

GLENAMUCK DISTRICT DISTRIBUTOR ROAD



Dún Laoghaire-Rathdown
County Council Comhairle Contae
Dhún Laoghaire-Ráth an Dúin

ENVIRONMENTAL STUDY

Volume 1

Non-Technical Summary

JULY 2007

RPS




GLENAMUCK DISTRICT DISTRIBUTOR ROAD

Environmental Study Volume 1

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PREFACE

This environmental study for the Glenamuck District Distributor Road consists of the following documents:

Volume 1: Non-Technical Summary

Volume 2: Main Report

Volume 3: Technical Appendices

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1 INTRODUCTION

This Environmental Study for the Glenamuck District Distributor Road was prepared on behalf of Dun Laoghaire Rathdown County Council by RPS Consulting Engineers. The study team involved in this project include RPS and specialist environmental sub-consultants.

This study comprises of three volumes of which this Non-Technical Summary is the first. The titles of each of the subsequent volumes are in the preface at the front of each volume.

1.1 LOCATION

The proposed scheme is located in southern County Dublin, approximately 16km from Dublin City Centre and 10km from Dun Laoghaire Town as shown in **Figure 1.1**. It is located in largely a rural and agricultural area of County Dublin, which encompasses the village of Kiltiernan. This village provides linkages to Enniskerry to the south, Stepside village to the north and to the Carrickmines Interchange of the M50 South Eastern Motorway approximately 1.5km east of Kiltiernan village. The existing Glenamuck Road links all these roads together at the Golden Ball junction in the heart of Kiltiernan village. This rural location is situated at the urban fringes of Dublin City and County particularly with the access onto the M50 motorway, which provides linkages to the majority of the national road schemes in the country.

1.2 EXISTING SITUATION

The Glenamuck Road is presently used by a variety of road users including agricultural vehicles, buses, pedestrians, cyclists, equestrian activities, heavy goods vehicles, commuters, local and regional businesses etc. This narrow single carriageway road is rural in nature and fronted by numerous residential dwellings and farmlands. This inevitably creates conflict between the different road users who share the same road facility. In addition, the Glenamuck Road is becoming increasingly under pressure to cater for commuting routes (regional and local) between Enniskerry, Stepside, Kiltiernan and environs (Cornelscourt, Cabinteely etc) of these areas to the M50 motorway and other eastbound locations such as Dun Laoghaire etc. The

Glenamuck Road has essentially become a distributor road for these areas.



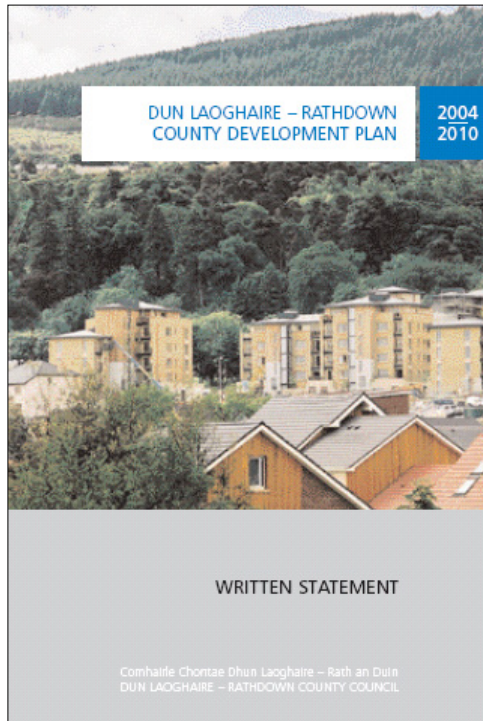
Glenamuck Road

The existing Glenamuck Road is also considered incapable of servicing the transportation needs arising from the extensive residential and commercial zoning set out in the County's Development Plan. Some of these proposals are already at planning and construction stages and many of these developments will be seeking access onto the Glenamuck Road thereby placing further demand on the road. Furthermore, there are proposals as laid out in the Dublin Transportation Office *Platform for Change* document which contains the future transportation needs of the Greater Dublin Area to extend the LUAS light railway line, further develop the Quality Bus Corridor network and cycle lanes within the study area. These proposals will be difficult to implement without the proposed scheme in place.

1.3 NEED FOR THE SCHEME

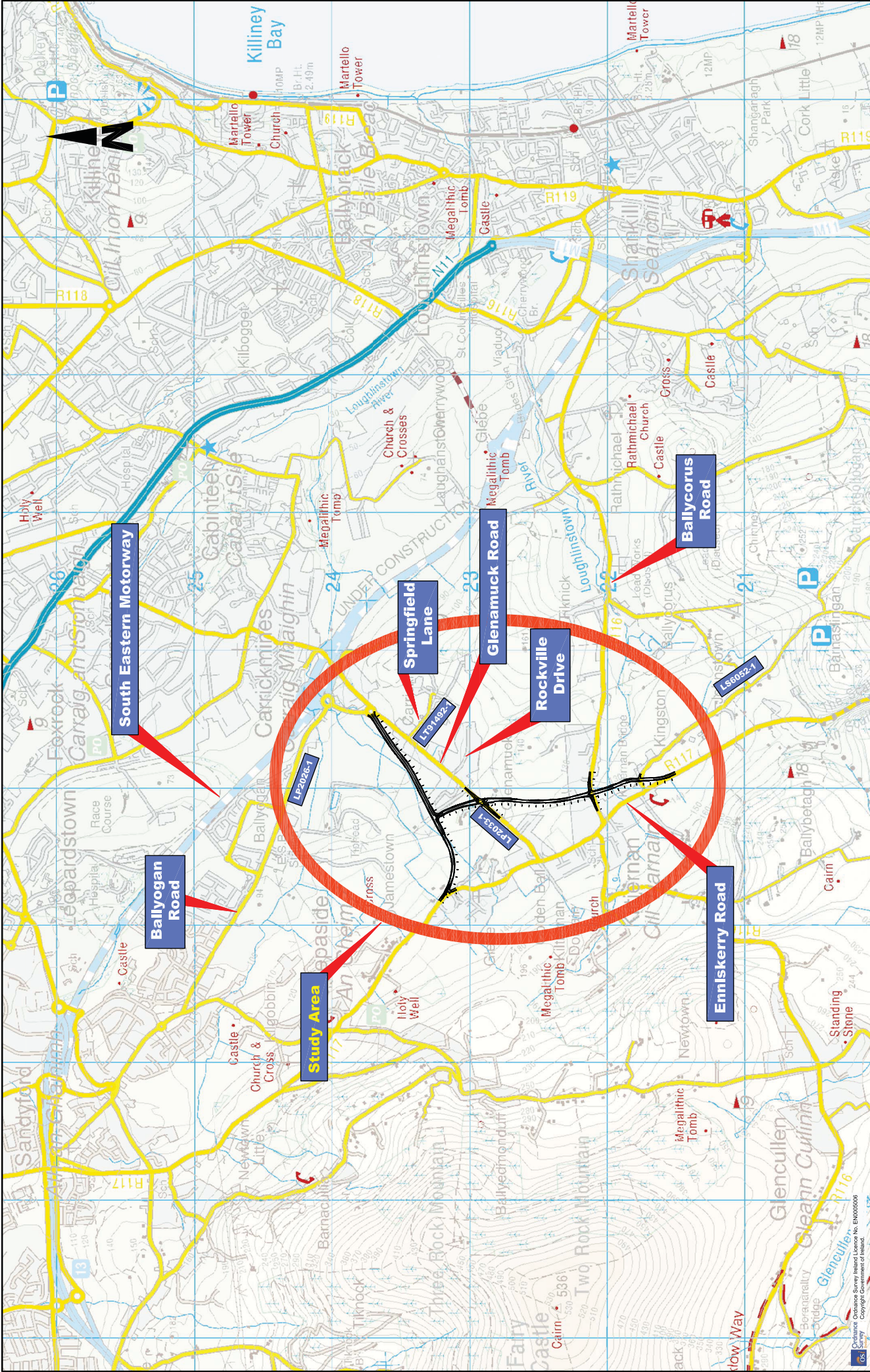
The current road infrastructure is unsatisfactory for the current and predicted traffic volumes and in some locations does not comply with current design standards. There is evidence of congestion and delay on the Glenamuck Road particularly at the Golden Ball junction. In addition, since the completion of the South Eastern Motorway, further demand has been placed on this corridor, as it is a direct strategic link to the motorway off the already heavily trafficked Enniskerry Road. Dun Laoghaire Rathdown County Council has recognised the need to improve the road network within this locality and as such in their

