

Variation No. 5 (a) of the Limerick County Development Plan 2010 – 2016

Limerick Northern Distributor Road

Strategic Environmental Assessment Environmental Report



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Client

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Variation No. 5 (a) of the Limerick County Development Plan 2010 – 2016 Limerick Northern Distributor Road SEA - Environmental Report

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1. INTRODUCTION

1.1 Introduction

This is the Strategic Environmental Assessment (SEA) Environmental Report (ER) for Variation No. 5 (a) of the Limerick County Development Plan (CDP) 2010-2016 (as extended). The purpose of this SEA Environmental Report is to provide a clear understanding of the likely significant effects on the environment regarding the making of the proposed Variation. The SEA is carried out in order to comply with the provisions of the Planning and Development (Strategic Environmental Assessment) Regulations 2004 (as amended) (SI No. 436 of 2004). This report should be read in conjunction with the CDP as varied.

Limerick City and County Council (LCCC) is currently proposing Variation No. 5 (a) of the Limerick County Development Plan 2010-2016. This proposed Variation relates primarily to the inclusion of the preferred route corridor of the Limerick Northern Distributor Road (LNDR). To incorporate the preferred route corridor into the Limerick County Development Plan 2010-2016 the Variation requires the insertion of an additional Objective under Chapter 8: *Transport and Infrastructure*, 8.2.6.1 *Strategic Regional Roads* of the Limerick County Development Plan 2010-2016 and reference to a Context Map relating to the Preferred Route Corridor.

The purpose of this SEA Environmental Report (ER) is to identify, describe and evaluate the likely significant effects on the environment of implementing the proposed Variation No. 5 (a) to the Limerick County Development Plan 2010-2016 and should be read in conjunction with the CDP referred to hereafter as the Plan. The aim of the ER is to identify:

- Existing environmental issues in the proposed Variation area;
- The potential likely significant effects on the environment resulting from implementation of the proposed Variation;
- How likely significant effects on the environment can be prevented or reduced; and,
- How to monitor environmental effects over the lifetime of the Plan.

It should be noted that this ER forms only part of the SEA process. The SEA process also comprises a Scoping Report, a Non Technical Summary (NTS) and at the final stage an SEA Statement will be published. The Scoping Report (January 2017) determined the baseline environmental parameter data and issues to be considered in the ER. Statutory consultation was carried out with the relevant authorities at this stage and the responses received from these are addressed in this ER. The purpose of this ER is to document the process that has been followed in carrying out the SEA and where relevant how the proposed Variation has subsequently been altered as a result of the identification of the likely significant environmental effects identified during the SEA process.

1.2 Legislative Context

The European Community issued the Strategic Environmental Assessment (SEA) Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment. This introduced the requirement that SEA be carried out on plans and programmes, including those of land use planning. Article 1 of the SEA Directive states: "*The objective of this directive is to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and*

programmes with a view to promoting sustainable development, by ensuring that, in accordance with this Directive, an environmental assessment is carried out of certain plans and programmes which are likely to have significant effects on the environment”.

The SEA Directive was transposed into Irish Law in 2004 becoming operational on the 21st July 2004. The requirements for SEA in Ireland are set out in the national Regulations:

- S.I. No. 435 of 2004 (European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004; and
- S.I. No. 436 of 2004 (Planning and Development (Strategic Environmental Assessment) Regulations 2004 as amended by S.I. No. 200 of 2011 (European Communities (Environmental Assessment of Certain Plans and Programmes) (Amendment) Regulations 2011); and S.I. No. 201 of 2011 (Planning and Development (Strategic Environmental Assessment) (Amendment) Regulations 2011) respectively.

2. SEA PROCESS

2.1 Introduction

The objective of the Strategic Environmental Assessment (SEA) Directive is *'to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans.... with a view to promoting sustainable development'* (Article 1 SEA Directive).

It is a systematic, on-going process for evaluating, at the earliest possible stage, the environmental quality and consequences of implementing certain plans and programmes on the environment.

The SEA process is comprised of the following steps (this report currently corresponds to Step (iii) and will be immediately followed by Step (iv)):

- (i) Screening: Decision on whether or not SEA of the Plan variation is required;
- (ii) Scoping: Consultation with the defined statutory bodies on the scope and level of detail to be considered in the assessment;
- (iii) Preparation of an Environmental Report;**
- (iv) Consultation on the proposed variation and associated Environmental Report;
- (v) Evaluation of the submissions and observations made on the proposed variation and Environmental Report and preparation of Manager's Report;
- (vi) Elected members vote on the variation, with or without modifications;
- (vii) If passed by the elected members, the final ER is prepared which consolidates the original ER with any changes resulting from submissions, observations and modifications where required;
- (viii) Issuance of an SEA Statement identifying how environmental considerations and consultation have been integrated into the Final Plan.

