Planning Engineering Report: M11-J6 (Fassaroe) Park & Ride

Author: National Transport Authority

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Park & Ride Development Office

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1 INTRODUCTION

The NTA Park & Ride Development Office (PRDO), established in February 2020, is responsible for the delivery of key Park & Ride sites for the NTA, Local Authorities and other transportation agencies in the Greater Dublin Area and Regional Cities by providing full-time specialist resources on these projects.

The PRDO published the GDA Park & Ride Strategy Report, which identifies 13 strategic locations for the provision of new Park & Ride facilities in the Greater Dublin Area including one at M11-J6 (Fassaroe).

This report documents the background and need for the facility, the proposed works to be undertaken, and the basis for the design of the proposed facility.

2 BACKGROUND

There is a significant number of people living in regional towns, rural hinterlands, and to a lesser extent; in the metropolitan area who do not have ease of access to high-quality public transport by walking or cycling. This can be due to their physical distance to high-quality public transport networks, limited pedestrian, and cyclist facilities (particularly in rural areas), or due to reduced mobility (e.g., elderly or mobility impaired).

Appropriately located and designed Park & Ride facilities can enable these people to access public transport and enhance their transport options to a wide range of destinations in a sustainable manner.

Park & Ride can intercept car trips where people are reliant on a private car at an early viable point in their journey thereby reducing the distances travelled by private cars with a corresponding reduction in carbon emissions and congestion.

The provision of high-quality Park & Ride facilities will enhance the accessibility of public transport to a wider catchment of people. This will increase the usage of public transport in the future in line with the GDA Transport Strategy objectives and protect the investment in existing and new public transport schemes.

Junction-6 is located 20 km south of Dublin City on the M11/N11 radial corridor. This corridor connects Dublin City to Rosslare Port and is of strategic importance nationally. This is emphasised through its inclusion in the Trans-European Transport Network (TEN-T) comprehensive road network. Therefore, it is imperative that it functions efficiently, particularly in facilitating the movement of goods and services. However, there is currently insufficient capacity along a section of this route between the Glen of the Downs (i.e., just north of Junction 7) and Dublin City to cater for existing demand during peak periods. Thus, the N11/M11 is subject to heavy congestion during these times.

Most trips using the N11/M11 corridor during peak times are taken by single occupancy car commuters. These road users occupy a high proportion of road space per person compared with the equivalent space occupied per person travelling on Public Transport.

This location was identified in the GDA Park & Ride strategy as an intervention point on the N11/M11 corridor for transferring a portion of these single-occupancy car trips to public transportation.

3 PURPOSE OF THE SCHEME

The number of commuters travelling by car to various key destination zones in Dublin City using the N11/M11 from areas that are currently lacking easy access to high-quality Public Transport services demonstrates the need to develop a network of Park & Ride facilities with good Public Transport services to the City. The overall objectives of these strategic Park & Rides are-

- To maximise the opportunities provided by on-going investment in public transport infrastructure and

services, particularly in relation to the commencement of service of new public transport projects.

- To provide the appropriate type and scale of Park and Ride at the right locations, with connectivity to the road and public transport networks and design that supports integration with the surrounding walking and cycling network.
- Reduce reliance on the private car, reduce distances travelled by car and ensure Park and Ride facilitates greater use of sustainable modes.
- Deliver an enhanced customer experience through safe, secure, and user-friendly facilities that consider opportunities for interchange and to address barriers to public transport use.

It is projected that there will be a substantial increase in public transport demand between 2021 and 2042 with significant population increases forecasted along the corridor and planned road capacity improvements of the M11. The demand for Park & Ride will further increase as the public transportation mode share increases to accommodate the expected increase in trips to 2042.

Strategically placed Park & Ride will enable this wider catchment to access high-quality public transport options and, in facilitating this, will help reduce road congestion along the corridor.

Travel Demand Analysis and a review of the current Public Transport services on the M11 corridor conducted by the Park & Ride Development Office concluded that intervention through strategic Park & Ride facilities would be most effective in the vicinity of three separate locations on the M11, including at Junctions 6, 11 and, 16.