County Development 2004 – 2010 stated that as part of the six year road objective the Glenamuck Road corridor is to be upgraded between Enniskerry Road the Carrickmines M50 Interchange.



Dun Laoghaire-Rathdown
County Development Plan 2004 - 2010

The need for the proposed scheme has also been laid out against the principles of National Spatial Strategy, which recognises the need to encourage greater spatial balance by strengthening areas and places in a structured way, rather than seeking to stop growth in Dublin. This is reinforced by the Local Area Plan for Kiltarnan/Glenamuck, which encourages sustainable local development.



<p>Client: Dún Laoghaire Rathdown County Council/Comhairle Contae Dún Laoghaire-Ráth an Dúin</p>	<p>Project: GLENAMUCK DISTRICT DISTRIBUTOR ROAD</p>	<p>Title: STUDY AREA & EXISTING ROAD NETWORK</p>	
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<p>Notes: 1. This drawing is the property of RPS Consulting Engineers Ltd. It is a confidential document and must not be copied, used, or its content divulged without prior written consent. 2. All Levels refer to Ordnance Survey Datum, Mean High Water. 3. DO NOT SCALE. Use figured dimensions only, if in doubt ask.</p>	<p>Scale: 1:25,000@A3</p>		<p>Fig. No.: A01</p>
	<p>Date: July 08</p>		<p>Approved by: MN</p>

2 DESCRIPTION OF THE SCHEME

2.1 ROUTES CONSIDERED

Following the identification of the study area and analysis of the constraints to the scheme, (Constraints Study Report, 2005), three primary route options (1, 2, and 3) were identified that appeared to satisfy the scheme objectives, i.e. to cater for the predicted increase in traffic volumes and thereby provide adequate facilities for the different road users.

These routes were identified taking account of the engineering, economic and environmental considerations and having regard to the issues and constraints identified in the Constraints Report. Due to the length of the scheme (approximately 1.5km) there are a limited number of viable route options available for consideration. The three route options commence at the Carrickmines Interchange Southern Roundabout and extend to meet the Enniskerry Road at various locations. All three-route options are shown schematically in **Figure 2.1**.

The Feasibility Report concluded that the preferred route for the GDDR section of the proposed scheme is Route Option 1. Subsequent to this report, during the Preliminary Design Stage of the project, further detailed traffic modelling analysis was undertaken. The results of this assessment established that a Link Road to Enniskerry would be necessary to prevent traffic congestion within Kiltiernan village. The Preliminary Design further developed the Link Road with three link options A, B and C as shown in **Figure 2.2** to tie into the preferred GDDR.

The preferred route of Route Option 1 and Link Option C was chosen.

2.2 GENERAL

There are two sections to the proposed scheme, which are the Glenamuck District Distributor Road (GDDR) and the Link Road to Enniskerry. The basic design philosophy adopted for the GDDR was the provision of road infrastructure that would allow traffic to/from the north and south ends of the Enniskerry Road to feed into one road (the GDDR) and thus facilitate access to/from the M50 and future development lands. The Link

Road to Enniskerry and a section of the GDDR will be single carriageway feeding into a dual carriageway section of road along the mainline GDDR closer to the Carrickmines Interchange. The proposed scheme layout has been shown in **Figure 2.3**

2.2.1 Glenamuck District Distributor Road (GDDR)

The mainline of the proposed scheme is known as the GDDR and is located north of the existing Glenamuck Road. This road will act as the main collector/distributor section of the overall network and directly connect the roundabout to the south of the Carrickmines interchange to the Enniskerry Road north of Kiltiernan Village. The proposed GDDR is approximately 1.5km long and starts at the tie in to the Enniskerry Road north of Kiltiernan village. This runs to the existing roundabout junction to the south of Carrickmines M50 Interchange. The GDDR consists of 500m of single carriageway, a transitional section of 100m from single to dual carriageway at the proposed junction with the Link Road to Enniskerry and approximately 935m of dual carriageway at the existing roundabout junction at Carrickmines.

2.2.2 Link Road

The Link Road to Enniskerry is located to the south of GDDR and runs in a north south direction connecting the GDDR to the Enniskerry Road south of Kiltiernan Village. This road would act as a collector/distributor road for traffic and will also act as a bypass of the village and keep passing traffic out of the village. This provision will remove the majority of unwanted through traffic from the village and create a naturally traffic calmed street.

The proposed Link will intersect the existing Glenamuck Road creating a new junction. This measure will mitigate any severance issues that may arise.

2.3 ROAD CLOSURES

One of the aims of the proposed scheme is to restrict unwanted through traffic within Kiltiernan Village in order to create a naturally

traffic calmed village. This can be achieved and enhanced by the introduction of the following four road closures ('cul de sacs') on existing roads. These are located on the Glenamuck Road, Enniskerry Road and Barnaslingan Lane. The locations of these road closures are shown in **Figure 2.4**. It should be noted that the extinguishments of public rights of way will be subject to and in accordance with the relevant statutory procedures.

