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3 Alternatives Considered

3.1 Introduction

Article 5(1)(d) of the EIA Directive 2014/52/EU requires an EIAR to contain:

A description of the reasonable alternatives studied by the developer, which are relevant to the project and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the project on the environment.

The EPA EIAR Guidelines (2017) refer to Alternatives in section 3.4 noting the following:

Higher level alternatives may already have been addressed during the strategic environmental assessment of relevant strategies or plans. Assessment at that level is likely to have taken account of environmental considerations associated, for example, with the cumulative impact of an area zoned for industry on a sensitive landscape. Note also that plan-level/higher-level assessments may have set out project-level objectives or other mitigation that the project and its EIAR should be cognisant of. Thus, these prior assessments of strategic alternatives may be taken into account and referred to in the EIAR. This is particularly the case for public sector projects where it is often appropriate to consider a wider range of alternatives than for private sector projects.

The GDRS is included in the Dún Laoghaire-Rathdown County Development Plan 2016-2022 (CDP) as a 'six-year roads objective' and is further detailed in the 'Kiltiernan Glenamuck Local Area Plan 2013' (LAP). The LAP is accompanied by a Strategic Environmental Assessment Statement and by a report entitled Review of Glenamuck Local Area Plan; Traffic Modelling Report (2013). Previous traffic modelling work was undertaken by the NTA in advance of the scheme being included in the 2006 Glenamuck LAP and the environmental impact of route alternatives considered in the Glenamuck District Distributor Road, Environmental Study (2007).

The road alignment under consideration in this EIAR therefore reflects the development of strategic alternatives in these studies referenced below. For the Glenamuck area to facilitate its development over time, it is pertinent to refer to a 'Do-Nothing' scenario in consideration of land use trends and potential environmental impacts, in the event that the GDRS did not proceed. Finally, the consideration of design alternatives describes the evaluation of detailed design, alignment and construction options. In summary alternatives are considered under the following headings:

- Strategic Alternatives – Land use policy and Route Alignment options;
- Do-Nothing Alternative; and
- Design Alternatives.

3.2 Strategic Alternatives – Land Use Policy and Route Alignment Options

The Dún Laoghaire-Rathdown County Development Plan 2004-2010 recognised the need to improve the road network within the Kiltiernan-Glenamuck locality and included a 'six-year roads objective' for the Glenamuck Road corridor to be upgraded between Enniskerry Road and the Carrickmines M50 Interchange.

This was on the basis that the current road infrastructure was considered unsatisfactory for the current and predicted traffic volumes, and there was 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 had been placed on this corridor, as it is a direct strategic link to the motorway off the already heavily trafficked Enniskerry Road. In addition, DLRCC commissioned the following studies:

- Glenamuck District Distributor Road, Environmental Study (Vol 1-3), 2007, RPS;
- Glenamuck District Distributor Road, Preliminary Design Report, 2007, RPS;
- Glenamuck District Distributor Road, Feasibility Study & Route Selection Report, 2007, RPS; and
- Glenamuck District Distributor Road, Constraints Study, 2007, RPS.

Following the above studies, Dún Laoghaire-Rathdown County Council commissioned the following reports which considered the overall Draft LAP proposals, including the GDRS alignment, and their impact on the environment:

- Kiltiernan / Glenamuck Draft Local Area Plan (2013-2019), Strategic Environmental Assessment, Environmental Report, May 2013, RPS.
- Kiltiernan / Glenamuck Draft Local Area Plan (2013-2019), Strategic Environmental Assessment, Environmental Report, Screening for Appropriate assessment, May 2013, RPS.

Primary Route Options

Following the identification of the study area, a constraints study was undertaken in 2005 identifying the physical, environmental, procedural, and legal constraints that potentially affected the choice and design of a route for the scheme. This study included an overview of:

- Planning Policy;
- Protected Areas – National Heritage Areas (NHA's) and Special Areas of Conservation (SAC's);
- Existing Road Network;
- Water Features (Rivers, Streams, Lakes etc.);
- Landholdings;
- Community Facilities – Sports Grounds, Schools, Churches etc.;
- Landscape Features;
- Cultural Heritage – Archaeology and Architecture;
- OS Mapping showing Development (Dwellings, Farmyards etc.);
- Procurement of Aerial Photography;
- Topography;
- Utilities (Electricity, Communication, Gas, Watermains, Foul and Surface Water); and

- Geology and Hydrogeology.

The Route Selection Report identified three primary route options (1, 2, and 3) 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 Study. It was considered that due to the length of the scheme (approximately 1.5km) there were a limited number of viable route options available. The three route options commenced at the Carrickmines Interchange Southern Roundabout and extend to meet the Enniskerry Road at various locations. All three route options are shown in Figure 3-1.