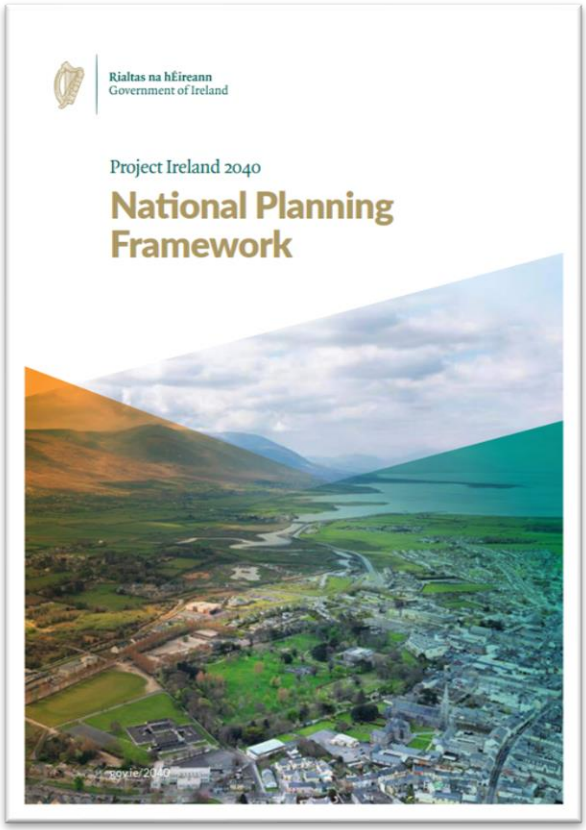
The objective of this scheme is to provide the appropriate type and scale of Park & Ride at Junction-6, with connectivity to the road and existing public transport networks with a design that supports integration with the surrounding walking and cycling network.

As a strategic Park & Ride, this facility aims to intercept motorway car traffic that originates in catchment areas further south of this location (Example: Arklow, Gorey, Enniscorthy etc.,) and transfer them to a bus suitable for their destination at the facility.

4 PLANNING CONTEXT

4.1 *Project Ireland 2040 – National Planning Framework*

The development of the proposed Park & Ride facility complies with the following policy set down in the Project Ireland 2040 – National Planning Framework:



National Strategic Outcome 4:

Sustainable Mobility - Public Transport: Expand attractive public transport alternatives to car transport to reduce congestion and emissions and enable the transport sector to cater for the demands associated with longer term

population and employment growth in a sustainable manner.

Deliver the key public transport objectives of the Transport Strategy for the Greater Dublin Area 2016-2035 by investing in projects such as New Metro Link, DART Expansion Programme, BusConnects in Dublin and key bus-based projects in the other cities and towns.

4.2 *Wicklow County Development Plan 2022-2028*

The development of the proposed Park & Ride facility complies with the following policy set down in Wicklow County Development Plan 2022-2028:

CPO 11.29: To support tourist/visitor park and ride facilities at appropriate locations that will facilitate access to upland amenity areas as may be identified in the Glendalough and Wicklow Mountains National Park Masterplan, or by strategies / plans of the Wicklow Outdoor Recreation Committee, Wicklow Tourism or other tourism agencies.

Sustainable Transportation:

12.2.2 Park & Ride Facilities

The purpose of a 'Park and Ride' facility is to encourage car commuters to drive or cycle to a specific location with a car and secure bicycle park close to a high quality public transport service and to transfer to public transport, thereby reducing congestion and promoting public transport. Park and Ride sites often use valuable land adjacent to high-capacity public transport stations/stops which might be better used to provide intensive development, and therefore careful consideration will be given to ensure optimal locations, at the edge of or just outside town centres, that are attractive to users and developed for such use. The NTA has established a dedicated Park and Ride design office. Wicklow County Council is working with the NTA to determine locations for park and ride facilities along primary routes such as the M11/N11.

CPO 12.1: Through coordinated land-use and transport planning, to reduce the demand for vehicular travel and journey lengths by facilitating initiatives like carpooling and park and ride.