2.4 JUNCTIONS

There will be five junctions in total, as listed below, with four between the GDDR scheme and the existing local road network and one junction on the GDDR itself.

- Roundabout junction with GDDR, Ballyogan Link Road and Glenamuck Road
- Signalised junction between the GDDR and Link Road
- Signalised junction between the Link Road and the existing Glenamuck Road
- Priority junction between the Link Road and the realigned Enniskerry Road
- Signalised junction between the Link Road and the Ballycorus Road.

2.5 PEDESTRIAN AND CYCLIST CONSIDERATIONS

The proposed scheme will include the following provisions for pedestrian and cyclists.

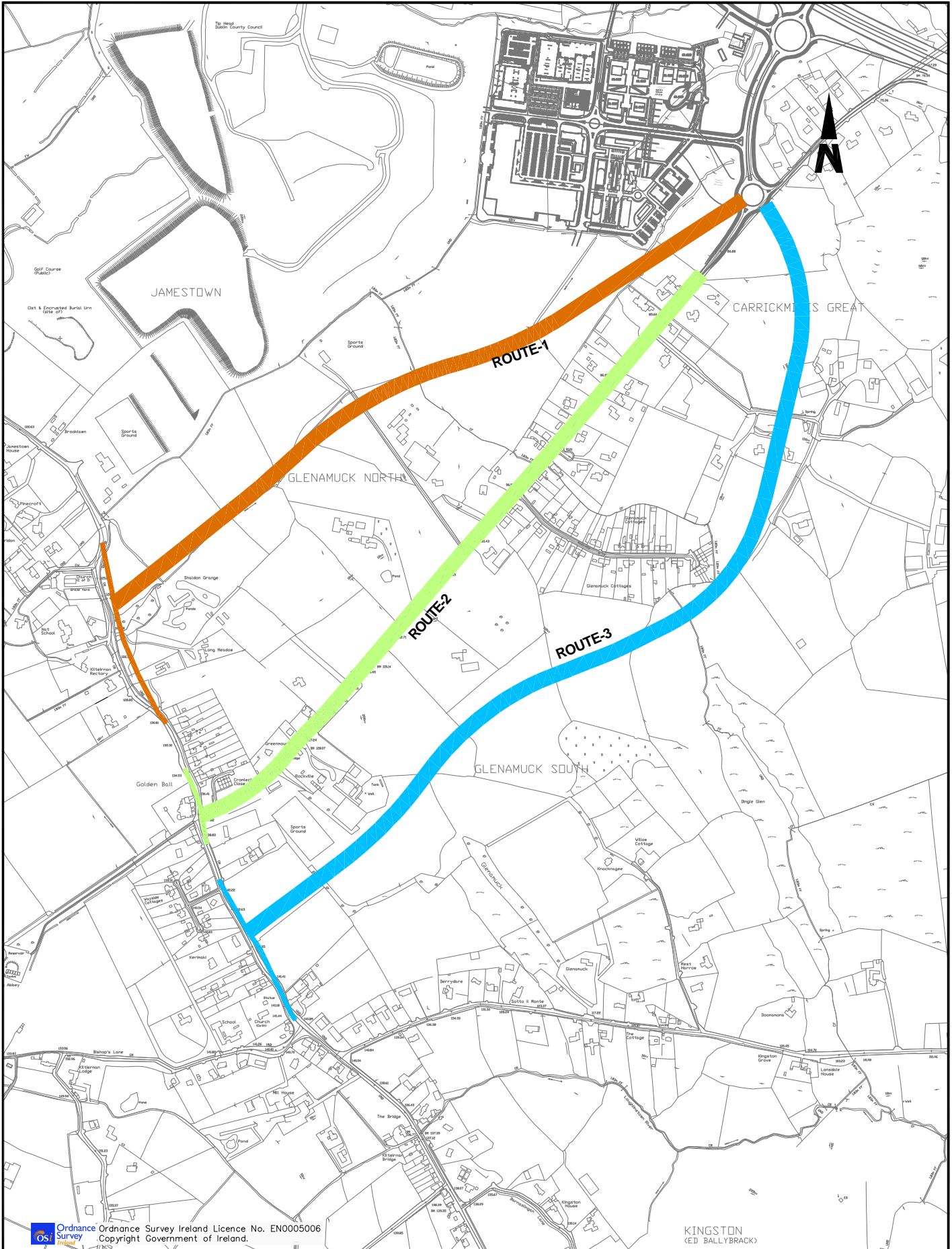
- Continuous footpaths will be provided along both sides of the GDDR and Link Road to Enniskerry.
- The GDDR footpaths and cyclepaths can be integrated into future pedestrian or cycle infrastructure provision adjacent to the proposed scheme.
- The existing footpaths on the Glenamuck Road will be realigned to tie into the proposed footpaths of the Link Road.
- Pedestrian crossing facilities will also be provided at the four key junctions of the proposed scheme.

2.6 PUBLIC TRANSPORT

The scheme includes for the provision of public transport facilities. In the future there is a requirement to develop bus priority on the scheme, as such, the design has an allocation of road space and infrastructure to accommodate these requirements. These include bus lanes and bus priority at each junction on the proposed scheme. The scheme also proposes that space be set aside for the provision of bus stops/shelters along the route. All of these proposals are in line with the Dun Laoghaire Rathdown County Council Development Plan and the Dublin Transportation Office Strategy *A Platform for Change 2000 – 2016*.