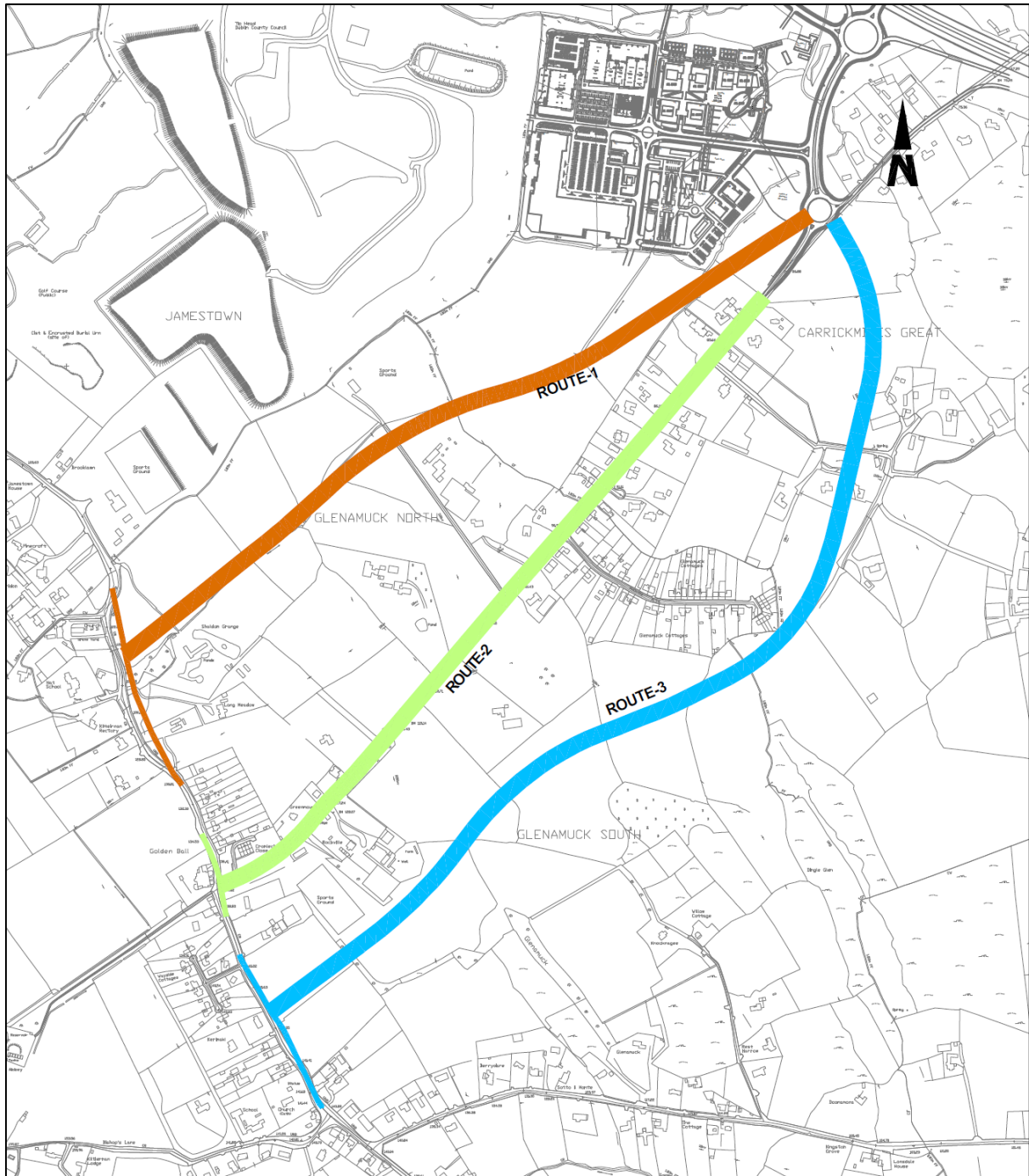


Figure 3-1: Glenamuck District Distributor Road, Environmental Study (Vol 1-3), 2007, RPS Fig. 2.1 Route Options for Proposed Scheme

It was concluded in the Feasibility Report from the Route Selection Analysis that Route Option 1 was the preferred route. Route 1 would reduce traffic in both Kiltiernan Village and on the existing Glenamuck Road. It would also provide quality road infrastructure to link with the M50 and for the future development of local lands. This assessment was based on the Design Manual for Roads and Bridges Volume 5 Assessment and Preparation of Road Schemes.