CPO 12.21: To promote the development of transport interchanges and 'nodes' where a number of transports

types can interchange with ease. In particular:

- *to facilitate the development of park and ride facilities at appropriate locations along strategic transport corridors which will be identified through the carrying out of required coordinated, plan-led transport studies and consultation with the appropriate transport agencies and/or Regional Authority.*

CPO 16.28: To encourage carpooling and facilitate park and ride facilities for public transport.

5 SCHEME DESIGN DETAILS

5.1 *Location*

The proposed Park & Ride facility is located north-western quadrant of Junction 6 on N11, 450 meters west of the western fringe of Bray town. The site is reasonably close (circa 250m) to the motorway and is easily accessible from the N11 via Junction-6 and the existing dual carriageway road.

The proposed site location is shown in Drawing: 20_008N-CSE-GEN-XX-DR-C-2001

5.2 *Site Constraints*

There are no major constraints associated with this site except a few-

- The existing dual carriageway road (Fassaroe Lane) and the internal site access road have steep (~7%) vertical gradients.

- The site has uneven topography with localised depressions in the field.
- The elevation difference between the site's top level and the existing internal access road level varies between 0-2 meters.
- A 600mm diameter potable water main and a medium-pressure gas distribution pipe runs under the internal site access road.
- A high-pressure gas transmission pipe crosses Fassaroe Lane from the south and runs under the northern footpath towards the east.
- The ground investigation conducted in February did not reveal any significant constraints. However, made ground/engineered fill was identified at all three borehole locations and four trial pits, reaching a maximum depth of 3.70 meters below ground level. The recorded soil type was described as brown, brown-grey, and black, with a slightly sandy and slightly gravelly silty clay texture and a low cobble content.

5.3 *Details of the Scheme*

5.3.1 Overview

The proposed Park & Ride facility will consist of the following:

- A new car parking area capable of accommodating a total of 388 car parking spaces, including 26 no. mobility impaired parking spaces and 42 no. e-car charging spaces.
- New bus standing area with a dedicated turning circle, 2 new bus bays and 2 passenger shelters.
- New set-down areas and taxi ranks with dedicated access.
- Hardstanding area for bike shelter and lockers.

The Proposed Layout of the Park & Ride facility is detailed in drawing: 20_008N-CSE-GEN-XX-DR-C-2200.

The proposed bus turning circle will be 7 metres wide and 60 metres long, sufficient in length to safely accommodate 2 coaches. The proposed facility will also include 2 bus shelters as part of the bus stop stand area.

The parking area can be accessed at the northern end of the proposed site from the new internal access road. A separate egress point will be located at the southwest edge of the car park, circa 35m north of the new main access junction.

5.3.2 Vehicular Access to the site

It is proposed to convert the existing left-in/left-out junction located on the dual carriageway road (Fassaroe lane) into an all-movement priority junction for the Park & Ride facility.

A new 45m long and 3m wide right-turning lane will be constructed on Fassaroe Lane as part of the proposed junction by realigning the existing central reserve and the eastbound carriageways towards the north to facilitate the local widening. Details of the tie-ins are shown in drawing: 20_008N-CSE-GEN-XX-DR-C-2200.

The new junction will be constructed in line with the requirements of Section 5.6.4 of the Geometric Design of Junctions published by Transport Infrastructure Ireland (Ref. No. DN-GEO-03060).

To minimise any reconstruction of the existing internal road and any potential impact on the existing underground utilities (water and gas mains), the current gradient (~6.8% upwards) of the internal road has been maintained throughout its 130 meters running length. Beyond that, the new proposed road will feature a milder vertical gradient (~4.3% downwards) that will tie in at the northwest corner of the car park.

It is important to note that a significant elevation difference (~4.5-5 meters) exists between the internal access road and the car park site to its east. Hence, to facilitate easy access to the users, the bus turning circle/head will be constructed so that the bus bays

(including passenger shelters) are at a relatively similar elevation to the car park's top surface level.

New height restriction barriers with a 2.7-metre-high clearance will be installed at the northern entrances of the car parking area.

A full Traffic Impact Assessment for the proposed scheme has been completed and it concludes that the proposed scheme will have a low impact on the existing and projected traffic regime of the local road network.