2.7 STRUCTURES

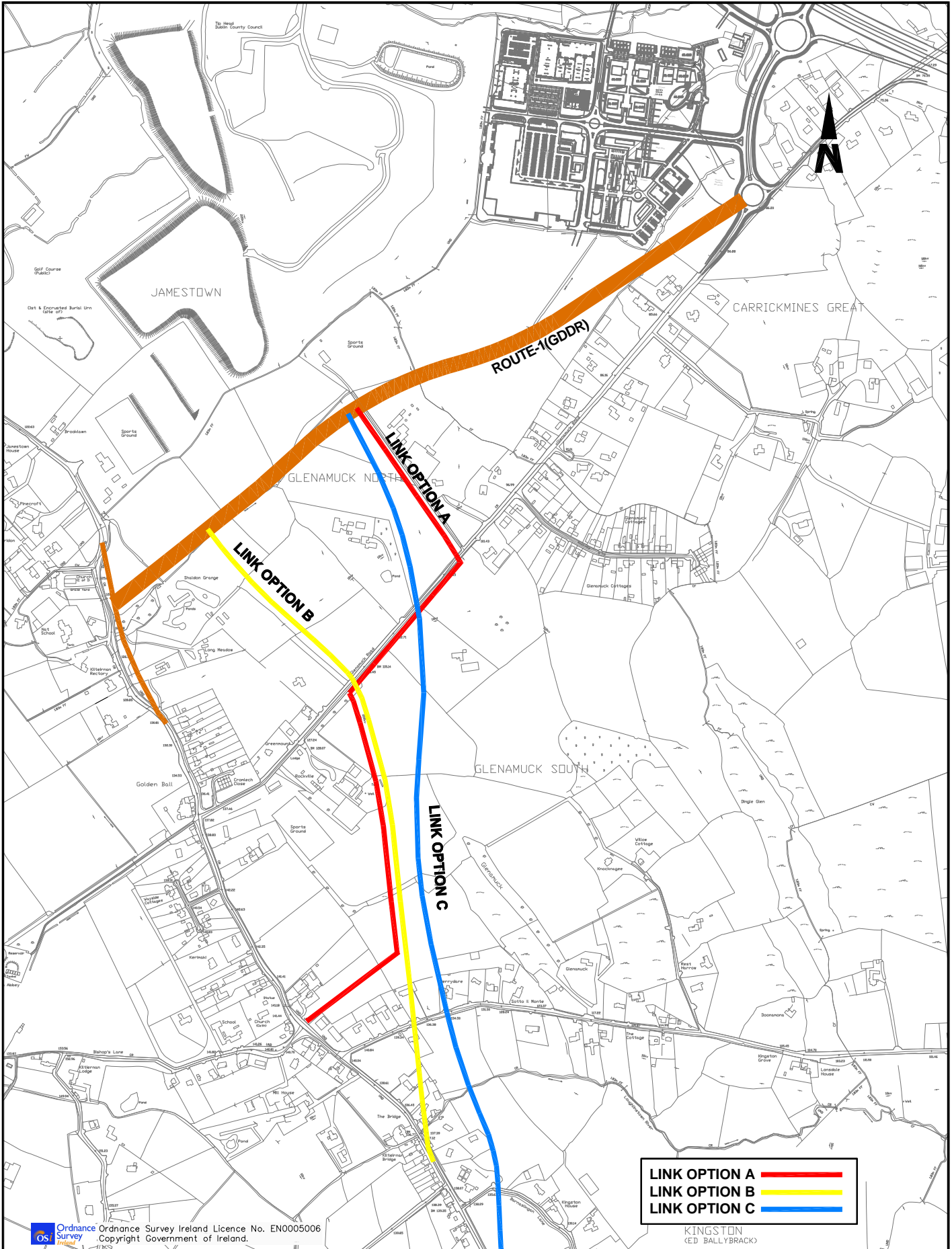
There will be one structure in the form of a bridge over the Shanganagh River. In addition, it is proposed to have two culverts along the proposed scheme.



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Project: GLENAMUCK DISTRICT DISTRIBUTOR ROAD		Title: Route Options for Proposed Scheme		Figure No.: 2.1	
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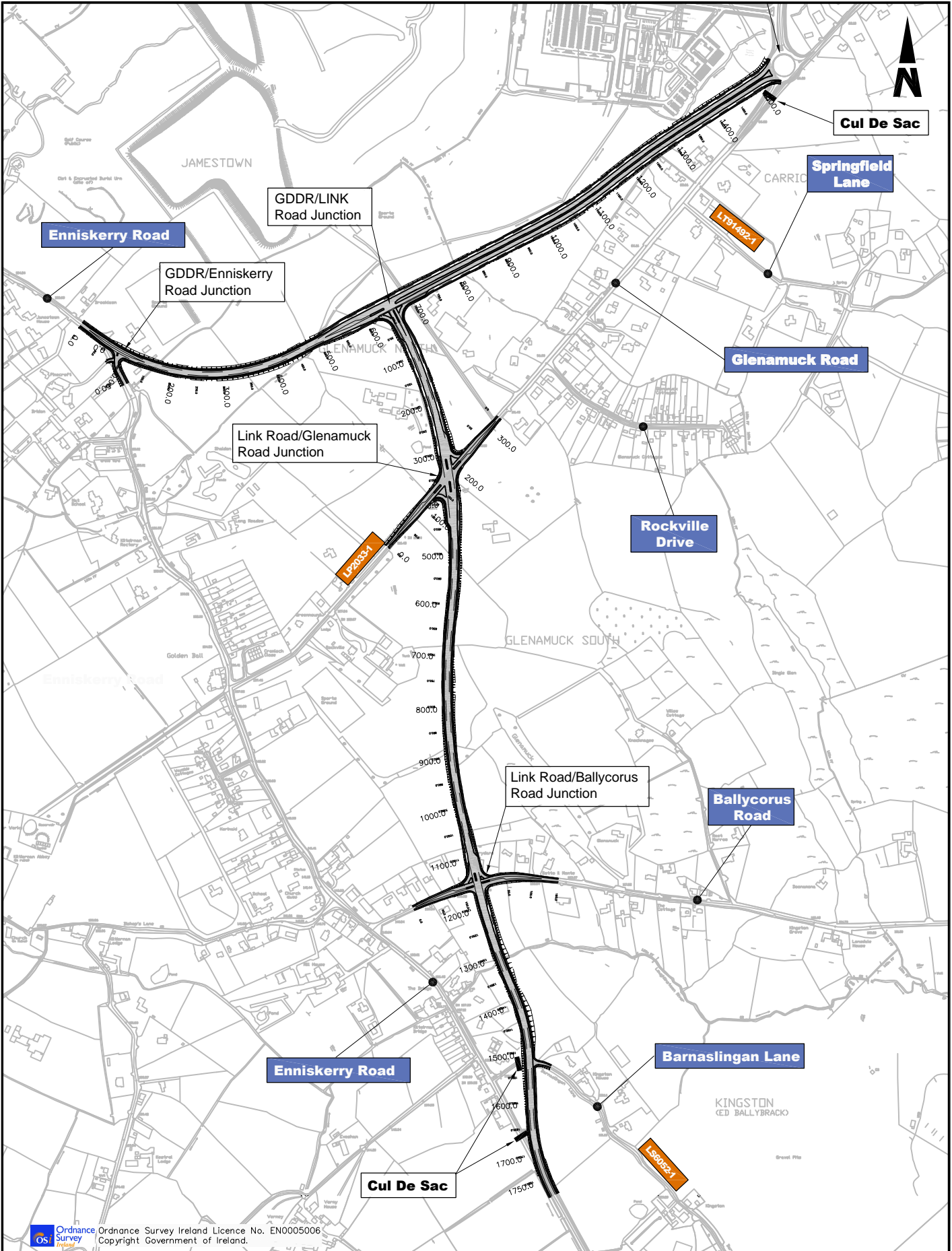


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LINK OPTION A ————
LINK OPTION B ————
LINK OPTION C ————