A summary of the assessment for each category is outlined below: -

- **Users of Facility** – Route Option 1 had the greatest overall benefit to the users of the facility. Route 2 had the least overall benefit to the users of the facility, with no reduction in traffic on the Glenamuck Road. Route Option 3 offered less road safety benefit than Route Option 1 as traffic volumes would not be decreased in both the Kiltiernan Village area and on the existing Glenamuck Road. Route Option 2 resulted in a road carrying mixed traffic with both local traffic and through traffic. This option would have the least impact of the three schemes for local traffic improvements due to the predicted increase in traffic.
- **Material Assets** – Route Option 1 has the least impact on the non-agricultural material assets. Route Option 2 has the greatest impact on the non-agricultural material assets as it directly affected a large number of residential dwellings. Option 2 also resulted in the loss of frontage to a large number of dwellings. Route 3 has a moderate impact on material assets.
- **Environmental Impacts** – Route Option 1 showed the least impact on the environment when compared to the other two routes. The only negative rank arose from the aquatic ecology where the proposed Glenamuck Stream would be directly impacted. Route Option 2, was considered to be the least preferred route. This was directly attributed to the highest number of residential properties situated within 100m of the route. This not only gave rise to physical impact on properties but also to increased exposure to possible environmental impacts such as air, noise and visual impacts etc.
- **Engineering Impact** – Route Option 1 was the best option for engineering requirements attributed to better geometric qualities, a superior cut/fill balance, less impact on utilities and causing significantly less severance to existing access roads and residences. Route Options 2 and 3 had a greater direct impact than Route Option 1.
- **Economic** - Route Option 1 had the lowest overall cost when both construction and land take costs are combined. Route Option 2 incurred higher construction costs due to the extensive traffic management and accommodation works required to allow widening of an existing road, while maintaining access to residents and through traffic during the construction period.

Route 2 had the highest cost for land take due to the number of residences directly affected by the route and due to the loss of frontage of a large number of residences. Route 3 had higher construction costs (as it is a much longer route). Route Option 3 also had high land take costs as the longest route passes through two areas, which had been zoned for residential development with planning permission already granted.

Subsequent to this report, during the Preliminary Design Stage of the project, further detailed traffic modelling analysis was undertaken which established that a Link Road to Enniskerry (GLDR) 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 3-2) to tie into the preferred GDDR. Link option C was determined to provide for a high quality bypass of Kiltiernan Village while also significantly reducing congestion and delay on the road network when compared to the alternative options. Route Option 1 (GDDR) and Link Option C (GLDR) were chosen as the preferred route.

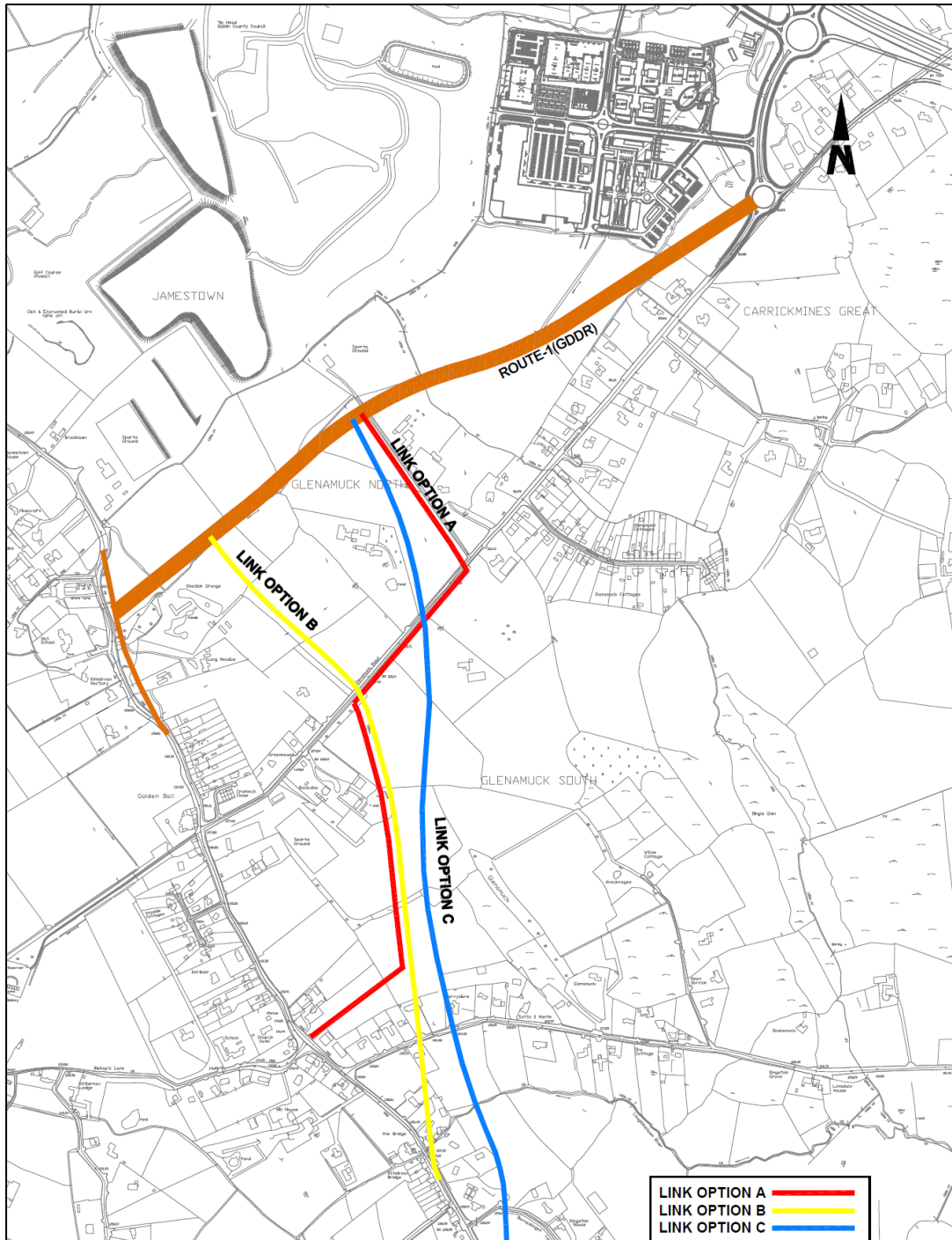


Figure 3-2: Glenamuck District Distributor Road, Environmental Study Vol 1, 2007, RPS Fig. 2.2 Link Options for Proposed Scheme