5.3.3 *Cycle and Pedestrian Infrastructure*

New active travel connections (pedestrian and cycle) with a crossing facility have been proposed on Fassaroe Lane linking the existing infrastructure to the Park & Ride as part of the junction improvement.

As part of the scheme, new realigned northern footways have been proposed that will replace the existing ones in a like-for-like manner.

40 no. bicycle parking Sheffield stands and 20 no. bike lockers will also be provided within the site to facilitate cyclists wishing to avail this facility.

5.3.4 *Public Lighting and Closed-Circuit Television (CCTV)*

The proposed facility will be illuminated by a new public lighting system to enhance the safety of the users.

A new CCTV system will also be installed at the bus stop area and throughout the car parking area in order to enhance the personal safety of the users and provide security for parked vehicles and Bicycles.

5.3.5 *Electric Vehicle Infrastructure*

The proposed scheme shall provide 42 no. parking and charging points for Electric Vehicles.

This represents ~10% of the total parking capacity of the facility which is in line with the recommendation set out in the Wicklow County Development Plan 2022-2028.

In addition, 39 no. standard parking spaces (~10%) will be futureproofed with ducting etc. to facilitate easy conversion to EV parking in the future.

5.3.6 *Provision for Parking for the Mobility Impaired Users*

The proposed scheme shall provide a total of 26 no. parking spaces (including 5 no. large spaces) for mobility-impaired users which represents ~5% of the total parking capacity of the facility. Two (2 no.) of these spaces will be equipped with electric vehicle charging capability and the rest futureproofed with ducting etc. to facilitate easy conversion to EV parking in the future.

5.3.7 *Proposed Surface Water Drainage*

The surface water drainage will consist of 2 separate systems:

- the site will be drained through a series of gullies and into a piped drainage system that will ultimately be collected and conveyed through a series of proposed stormwater pipes prior to discharging into the existing storm water sewer to the south of the site on Fassaroe Lane.
- To comply with the GDSDS guidelines in relation to SUDs, a series of rain gardens is proposed within the site, to promote infiltration to the groundwater where suitable. At locations where the infiltration rate is very low, a proposed perforated pipe will convey the excess runoff back to the piped drainage network.

5.3.8 *Proposed Foul Drainage*

A pre-connection enquiry (PCE) form was submitted to Irish Water on 14th December 2022 which detailed the proposed foul sewer gravity system for the site (ref CDS22008848).

The proposed development, subject to this planning application, comprises of 1No 150mm diameter gravity foul sewer line, connecting the staff toilet to the existing foul sewer within the R918 to the south of the site.

As such, the overall wastewater discharge associated with the proposed development is in accordance with the demand/discharge rates based on IW Wastewater Infrastructure Code of Practice 2020.

As no industrial-specific wastewater flow will be generated from the development, the design Dry Weather Flow of the development is 300l/d.

For further details, please refer to drawing 20_008N-CSE-GEN-XX-DR-C-2500.

5.3.9 Utility Connections (Including Relocation)

Some existing utility pipes/ducts are present within the redline boundary of the scheme as described below-

- A medium-pressure gas transmission main crosses the carriageway from south to north near the roundabout entry and runs towards west under the northern footway. A distribution main also runs under the southern footway with a connection line/main branching off into the site after crossing the carriageway in front of the existing site access junction. This transmission main ends 150 meters north of the junction.
- Several existing water mains (150 dia, 200 dia, 600 dia, 800 dia) are present within the redline boundary with a majority of them close to the existing/proposed junction. The 600 dia main currently runs under the existing internal road for 95m meters before deviating north-west. 2 nos. of 200 dia main also run under the verge of the internal road for 130m.

Based on our initial investigation, the scheme proposals will have no major impact on these existing utilities. The design has been optimised to ensure that the sections of utilities currently running under the footpath remain separate from the mainline carriageway without the involvement of any relocation work.

The electricity will be drawn from the existing ESB pylon from the Northwest corner of the site as shown on various electrical and ducting drawing submitted with the planning application.

A new substation will be required to power the various electrical equipment within site. The location of a building to accommodate the substation and the switch room has been shown in drawing 20_008N-CSE-GEN-XX-DR-C-2600.