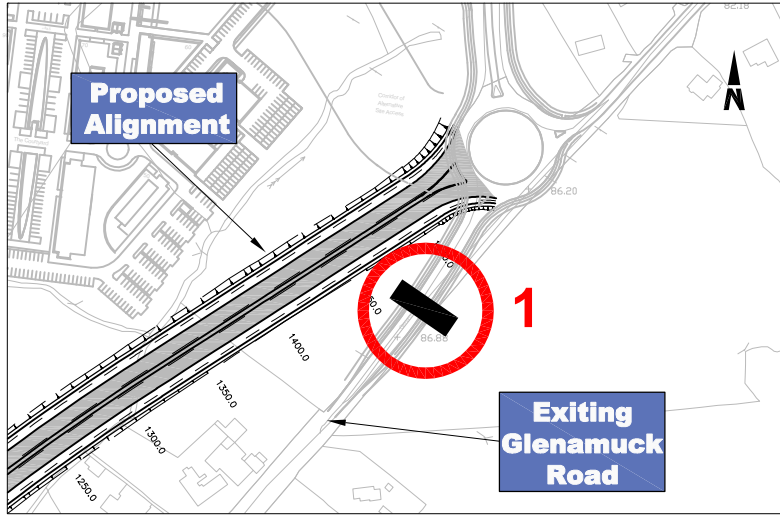
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Project: GLENAMUCK DISTRICT DISTRIBUTOR ROAD		Title: Link Options for Proposed Scheme			Figure No.: 2.2	
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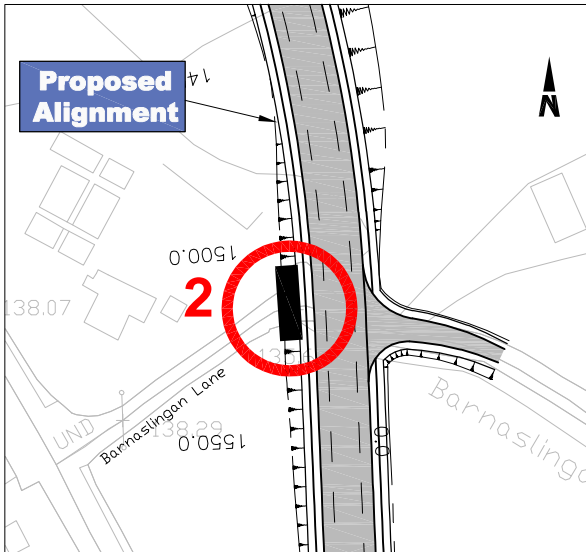


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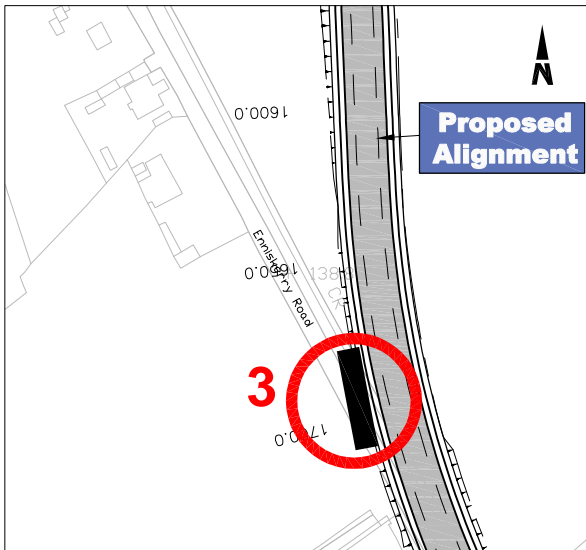
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 <p>Dún Laoghaire-Rathdown County Council Comhairle Contae Dhún Laoghaire-Ráth an Dúin</p>	<p>Mr. John McDaid Senior Engineer Dún Laoghaire Rathdown County Council County Hall, Marine Road, Dún Laoghaire, Co. Dublin Phone: 01 2054700 Fax: 01 2806969</p>	 <p>RPS Consulting Engineers RPS Consulting Engineers Ltd., West Pier Business Campus, Dun Laoghaire, Co. Dublin, Ireland T: +353 1 288 4499 F: +353 1 283 5676 E: Ireland@rpsgroup.com W: www.rpsgroup.com/ireland</p>	File Ref.: MDT0205EN_fig 2.1	Rev.: A01	
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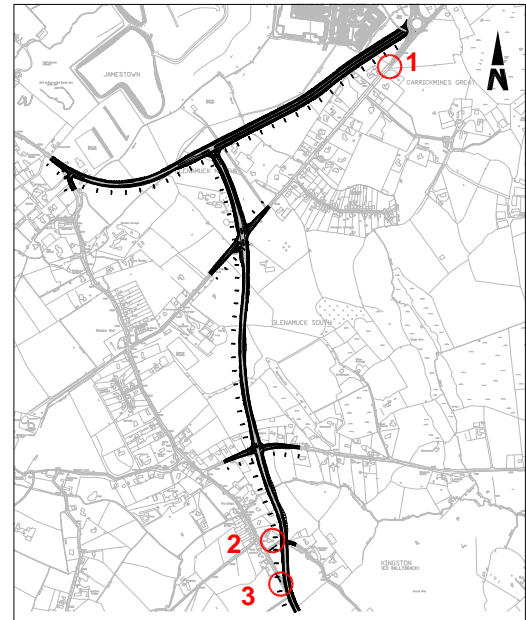
Cul-de-Sac at existing Glenamuck Road



Cul-de-Sac at Barnaslingan Lane, chainage 1500 of proposed alignment



Cul-de-Sac at Enniskerry Road, chainage 1700 of proposed alignment



Location Plan

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Title:

Design and Location
of Cul-de-Sac's

Figure No.:


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2.4

3 ENVIRONMENTAL STUDY

3.1 INTRODUCTION

This environmental study has been carried out according to the principles of an Environmental Impact Assessment (EIA). In order to fulfil these principles the EPA, DMRB and NRA guideline publications were followed within this environmental study. This involved identifying issues that are likely to be important throughout the life of the project. These were initially identified during the constraints study and route selection phases of the proposed scheme. Each characteristic of the proposed scheme, during both construction and operation phases has been considered in relation to each aspect of the receiving environment and potentially significant impacts identified. Where required, specialists have been appointed to carry out studies to further identify and quantify such impacts and to propose measures to reduce and eliminate, where possible, these impacts.

The preliminary engineering design of the proposed alignment has been selected to minimise the potential impact by avoiding or reducing the level of impact and where possible avoiding any sensitive areas identified. This would have been assisted with recommended mitigation measures that were possible to integrate into the proposed scheme design.

This chapter discusses all aspects of the receiving environment (Human Environment, Natural Environment, Material Assets and Archaeological/Architectural and Cultural Heritage) and summaries the potential significant environmental impacts identified and mitigation measures recommended during the course of the study.