The preferred route was the subject of the Environmental Report for the GDDR¹. The Preliminary Design Report² proposed that the main collector/distributor section of the overall network would directly connect the roundabout to the south of the Carrickmines interchange to the Enniskerry Road north of Kiltiernan Village. The route was approximately 1.5km long starting at the tie-in to the Enniskerry Road

¹ Glenamuck District Distributor Road Environmental Study Volume 2

² Glenamuck District Distributor Road Preliminary Design Report, 2007

north of Kiltiernan Village, running to the existing roundabout junction to the south of Carrickmines M50 Interchange. The GDDR consisted 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 Carrickmines roundabout junction. The proposed Link Road was approximately 1.8km long starting at the junction with the GDDR to the tie-in with the Enniskerry Road, south of Kiltiernan Village.

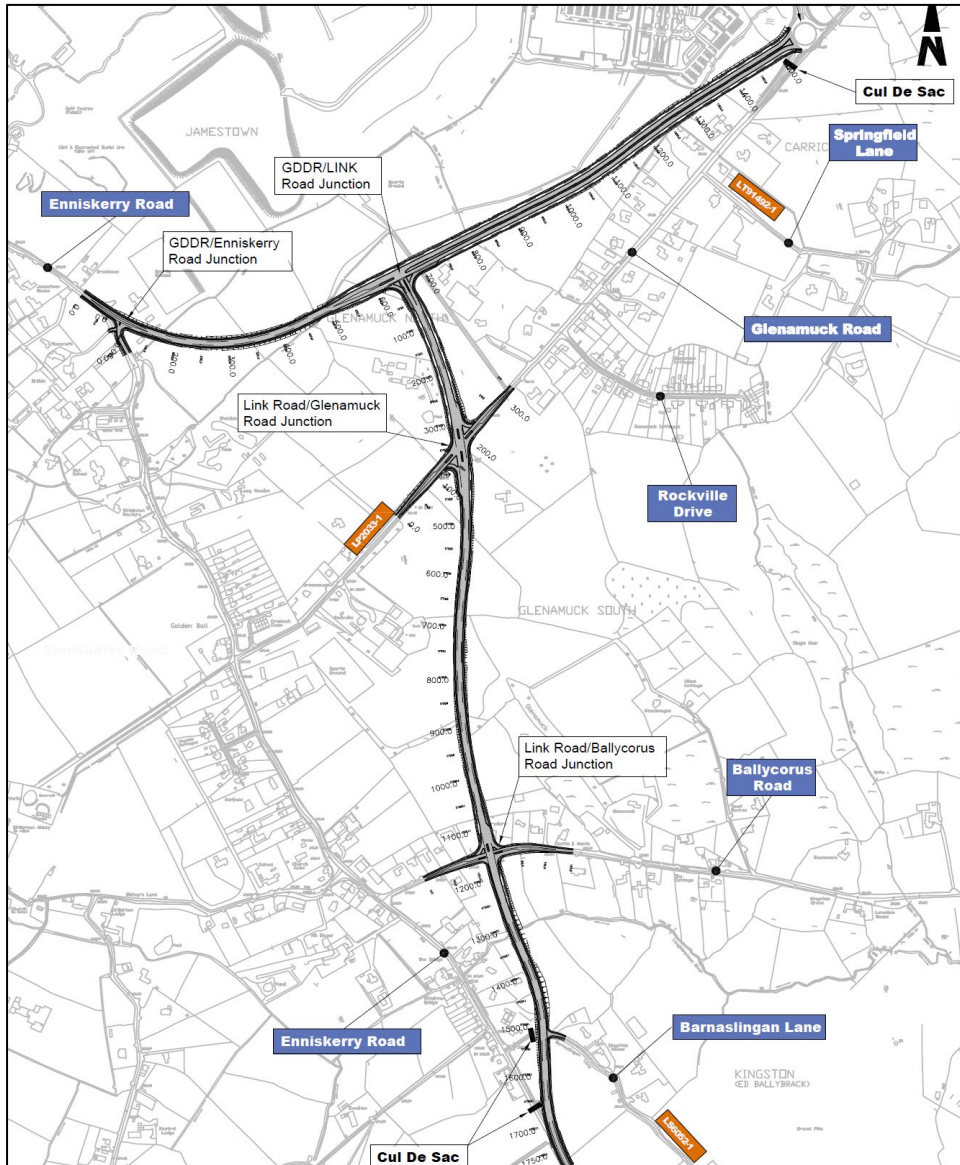


Figure 3-3: Glenamuck District Distributor Road, Environmental Study (Vol 1-3), 2007, RPS Fig. 2.3 Scheme Layout