5.3.10 Micro Generation (Solar Panels)

Solar panels are an excellent source of renewable energy as they harness the power of the sun, which is a sustainable and plentiful resource. They aid in reducing dependence on fossil fuels, mitigating greenhouse gas emissions, and promoting a cleaner and more sustainable environment for future generations.

Solar panels can be a good choice for offsetting the electricity demand of an existing asset, such as a building etc. However, the anticipated electricity demand at the Park & Ride site is expected to be low. Therefore, efficiently managing, storing, and integrating any surplus electricity generated from the solar panels into the grid would require additional resources, expenses, and the implementation of a comprehensive and intricate business model.

While solar panels may be suitable for other locations, such as existing buildings or bus shelters, they may not be the most optimal choice for a facility situated in an isolated remote area like this.

6 FLOOD RISK ASSESSMENT

We have assessed the available information and inspected the site and its environment. The proposed development is not deemed to be at any significant risk of flooding which is

mainly attributable to the local topography and therefore a stage 2 assessment in not required in relation to this site. The proposed works are unlikely to raise significant flooding issues and do not obstruct existing flow paths. The restricted surface water discharge from the site does not adversely affect or increase the flood risk to adjacent or downstream sites.

Please refer to Appendix A for the full report.

7 APPENDIX A

Appendix A -
Fassaroe Park & Ride
Flood Risk Assessment

Author: National Transport Authority

Date: 26th January 2023

Park & Ride Development Office

Document Control Sheet

Project Name: Fassaroe Park & Ride

Project Number: 20_008N

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1.1 Introduction/Scope of Report

This report is prepared in accordance with the requirements of the Department of the Environment Publication “The Planning System and Flood Risk Management guidelines for Planning Authorities (FRMG) published in November 2009. The scope of this assessment is a review of flood risks which may affect the proposed development and/or the effect or increase flood risk to adjacent properties resulting from the proposed development.

Flood risk is the product of likelihood of flooding and the consequences of flooding. The likelihood of flooding is assessed with regard to historical data and with a view to expected flood levels where they may impact on the proposed development. The consequences of flooding relate to the impact on the prospective occupants of the proposed development and any associated material assets located at the property.

1.2 Site Location:

The site is located on the Northern side of the R918, off Junction 6 of the N11. The site grid reference is E724577 N717969 to Irish Traverse Mercator.

Figure 3.1 – Site Location Map

1.3 Description of the Proposed Development:

The proposed site is a brown field site, bounded to the south by the R918, on the west by another brown field site, on the north by an area of woodland and on the east by the N/M11 Junction 6.

The proposed development consists of a 391 space Park & Ride facility, including a bus turning area, bike storage and a staff toilet. It is proposed to use permeable asphalt to drain the hardstanding and the staff toilet will connect into the existing FW system within the R918.There have been previous planning applications submitted on this site, but no development has occurred. The site is currently undeveloped.

The existing site slopes gently from west to east, with an existing access road sloping steeply from north to south, with a level difference of approximately 8m from 37.00 AOD to the north of the access road to 29.00 AOD to the south (refer to Site Survey Drawing in Appendix 1).

The finished level of the carpark ranges from 32.200 AOD to 35.000 AOD.

1.4 Stage 1 – Flood Risk Identification

The flood risk assessment is undertaken to determine if a flood risk exists for the proposed development and if so to determine the extent of the risk.

1.4.1 Office of Public Works (OPW) Flood hazard Database

Examination of recorded flood events as detailed on floodmaps.ie shows 3 recorded flood events within 2.5km of the site. These flood events are listed on the Map report which is attached in Appendix 2. The events are recorded as occurring to the north, northeast and south of the site. The event to the north is the occasional flooding due to hydraulic inadequacy. The event to the northeast occurred in August 1986 as a result of Hurricane Charlie causing flooding in the River Dargle. The event to the south of the site is the recurring flooding to the door of one property in Kilcroney Lane