3.2 HUMAN ENVIRONMENT

The impact of the scheme on human beings is addressed under the following headings: Community, Air Quality, Climate, Noise and Vibration and Landscape and Visual impacts.

3.2.1 Community

The study area is located in a semi-rural area north of the existing Glenamuck Road, in Carrickmines, South County Dublin and has

generally acted as a commuter suburb for persons travelling to work either in Dublin City Centre or nearby employment centres. There is a significant amount of employment that has developed over the last 10 years that is in the vicinity of the proposed scheme and largely located off the M50. These areas include Sandyford Industrial Estate, Stillorgan, Loughlinstown, Dundrum and Dun Laoghaire etc. However, there has been little economic activity in the Glenamuck area during the same time period though this pattern is beginning to change with new development emerging rapidly. A significant amount of land in this area is zoned under the County Development Plan and Local Area Plan for economic development and as such the proposed scheme and development potential will add significantly to the economic advancement of the area.

The existing Glenamuck road is characterised by individual detached residences, set within mature landscaped and screened boundaries. The road is currently used as a public amenity for walking, cycling and equestrian activities. There are a variety of services and amenities in the area including a rugby pitch, soccer pitches, equestrian centres, primary schools, churches, a golf course and specialised shops etc.



Kilternan Country Market

The potential impacts resulting from the proposed distributor road relate to the population, economic activity, landuse, travel patterns and community services. Under a “Do Nothing” Scenario, the expansion of the area generally and the development of zoned lands would generate huge volumes of traffic and associated nuisances. The existing Glenamuck and Enniskerry roads would not be able to meet the capacity and traffic demands and would impede future development of the area. The policies of the County Development Plan and Local Area Plan with regard to providing this road would fail to be delivered and as such

would have a broader significant adverse impact on the wider strategic development policies. No mitigation measures will be required in terms of demography, economic activity, employment or community services of the area once construction phase is completed and the route is open. Mitigation measures are required however for noise, landscape, air quality and other such environmental matters as covered in the environmental study.

3.2.2 Air Quality & Climate

A baseline air quality assessment was carried out along the existing and proposed route corridors. The survey identifies the existing pollutant trends in the area and aims to establish sufficient spatial information in order to determine compliance with relevant Irish ambient air legislation that has been adopted from the European Commission Directives 96/62/EC, 1999/30/EC and 2000/69/EC. A detailed air dispersion model was prepared in order to predict the future air quality trends as a result of traffic variations with the existing and proposed routes.

Ambient air quality monitoring for nitrogen dioxide (NO₂), sulphur dioxide (SO₂) and benzene was carried out at 6 locations and a prediction of ground level concentrations of traffic-derived pollutants was carried out using USEPA approved refined air quality modelling software was also undertaken. This focused on modelling future predictions of the five main polluting emissions NO₂, CO, VOCs, PM₁₀, and Benzene for the base year 2004, opening year 2007 and design year 2022. This was tested with (Do Something) and without (Do Minimum) the proposed scheme in place and gave future predictions of air quality for all sensitive receptors including residential dwellings and schools in the vicinity of the existing and proposed roads. Air pollution predictions were performed at these receptors at a worst-case speed scenario of 5km/hr to represent gridlock conditions.



Air Quality Monitoring

The predicted worst-case air pollution in 2004 was at Kilternan Village. If the proposed road does not go ahead the highest predicted pollutant concentrations will remain in the village. With the road in operation the highest pollutant concentrations are predicted to occur at the Ballyogan Link Road Roundabout. The worst-case pollutant concentrations are predicted to increase in future years with or without the proposed road in operation. Worst-case pollutant levels are predicted to be slightly higher with the proposed road in operation compared to the do nothing scenario for both 2007 and 2022. For all modelled pollutants and all model scenarios the predicted concentrations are shown to be in compliance with the current and future EU air emission limits.

In addition, there will be impacts to air quality during the construction phase such as dust, exhaust emissions etc. While these impacts will only be temporary mitigation in the form of implementing a dust minimisation plan has been proposed to minimise the impact to a non-significant level.

3.2.2.1 Climate

Ireland, along with the other EU member states, signed up to the Kyoto Protocol on 29th March 1998. These EU countries used a “burden sharing” approach to Kyoto and have agreed to cut greenhouse gas emissions as a whole by 8% in 2012 from the 1990 level with individual commitments set for each country. Irelands commitment under the Kyoto Protocol and this “burden sharing” is to reduce the main greenhouse gas (carbon dioxide) emissions to a 13% increase on 1990 levels by 2012.

The impact on climate of the proposed scheme was examined followed the procedures outlined in Annex II of the Design Manual for Roads and Bridges (1999) Volume 11, Section 3, Part 1, Air Quality. Traffic data has been used to model CO₂ emissions under normal traffic scenarios and modelling was carried out to predict the total CO₂ emissions from the existing and proposed roads for the opening year 2007 and design year 2022.

The results indicate that with the proposed road in operation, the total CO₂ generated by traffic will be approximately 13% higher than that generated without the road in operation in 2007. This increase is primarily due to the increased number of road users and the increased road network lengths that are

predicted in the traffic assessment with the proposed road in operation. Similarly, in 2022, the potential increase in greenhouse gas emissions with the road in operation is predicted to be 51% higher than the corresponding scenario without the road in operation. These results are based on worst case predictions where by the traffic figures include for social and economic growth that may develop as a result of the proposed scheme.

3.2.3 Noise & Vibration

Noise

Baseline noise measurements were taken at 13 locations along the existing roads and proposed scheme. Sound levels are measured in units called decibels (dB). Environmental noise levels are usually assessed in terms of A-weighted decibels referred to as dB(A). The A-weighting approximates to the response of a human ear.

Computer models were used to predict noise levels at 15 noise sensitive locations along the existing roads and proposed scheme for the Do Minimum and Do Something scenarios for both the opening and design years of the proposed scheme.

A traffic noise threshold criterion of 60 L_{den} was selected for the scheme. Measures to mitigate noise impact have been identified when the noise from the new scheme has a net negative impact and predicted traffic noise levels due to the scheme are greater or equal to the 60 L_{den} threshold.

The results from these models indicate that noise levels will decrease significantly in some cases up to 10dB(A) at residences along the existing roads. Noise levels at many properties along the new route will increase above current levels and at 6 locations (in 2007) noise levels due to the proposed scheme are predicted to rise above the threshold criterion. Mitigation measures will be implemented at these locations to reduce noise levels to below the threshold criterion. A variety of barriers, height, distance and length combinations are available to achieve the required reduction.

Additional mitigation measures have been devised for the construction phase of the proposed scheme in order to control and where necessary reduce the impact of construction noise.