Environmental Study (2007)

The Glenamuck District Distributor Road, Environmental Study 2007 was carried out according to the principles of an Environmental Impact Assessment (EIA) and followed EPA, DMRB and NRA guidelines. This report assessed all aspects of the receiving environment including:

- Human Environment (Community, Air Quality, Climate, Noise and Vibration);

- Landscape and Visual Impacts;
- Natural Environment (Terrestrial Ecology, Aquatic Ecology, Soils, Geology and Hydrogeology);
- Material Assets (Agricultural Properties, Non-Agricultural Properties, Natural & Other Resources); and
- Archaeological/Architectural and Cultural Heritage.

These issues 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 was considered in relation to each aspect of the receiving environment and any potentially significant impacts identified. Where required, specialists were appointed to carry out studies to further identify and quantify such impacts and to propose measures to reduce and eliminate these impacts where possible.

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

Incorporation of Alignment in Statutory Local Area Plans

The Kiltiernan/Glenamuck Local Area Plan (LAP) (2007) was adopted by DLRCC in July 2007 incorporating the GDDR and GLDR alignment into the statutory plan. The objective for the alignment was retained in the Kiltiernan/Glenamuck Local Area Plan 2013. **However**, Figure 3-4 and Figure 3-5 illustrates that while the alignment adopted in the current LAP is essentially the same alignment that evolved through the strategic options studies summarised above, the 2007 LAP omitted a section of the LDR up until the adoption of the 2009 County Development Plan.

'Barnasligan Link'

During the adoption process of the Draft Kiltiernan LAP (2006) LAP, the Council received a number of submissions in respect of the 'Barnasligan Link' which is the section of the GLDR from Ballycorus Road to the Enniskerry Road. The Manager's Report on Submissions (March 2007) noted that alternative alignments were proposed in the submissions including one where the LDR should terminate at a Roundabout at Ballyogan Road and the Ballycorus Road/Enniskerry Road junction should be altered to a Roundabout and to consider the realignment of the LDR under the 220kv wayleave corridor.

The Executive's Report noted the following:

The alignment of the LDR between the Enniskerry Road and Ballycorus Road has strategic importance to the LAP and the routing of traffic to/from outside the study area. It also enables the effective by-passing of Kiltiernan Village as Enniskerry traffic is directly routed towards the GDDR. The proposed GDDR and LDR are designed so that all through traffic, i.e. traffic travelling from origins outside the area to destinations outside the area will utilise the new infrastructure, thus freeing up the existing infrastructure, i.e. Kiltiernan Village and Glenamuck Road to cater for locally generated trips. Alternative layouts involving junctions on the Enniskerry Road at the southern end of the scheme will encourage the through traffic to utilise the Kiltiernan

Village route and thus render a bypass of the village ineffective. Such alternatives were studied and rejected due to the inefficiency of the proposals and the increase in traffic congestion illustrated by the study.

It is thus recommended that the direct link between the Enniskerry Road and the LDR be retained in the LAP”

However, the Barnaslingan link was removed following the Draft stage of the LAP by a Motion in the Council on 16 April 2007. As a consequence, the portion of Enniskerry Road extending from the southern boundary of the Local Area Plan area to the junction of Enniskerry and Ballycorus Roads, and the section of Ballycorus Road to the junction of Ballycorus Road and the proposed Link Distributor Road would have required to be appropriately improved/upgraded (see Figure 3.4 below). It is noted that no engineering assessment of the impact of the motion was carried out and no designs for the Ballycorus/ Enniskerry Road upgrades prepared