SEA is intended to inform decision-making and needs to "test" systematically the performance of the plan as a whole and its individual objectives and policies against SEA criteria. This particular report covers the third stage in the SEA process which is laid out under Article 13L of the SEA Regulations (S.I. No. 436 of 2004). This Article requires the planning authority to prepare an Environmental Report of the proposed Variation.

2.2 SEA Guidance

This SEA Environmental Report has been prepared by Roughan O'Donovan having regard to the following documents:

- Environmental Protection Agency (2003) Development of Strategic Environmental Assessment (SEA) Methodologies for Plans & Programmes in Ireland - Synthesis Report.
- Department of Environment Community and Local Government (2004) Implementation of SEA Directive (2001/42/EC): Assessment of the Effects of Certain Plans & Programmes on the Environment Guidelines for Regional Authorities & Planning Authorities (Section 28 Guidelines).
- Environmental Protection Agency (2015) Integrating Climate Change into Strategic Environmental Assessment in Ireland – A Guidance Note.
- Environmental Protection Agency (2013) SEA Resource Manual for Local and Regional Planning Authorities – Integration of SEA Legislation and Procedures for Landuse Plans.

- Environmental Protection Agency, (May 2016) EPA Scoping Template Web Version.
- Environmental Protection Agency & Mid-West Regional Authority (2013) Draft SEA Resource Manual for Local and Regional Authorities, Integration of SEA Legislation and Procedures for Landuse Plans.
- Dr Ainhoa González Del Campo for the Environmental Protection Agency (2015) GISEA Manual Improving the Evidence Base in SEA.
- Environmental Protection Agency (2015) Developing and Assessing Alternatives in Strategic Environmental Assessment.

The Department of Environment, Communities and Local Government (DoECLG) Circular (PSSP 6/2011) '*Further Transposition of the EU Directive 2001/42/EC on Strategic Environmental Assessment (SEA)*' has also been taken into account, as well as the DoECLG Circular (Circular PL 9 of 2013) 'Article 8 (Decision Making) of EU Directive 2001/42/EC on Strategic Environmental Assessment (SEA) as amended' during the preparation of the Plan and in undertaking the SEA process.

2.3 Key Stages in the Proposed Variation SEA Process

This section deals with how the key stages of the SEA is undertaken alongside the preparation of the proposed Variation.

Screening

Taking into account the criteria set out in Schedule 2A of the SEA Regulations, the Council screened the proposed Variation in order to evaluate if there was a requirement to undertake SEA. Following this assessment the Council determined that implementation of the proposed Variation would have the potential to give rise to significant effects on the environment and therefore a full SEA was required.

Scoping

To ensure that the SEA of the Variation of the Plan was adequately scoped, a Scoping Notification was circulated to the relevant designated environmental authorities. In this case, the authorities are detailed in Table 2.1.

Table 2.1 Authorities included in the Scoping Notification

Consultee Name	Postal Address	Email address
Environmental Protection Agency	Environmental Protection Agency SEA Section Office of Environmental Assessment EPA Regional Inspectorate Inniscarra Co. Cork	sea@epa.ie
Mr Simon Coveney TD, Minister for Housing Planning, Community and Local Government	Planning System and Spatial Policy, Department of Housing, Planning, Community and Local Government Custom House Custom House Quay Dublin 1 Email:	sea@housing.gov.ie

Mr Denis Naughten TD, Minister for Communications, Climate Action and Environment	Corporate Support Unit, Department of Communications, Energy and Natural Resources, Elm House, Earlsvale Road, Cavan.	corporatesupport.unit@dccae.gov.ie
Ms Heather Humphreys TD, Minister for Arts, Heritage, Regional, Rural and Gaeltacht Affairs	Covered by sending to Development Applications Unit	
The Manager, Development Applications Unit	Department of Arts, Heritage Regional, Rural and Gaeltacht Affairs Newtown Road Wexford	manager.dau@ahg.gov.ie
Mr Michael Creed TD, Minister for Agriculture, Food and the Marine	Environmental Co-ordination Unit, Climate Change and Bio Energy Division, Department of Agriculture, Food and the Marine, Pavalion A, Grattan Business Park, Portlaoise, Co. Laois	environmentalco-ordination@agriculture.gov.ie
Clare County Council	Planning Office, Clare County Council Áras Chontae an Chláir New Road Ennis, Co. Clare	planoff@clarecoco.ie

Submissions regarding the proposed Variation were received from the prescribed environmental authorities. All comments have been taken fully into account during this SEA process. The details of the responses and how they are to be addressed are contained in **Appendix B** of this Environmental Report.