Vibration

The highest ground vibration levels resulting from the proposed scheme are likely to occur during only the construction phase. The contractor will be required to adhere to the maximum vibration levels set in this environmental study. It is predicted that ground vibrations produced by road traffic are unlikely to cause perceptible structural vibrations in buildings located near to well-maintained road surfaces. The contractor will maintain road surfacing appropriate to eliminate vibration damage.

3.2.4 Landscape & Visual

The proposed route is located in an area of gently undulating agricultural land/urban fringe in the foothills of the Dublin Mountains. The site is located on the southeastern limits of development for Dublin City. The site topography is dominated by the massive rounded hills and mountains, which form the northern edge of the Wicklow Mountains. The area is dominated by urban housing but remnants of the formerly more extensive agricultural lands remain, particularly in the southern part of the study area.



Zone of Visual Influence

The distinctiveness of the landscape character in the study area can be sub-divided into Intermediate Undulating Agricultural Lands, Urban Landscape and Urban Open Space Landscape.

Reference was made to the Dun Laoghaire Rathdown County Development Plan 2004 - 2010 which aims to *preserve and protect trees and woodland* and to *preserve views*. A number of trees have been earmarked in the Plan for protection and a number of views to be preserved have also been listed.

The proposed scheme will reduce visual impacts where traffic has been transferred from the existing road network particularly

along sections of the Enniskerry Road, Stepside Road and as such will have slight positive visual impacts. However, a protected view on Ballycorus Road, zoned in the County Development Plan, will be negatively impacted by the proposed scheme. The view, moderately impacted, looks south towards the Wicklow Mountains where a small portion of the view will be crossed. It should be noted that no other important views from visitor amenity areas or tourist sites would be affected by the proposed road.

There will be negative visual impacts on residential properties that are located within the immediate vicinity of the proposed road of which 19 will be substantially impacted, 8 moderately impacted, 11 slightly impacted, 24 no change and 8 slightly positively impacted. Mitigation measures including specific landscape measures will be provided for those negatively impacted. A landscape masterplan will be devised subsequent to this study being approved, which will incorporate the existing hedgerows, trees and general ecology as far as possible. Different types of planting will be used to accommodate those properties visually impacted by the proposed scheme.

3.3 NATURAL ENVIRONMENT

This section looks at the impacts on the natural environment and includes the terrestrial and aquatic environments, soils, geology and hydrogeology

3.3.1 Terrestrial Ecology

The site area for the Glenamuck District Distributor Road was visited and walked-over to assemble lists of characteristic species of plants and animals on and close to the route and broadly corresponds to the phase 1 habitat survey methodology (JNCC 1990). Descriptions of habitats and dominant species encountered were made based on the Heritage Councils Guide to Habitats in Ireland (Fossitt 2000). Furthermore, a review of the National Parks and Wildlife Service dataset identified that the proposed route is located approximately 6km from the proposed Natural Heritage Area *Dingle Glen* (Site Code 001207). It is unlikely that there would be any species of particular importance within the study area. In addition, the pNHA No 1211 – Loughlinstown Woods is approximately 5km downstream of

the proposed road crossing on the Shanganagh River. However there are no designated areas along the length of the proposed scheme.

The obvious potential impacts of a new road on terrestrial ecosystems include habitat loss, disturbance and fragmentation. There are no habitats of significant value along the proposed scheme. The richest sites are two streams, edged by tress and bushes, which are used by fauna or feeding and communication. There is tree belt on the Enniskerry link, which is also of local interest and contains the least common plant, the soft grass *Holcus mollis* and is considered to be rated as E under the NATURA rating scheme.



Holcus mollis – Creeping Soft Grass

It is considered that fauna particularly badgers, otters and bats will be impacted by fragmentation, as the proposed scheme will break up habitats. It is recommended that pre-construction surveys are undertaken prior to the construction of the proposed scheme and that mitigation measures are devised and approved by the NPWS.

3.3.2 Aquatic Ecology

The proposed scheme will cross two watercourses, the Shanaganagh River and the Glenamuck Stream.

Glenamuck Stream: This will be crossed by the proposed new road at a single location. The road will also be constructed in close proximity to the stream over a distance of c. 1km. Due to the presence of brown trout, the potentially affected sections of the Glenamuck stream are

classified as of high local value in terms of Ecological Importance.

Shanganagh River: The Shanganagh River is located adjacent to the densely populated area of Dublin city and suburbs, and as such its high quality habitat and populations of salmonid fish assume a greater importance than might be the case in other parts of the country. The pNHA No. 1211 - Loughlinstown Woods is c. 5km downstream of the proposed road crossing. The three Irish species of lamprey, Sea Lamprey (*Petromyzon marinus*), Brook Lamprey (*Lampetra planeri*), River Lamprey (*L. fluviatilis*), are listed in Annex II of the Habitats Directive. Lampreys could occur in the Shanganagh River. As a good brown trout river with a run of sea trout within the suburbs of Dublin, the potentially affected sections of the river are classified as of regional value.

Biological assessment of water quality and aquatic habitats were undertaken to determine the level of potential negative impact on watercourses caused by the scheme.

Some of the potential impacts identified will be temporary in nature e.g. siltation and disturbance of the rivers during construction. Others will be permanent such as loss of habitat and alternation of water channels. Measures that will be incorporated to minimise permanent impact from the scheme include

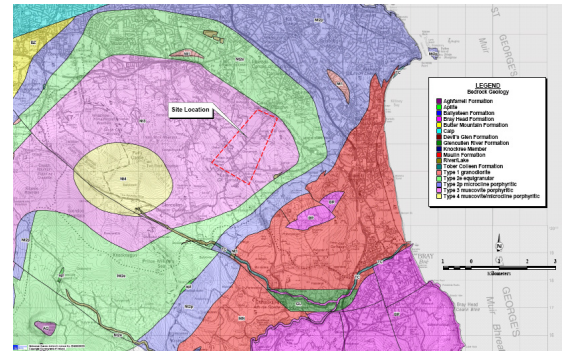
- Ensuring free passage for fish at stream/river crossings
- Provision of filter drains or alternative system to reduce pollutants in runoff from the road
- Strict control of erosion and sediment generation and other pollutants associated with the construction process
- Protection of salmonid spawning and nursery areas at specified stream/river locations from construction operations

The relevant Fisheries Boards have been consulted and will be further consulted during the design and construction of the scheme.

3.3.3 Soils, Geology and Hydrogeology

The assessment takes into account groundwater vulnerability, impacts to private / public water supplies and the geological heritage of the area.

The general geology shows that the subsols



underlying the Glenamuck Road Study Area are comprised of variable sediments and thickness of Quaternary aged Glacial Till (boulder clay), all underlain by granite bedrock.