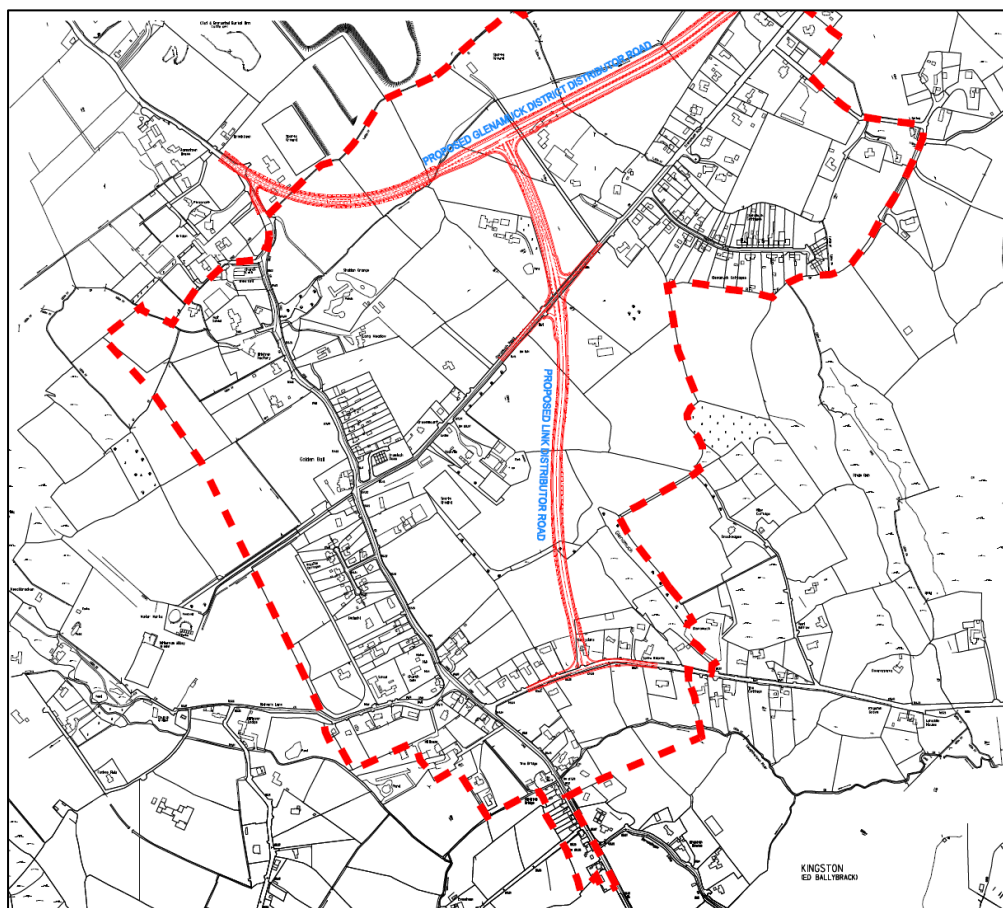


Figure 3-4: Extract from 2006 Kiltiernan/Glenamuck Local Area Plan

As part of the preparation of the Draft County Development Plan (2009), the ‘Barnalangan’ Section (Ballycorus Road – Enniskerry Road Link))was reintroduced to the ‘Draft Plan’. The alignment was this included in adopted County Development Plan (2010).

The preparation of the Draft LAP for the area in 2012 again gave rise to submissions seeking the removal of the “extension” of the Link Distributor Road from the Ballycorus Road to the Enniskerry

Road, on the grounds that the M50 had reduced traffic flow in the locality. The Chief Executive's report noted the following:

The proposed route for the GDLR ensures that the most advantageous route to travel from Stepaside/Carrickmines to and from Enniskerry - as a de-facto bypass of Kiltiernan Village - will be to use the new road network. Without the GLDR extension at Ballycorus Road, the available route through the village would be as attractive as the new road network and so the bypass would be less successful. Thus, with the 'GLDR Extension' the proposed network is considered the most efficient and effective Bypass route providing linkages to both the Carrickmines/Cherrywood area, continuing the Enniskerry Road connection towards Stepaside/Lambs Cross avoiding potential traffic congestion at the existing Enniskerry Road/Ballycorus Road junction. Allied to associated future traffic management measures in the Village area, the GLDR as proposed will best support and facilitate the development of the pedestrian-friendly Village Core free from through traffic.

The inclusion of the section of GLDR between Enniskerry Road and Ballycorus Road will greatly improve the residential amenity of those properties fronting the Enniskerry Road in the southern part of the Village.

During the preparation of the 2013-2019 LAP, the GDDR Preliminary Design Report (2007) was reviewed and updated. The LAP notes extensive changes that had occurred since the previous modelling work. The 'Traffic Modelling Review' determined that the main elements of the original design for the GDDR/GLDR (Glenamuck Link Distributor Road) scheme remained robust. Some amendments to the 'Preliminary Design' of 2007 were recommended which included;

- The introduction two 'bus-gates' at two locations, (i) at the junction of the Enniskerry Road and (ii) the GLDR and the junction of the Glenamuck Road East and the GLDR; and
- The removal of the proposed 'Link Road' between the GDDR and existing Glenamuck Road.

The 2012 Review continued to recommend that an essential minimum provision of a new distributor road system will need to be provided for lands to be developed in a sensible and sustainable manner. This minimum essential (core) level of road infrastructure consists of:

- GDDR – Primary Link Road - single carriageway from Enniskerry Road to the Glenamuck Road East/Golf Lane Roundabout;
- GLDR – Primary Link Road - single carriageway from Enniskerry Road to GDDR;
- Junction of GDDR and GLDR;
- Junction between GLDR and the existing Glenamuck Road (East and West side);
- Junction of GLDR and Ballycorus Road;
- Junction of Enniskerry Road and GDDR; and
- Provision of necessary SuDS attenuation ponds.

