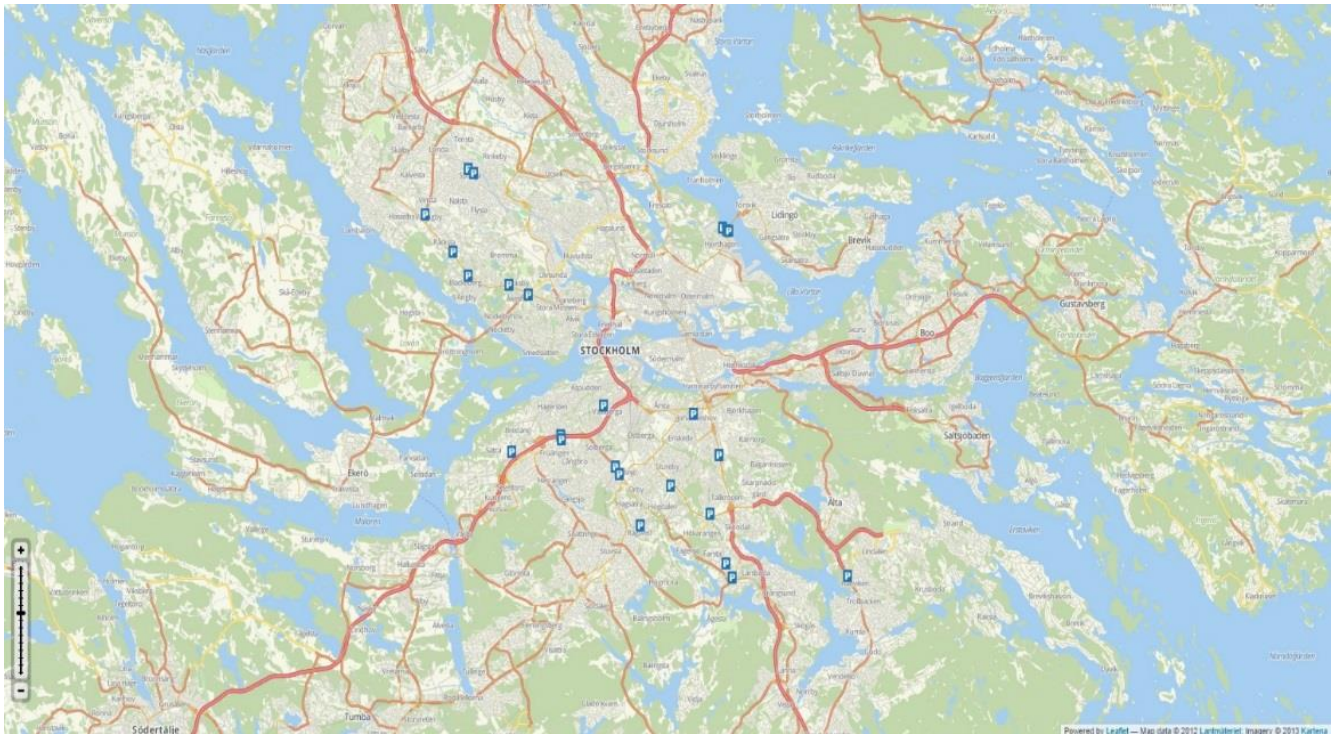

Figure 9-2 : Park and Ride Facilities in Stockholm

B.6.3   Application of Best Practice

20-25 sites give good geographical coverage, but this is at a variety of distances from the city centre. Some sites are multi-use, and all have good public transport links often associated with Stockholm's comprehensive suburban rail network (S-Tog and T-Bana) which has significant penetration to the hinterland of Stockholm. Locations are generally on or very close to major roads with good access to and from the facilities. These coupled together with a congestion charge makes the use of public transport services an attractive option and in turn promotes the use of Park and Ride facilities.

B.6.4   Context for GDA

Stockholm has followed best practice by placing Park and Ride on high capacity public transport services with wide ranging coverage across the region often close to major arterial highway routes to maximize extraction of car trips. Further incentive is provided with the policy mechanism of a congestion charge to limit traffic to the city core. Elements of this approach that could be considered for the GDA would be the placing Park and Ride on existing or future high capacity lines with varying coverage across the GDA and close to major arterial routes. Such demand management measures are being considered, specifically the addition of 4 toll locations along the M50.

B.6.5   Case Study 7: Bus for Scotland: Park and Ride for Buses, A National Framework, Smarter Scotland, Scottish Government, 2009

In this case study, Scotland identified bus Park and Ride as contributing to the provision of appropriate public transport solutions to address, local and national environmental objective. The sites were

Of the Scottish Government's five strategic objectives, the provision of Park and Ride facilities:

* Helped communities to become a stronger and safer place to live;

* Improved natural and built environment and the sustainable use and enjoyment fit;

* Helped people to improve their health ensuring better and faster access to health care;

* Reduced the driver journeys delays due to traffic congestion; and

* Increased the number of journeys made by public transport and active travel.

Park and Ride was defined as an integrated transport option where users could park their vehicles at a dedicated car park space and travel onwards to another destination using public or other modes of transport.

Inner Park and Ride locations were located just outside city centre (urban areas) and were served by bus services to city centre. The principal challenge was to ensure that this option clearly offset any usage of cars to/from city centre.

Outer Park and Ride locations were located further out and were designed to relieve traffic congestion along the road leading to city centre. They seemed to be very popular in Edinburgh and increased the usage rates by approximately 10% per month.

The Park and Ride developments worked well with wider multi-modal options, such as "car sharing" and "bike and ride". Table B.1 summarises the Park and Ride Provision for Edinburgh and **Error! Reference source not found.** provides a visual representation of the location of Park and Ride sites across Edinburgh.

Table B.1 : Edinburgh Park and Ride Provision

Location	Capacity	Service Type	Cost	Comments
Ingliston	1085	Bus, Rail,Tram	Free	
Hemiston	450	Bus	Free	Serviced by 5 bus routes during the day, 2 Night Service
Neweraghall	565	Bus, Rail	50p	
Ferrytoll	1040	Bus	Free	Region Bus Service to major towns
Sherifhall	561	Bus	Free	Serviced by 2 Bus routes, 8 services an hour off peak more during peak hour
Straton	600	Bus	Free	Serviced by 3 bus routes
Wallyingford	300	Bus, Rail	Free	Serviced by 4 bus services at 10 minute intervals

Figure B.4 : Park and Ride facilities in Edinburgh

B.6.6   Application of Best Practice

The most successful Park and Ride site is located at Fort Road Bridge (ferry toll) which is the major link from Fife to Edinburgh. It is essentially a regional bus station with express buses going to various locations on separate routes to and from Edinburgh i.e. not just the city centre. The site has a multi-storey car park. It has limited stops on the routes to minimize journey time. Edinburgh does suffer from congestion but its urban footprint is smaller than Dublin allowing quick times for bus routes into the centre (express bus). This model may not be applicable to the GDA. The Forth Road Bridge creates a barrier at which the cost of travel can be controlled. Dublin does not have such a structure.

B.6.7   Context for the GDA

It may be of consideration to provide a regional bus station with suitably sized Park and Ride facilities for towns such as Navan which have no rail links and rely on bus.

Edinburgh similar to other case studies shows the need for the GDA to have a good spread of facilities, locations outside urban areas to avoid congestion and minimise extraction from existing public transport services, location with good access to and from major arterial routes services by multiple mode public transport and service with multiple routes and destinations to give a good spread of destination to attracted not solely for city centre destinations.