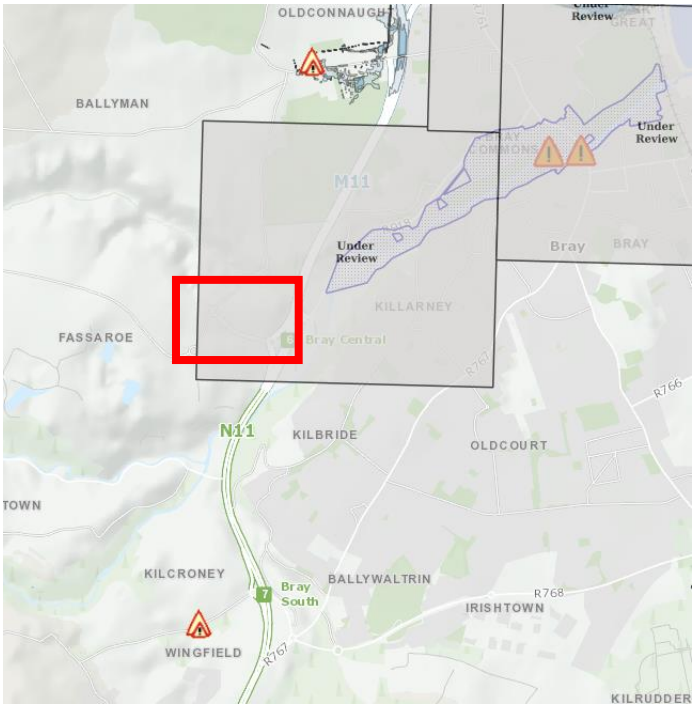

Figure 3.2 - OPW Flood Hazard Map

1.4.2 CFRAM Preliminary Flood Risk Assessment Map

The catchment Flood Risk Assessment and Management (CFRAM) programme is designed to assess and map the country river system to identify areas at risk of significant flooding.

The CFRAM Draft Map for the proposed site does not indicate flooding under the following headings;

- Fluvial
- Pluvial
- Groundwater

Figure 3.3 – Extract from CFRAM Preliminary Flood Risk Assessment Map

The probability of flooding from rivers and the sea is low (less than 1:1000) for both river and coastal flooding which would be equivalent to Flood Zone C.

1.4.3 Wicklow County Council Drainage Records

A copy of Wicklow County Council Drainage Records is attached in Appendix 3. The existing drainage records also include the existing private drainage system previously provided to the site.

1.4.4 Vulnerability Class

The proposed development is categorised as Less Vulnerable Development in accordance with Table 3.1 Classification of vulnerability of different types of development of the OPW document 'Guidelines for Planning Authorities.

1.4.5 Impact of the Proposed Development on the Existing Catchment

The proposed development does not obstruct any existing flow paths and the surface water discharge from the site is restricted to equivalent green field run off thus not impacting or increasing the flood risk within the existing catchment.

1.5 Tabular Assessment of Flood Sources

Flood Source	Pathway	Information Source Consulted	Likelihood	Reason
Storm Surge from Irish Sea	Back-up of Council Drainage,	Site Survey,	Low	Distance for Sea and height above sea level.
Surface Water	Surcharging system blockage	WCC Records Site Survey As-Builts Site Visits	Low	The topography of the site. The site is incorporating SuDS as part of the surface water drainage design. The oversized surface water sewer within the R918 is owned and maintained by WCC.
Foul Sewer	Surcharging system blockage	WCC Records Site Survey As-Builts Site Visits	Low	The topography of the site. The site is only providing 1No staff toilet on a foul run of over 100m long.
Ground Water	Surcharging	Site Survey Site Visits	Low	The topography of the site.
Overland Flow	Run off from adjacent fields	Site Survey Site Visits	Low	The location and topography of the site.

1.6 Conclusion

Based on the above, we have assessed the available information and inspected the site and its environment. The proposed development is not deemed to be at any significant risk of flooding which is mainly attributable to the local topography and therefore a stage 2 assessment in not required in relation to this site. The proposed works are unlikely to raise significant flooding issues and do not obstruct existing flow paths. The restricted surface water discharge from the site does not adversely affect or increase the flood risk to adjacent or downstream sites.