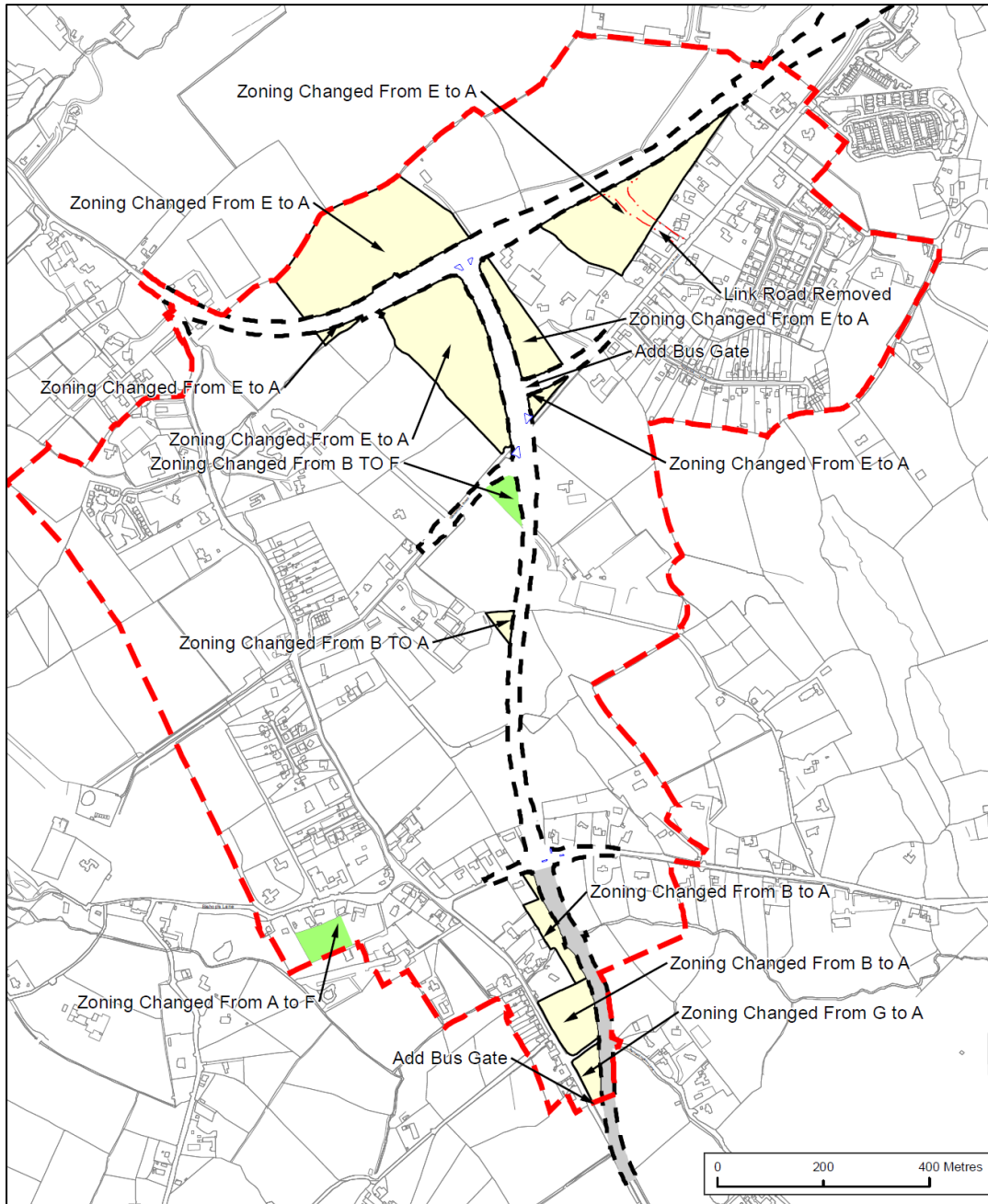


Figure 3-5: Kiltiernan/Glenamuck Local Area Plan 2013 Map 1 Changes to Kiltiernan/Glenamuck Local Area Plan 2007 Adopted

3.3 Do-Nothing Alternative

The do-nothing alternative is a general description of the evolution of the key environmental factors of the site and environs if the proposed project did not proceed.

This examines trends occurring at the site, for example likely land use changes or other interventions, the likely effects of climate change, and the significance of these changing conditions. It can be particularly useful when assessing effects caused by projects which themselves are designed to alleviate environmental or infrastructural problems, e.g. waste treatment facilities, flood relief projects, road building, etc.

This approach considers the effects of projects which already have consent but are not yet implemented. It may also be appropriate to consider other projects that are planned but not yet permitted. For example, it would be prudent to consider a significant project for which a planning application has been lodged even if the consent decision has not been issued. The do-nothing alternative should describe consequences that are reasonably likely to occur.

The potential impacts resulting from the GDRS road relate to the population, economic activity, land use, 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 required capacity and future traffic demands and would impede future development of the area.

This would have a significant negative impact on the aims of the CDP and Local Area Plan. Under a do-nothing scenario, residential development on zoned land with supporting access and road infrastructure would be delivered on a piecemeal basis. The opportunity to deliver an integrated approach to movement in the LAP area would be significantly restricted for cycle and pedestrian infrastructure. Public transport infrastructure serving the area could not be delivered with a potential significant negative impact on sustainable modes of travel.

Given that the alignment of the GDRS is protected under the LAP and the CDP, it is likely this area would remain undeveloped with potential impacts arising from the construction of the GDRS would not occur in respect on all aspects of the receiving environment.