Bedrock Geology within the Study Area

The hydrogeology consists of impermeable granite, which is considered to be unproductive in terms of well yield. Any groundwater in the area moves either in the upper weathered zone which has permeable beds of limited extent, in fault or in fracture zones. There are two groundwater wells within 2.0km radius of the site of which is classified as poor yielding. The aquifer vulnerability classification for the site may be derived from the GSI vulnerability mapping guidelines which classes this area as Moderate to High due to the presence of moderately deep clayey soils in the areas sandy soil.

Possible impacts include possible pollution in local rivers due to untreated surface water runoff and loss of groundwater recharge. Mitigation measures such as attenuation, petrol interceptors and filter drains have been incorporated into the drainage design to minimise the impact on surface and ground waters. It is considered that the reduction of groundwater recharge in the area due to the construction of the hardstanding material of the proposed roads is unlikely to impact on the overall hydrogeological regime of the area given the underlying low permeability clays, depth to bedrock and poor yielding aquifer.

3.4 MATERIAL ASSETS

This section covers the potential impacts of the proposed scheme on Material Assets including agricultural properties, non-agricultural properties and existing natural resources.

3.4.1 Agricultural Properties

The proposed scheme traverses the following farming enterprises dairying, horse, drystock and tillage farms. There will be approximately 16 farms affected by the proposed scheme.

The impact of the scheme will be limited to farms directly traversed by the route and while the loss of land to individual farmers may be significant, it will not be significant to agricultural production on a county or national scale. The impact of the proposed scheme on individual farms has been assessed in terms of the overall impact including loss of land, loss of facilities such as farm buildings and severance. The degree of overall impact on individual farms will vary from non significant to severe with the majority of farms falling under the *major* impacted category. However, due to the significant hope value per development and changing agricultural practices it is likely that there will be changes in agricultural practices whether the proposed scheme goes ahead or not.

Mitigation measures have been proposed to address the negative impacts. These include providing access to severed land parcels where feasible and providing compensation to landowners who are significantly impacted. This will be assessed in accordance with the relevant assessment of compensation and arbitration acts.

3.4.2 Non-Agricultural Properties

The lands crossed by the proposed GDDR are predominantly agricultural however residential development occurs in a linear pattern along the existing Glenamuck Road and along the Ballycorus Road in the Kingston area. A total of 16 residential properties come in contact with the proposed route corridor, however not all are impacted by the scheme. There are also a small number of non-agricultural commercial properties and community/recreational properties present along the scheme corridor. One commercial property will be impacted and two recreational properties will require access as part of mitigation to avoid severance.

One residential property will have a major impact and must be fully acquired to facilitate the proposed scheme. One residential property will have a moderate impact and require the acquisition of a portion of land from this property. The acquisition of a portion of land from a property will result in a minor impact. The remaining properties (approximately 7) will be affected by acquisition of part of the holding. These properties require only road frontage and not large portions of land.

There may be some impacts during the construction phase however mitigation measures have been proposed to reduce these impacts. These include advance warning of works particularly to services and roads.

3.4.3 Natural & Other Resources

This examines the natural and other resources within the study area and how they may be affected by the proposed scheme. The impacts on resources such as mineral deposits, soil, utilities etc., have been assessed.

Overall the road will have a minor negative impact on natural and other resources. Much of the expected disruption to services and existing transport networks will be of a temporary nature during the construction phase of the development and can be adequately mitigated.

It is considered that the road will have no significant impact on mineral resources in the vicinity of the proposed scheme. It is however recommended that further ground investigation be carried out along the finalised road alignment in order to confirm the ground conditions. This should comprise trial pits, dynamic probing and laboratory testing.

Similarly the impact on soil will also be not significant given that the material available is unsuitable for road construction. Much of the material will have to be sourced from outside the site from an established site approved under all the appropriate planning and legislation.

Lighting will be provided on this scheme at all key junctions to improve safety and will be designed in sympathy with the environment. This is with particular regard to visual intrusion from public lighting.

There will be some disruption to utilities along the scheme however these will be of a temporary nature and will be maintained/reinstated as necessary.

3.5 ARCHAEOLOGICAL, ARCHITECTURAL & CULTURAL HERITAGE

This section of the study examines the potential impacts of the development on archaeological, architectural and cultural heritage. This section of the environmental study examines the impacts of the development on known sites which (could be avoided) or potential sites which have come to light during the field survey of the proposed route.

This evaluates the archaeological, architectural heritage and cultural heritage significance of the landscape along the proposed Glenamuck District Distributor Road and Distributor Link Road to Enniskerry. The proposed scheme passes through the townlands Carrickmines Great, Glenamuck North, Jamestown, Glenamuck South and Kingston in the Barony of Rathdown in the parish of Tully and also through the townland of Kiltiernan in the Barony of Rathdown in the parish of Kiltiernan.

The study is based on an examination of the Record of Monuments and Places (RMP) constraints maps of Department of the Environment, Heritage and Local Government; the topographical files of the National Museum of Ireland (NMI); aerial photographs; historical maps and Ordnance Survey maps held by the Map Library of Trinity College, Dublin; the publication *Excavations* for the period 1969–2002; the Record of Protected Structures of Dún Laoghaire Rathdown County Council Development Plan 2004-2010; and a number of other published and unpublished documentary sources.

3.5.1 Archaeological Heritage

The proposed Glenamuck Distributor Road and Distributor Road Link to Enniskerry runs through the archaeologically rich landscape of South County Dublin as demonstrated by the number of recorded archaeological monuments and stray finds located in the area and the numerous newly discovered sites found in advance of development in the area. The proposed route will have a direct negative

impact on RMP site DU026-021, the 'site of enclosures, which lie on both sides of the Shanganagh/Bridesglen River. There are no above ground remains of this site, a geophysical survey carried out did not identify features that were indicative of enclosure sites this area. Considering the landscape through which the proposed route passes there is a significant potential that previously unknown archaeological sites will be identified along the line of the proposed route. These will be mitigated by a series of archaeological testing and further testing of the RMP enclosure site. These measures will be discussed and agreed with the National Monuments Section of the Department of Environment, Heritage and Local Government.

3.5.2 Architectural & Cultural Heritage

Three properties will have a major impact from the proposed Glenamuck District Distributor Road and the Distributor Road Link to Enniskerry however they are of no architectural heritage merit. The attendant grounds of two protected structures will be traversed by the proposed scheme and are therefore subject to indirect impact. A number of property entrances and boundaries will be directly impacted by the proposed scheme, particularly at the junction of the Distributor Road Link to Enniskerry with the Ballycorus Road. The majority of these entrances and boundaries are of no architectural heritage merit. However there is one exception where a property has an entrance gate of architectural heritage merit. A cast-iron water pump of cultural heritage interest lies in the path of the proposed Distributor Road Link to Enniskerry and will be directly impacted. Mitigation will be provided for one property that is indirectly impacted which will be in the form of landscaping