3.4 Design Alternatives

A fundamental factor for the revised GDRS design addressed in this EIAR was the publication in 2013 of the Design Manual for Urban Roads & Streets (DMURS) by the Department of the Environment, Community and Local Government/Department of Transport, Tourism and Sport. This sets out best practice guidance relating to the design of urban roads and streets, setting out a road hierarchy of Arterial, Link & Local Streets, to ensure that the road is not only effective in terms of traffic, but also supports integration with existing and future developments in line with DMURS guidance.

DMURS provides a set of key principles, approaches and standards which aim to secure the implementation of the high-level policies of Smarter Travel at local level and guidance to achieve quality, safe streets and spaces, which balance the needs of all users. This assists the provision and delivery of a greater degree of sustainable transport throughout the Kiltiernan/Glenamuck LAP area and beyond. It will also provide for a clear network of movement and access within a clear street hierarchy to support a best practice approach to integrated placemaking.

An Urban Design Report ([Appendix 12.4.](#)) has been prepared in association with the EIAR and Road Design exercise which both highlights how the DMURS guidelines have informed the current GDRS design and reflecting the process that has evolved from the 2007 GDDR road scheme. In line with DMURS, the approach taken for the GDRS has been influenced and guided by the following design principles:

- **Connected Networks:** To support the creation of integrated street networks which promote higher levels of permeability and legibility for all users, and in particular more sustainable forms of transport;
- **Multi-Functional Streets:** The promotion of multi-functional, place-based streets that balance the needs of all users within a self-regulating environment;
- **Pedestrian Focus:** The quality of the pedestrian environment; and
- **Multi-Disciplinary Approach:** Greater communication and co-operation between design professionals through the promotion of a plan-led, multidisciplinary approach to design.

The Glenamuck District Road Scheme Urban Design Report ([Appendix12.4.](#)) by Brady Shipman Martin is reflective of a framework for development that is connected, provides multi-functional streets, is pedestrian and cyclist focused and has been created and formulated through a multi-disciplinary approach. Utilising the opportunity afforded by the re-design of the GDRS in accordance with DMURS the approach to Design Alternatives addressed the following issues:

- Receiving Environment
 - A comprehensive EIAR Scoping Report was prepared and issued to Stakeholders in May 2018. This identified important environmental issues to be incorporated in the design having particular regard to Cultural Heritage, Biodiversity, Transportation;
- Drainage and Attenuation

- The approach to road drainage design incorporating SuDS principles and consideration of design alternatives for the location and scale of attenuation ponds as well integration with landscape proposals;
- As part of the EIAR public consultation exercise, several landowners and members of the public submitted that the attenuation pond to the west of the GLDR alignment and south of Ballycorus Road should be moved eastwards. Upon review of this issue, the scheme layout was amended to accommodate the attenuation pond as in a new position to the east.
- Road Design
 - In accordance with DMURS guidance, detailed design of sections of the road progressed to incorporate alternative approaches to servicing public transport and priority (bus gate), and appropriate cross-sections of road to provide for a street-based character (with attention on pedestrian environment and more permeable boundaries, instead of a traditional distributor road (with restricted access points and low integration with adjoining properties);
 - As part of the EIAR public consultation exercise several attendees stated that the scheme should link with the approved Part 8 Proposed Enniskerry Road / Glenamuck Road Junction Upgrade scheme in order to deliver complete pedestrian and cycle facilities along this portion of the Glenamuck Road. Upon review of this issue, the scheme was extended slightly to form a tie in with this scheme.
- Power Lines and Masts
 - The juxtaposition of the GDRS with strategic electric power infrastructure including reservations for high-voltage cables and supporting masts has implications for land use in the LAP area. Alternative development has included the detailed review of the road alignment and junctions in locations where the road reservation and power infrastructure interact. Given the national strategic importance of the 220kv power infrastructure in the area designs were optimized to remove the requirement for diversion of this infrastructure. Diversions of this line would have introduced significant environmental impacts to the local area; and
- Material Assets - Property
 - Localised options for access to development sites, formation of land development parcels, consolidation of boundaries with road alignment and mitigate potential for community severance.

Each of the above alternative issues were addressed as part of the EIAR process and are referred to in the relevant section of this EIAR.

3.5 References

- Design Manual for Urban Roads & Streets (DMURS) by the Department of the Environment, Community and Local Government/Department of Transport, Tourism and Sport, 2013;
- Kiltiernan/Glenamuck Local Area Plan, Dún Laoghaire-Rathdown County Council, 2013;
- Kiltiernan/Glenamuck Local Area Plan, Dún Laoghaire-Rathdown County Council, 2007;
- Glenamuck District Distributor Road, Environmental Study (Vol 1-3), RPS, 2007;
- Glenamuck District Distributor Road, Preliminary Design Report, RPS, 2007;
- Glenamuck District Distributor Road, Feasibility Study & Route Selection Report, RPS, 2007;
- Glenamuck District Distributor Road, Constraints Study, RPS, 2007;
- Review of Glenamuck Local Area Plan, Traffic Modelling Report, RPS, 2013.