Environmental Baseline Data and Other Strategic Actions

The SEA process is informed by the environmental baseline (i.e. the current state of the environment - flora and fauna, soil, water, cultural heritage etc.). This is used to facilitate the identification and evaluation of the likely significant environmental effects of implementing the Variation; and the subsequent monitoring of the effects of the Variation as made to the Development Plan.

The SEA Directive requires that information is provided on '*any existing environmental problems which are relevant to the plan or programme*'. Information was therefore provided in the Scoping Report on existing environmental problems which are relevant to the area. The SEA Directive requires that information on the baseline environment be focused upon the relevant aspects of the environmental characteristics of areas likely to be significantly affected and the likely evolution of the current environment in the absence of the strategic action i.e. the proposed Variation. Any information that does not focus upon this is surplus to requirements; therefore the SEA focuses on the significant issues, disregarding the less significant ones. In addition, the SEA Directive aims to avoid duplication of the assessment whereby a strategic action forms part of a hierarchy in the decision making process.

Furthermore, if certain matters are more appropriately assessed at different levels of the decision making process in which the proposed Variation is positioned, or, if certain matters have already been assessed by a different level of the hierarchy then additional assessment is not required during the SEA process as they are more appropriately assessed at that level in the decision making process e.g. at project level planning application/ EIA stage.

Alternatives

The SEA Directive requires that reasonable alternatives (taking into account the objectives and the geographical scope of the plan or programme) are identified, described and evaluated for their likely significant effects on the environment. Discussion on the alternatives considered is provided in Section 7 of this Report.

Environmental Report (ER)

The ER is placed on public display alongside the proposed Variation. The likely significant environmental effects of the proposed Variation are identified and their significance evaluated with regard to the environmental baseline. The Environmental Report provides relevant information to the decision-makers, the members of the Council, who decide whether or not to make the Variation, as well as to the public, with a clear understanding of the likely significant environmental effects of the proposed Variation.

If any modifications to the Variation are made after this consultation period, the ER will be updated to assess those changes and any likely significant effects on the environmental topics as a result of those changes.

The SEA Statement

If the Variation is made by the Elected Members, a document referred to as the SEA Statement must be made public. This is required to include information on:

- how environmental considerations have been integrated into the proposed Variation - highlighting the main changes to the Variation which resulted from the SEA process;
- how the Environmental Report and consultations have been taken into account - summarising the key issues raised in consultations and in the Environmental Report indicating what action, if any, was taken in response; and
- the reasons for choosing the Variation in the light of other reasonable alternatives.

2.4 Requirement for Habitats Directive Assessment

The SEA legislation and guidelines indicate that there should be complete integration between the preparation of the proposed Variation, the SEA process and any Habitats Directive Assessment (HDA) which might be required. The Environmental Report outlines the SEA process carried out in tandem with the proposed Variation to the Limerick County Development Plan 2010-2016 and the HDA. The SEA process ensures that the proposed Variation is informed by environmental considerations from the outset.

Article 6(3) of the Habitats Directive (92/43/EEC) states that any plan or project not directly connected with or necessary to the management of a Natura 2000 site, *i.e.* Special Area of Conservation (SAC) or Special Protection Area (SPA), but likely to have a significant effect thereon, either individually or in combination with other plans

or projects, shall be subject to an Appropriate Assessment (AA) of its implications for the site in view of the site's Conservation Objectives.

Under the Habitats Directive and the European Communities (Birds and Natural Habitats) Regulations, 2011-2015, where an AA is required and will be undertaken in conjunction with the SEA, environmental problems, indicators or other issues relevant to the assessment should be identified, that need to be considered during the SEA process. The likely significant effects of the proposed Variation on Natura 2000 sites in the vicinity and also impacts on protected species should also be considered as part of the SEA.

The HDA, although carried out in parallel with the proposed Variation and the SEA, was prepared as a separate document. The Assessment was carried out in two stages, the first, Appropriate Assessment (AA) Screening where any likely significant effects on the surrounding Natura 2000 sites were identified. The second, the Natura Impact Report (NIR) is where those affects identified during the screening exercise are examined in further detail to determine if any adverse impacts on the site integrity of any Natura 2000 sites was possible. The following paragraphs provide a summary of the process, for more detail please read the completed NIR which accompanies the Variation.

The NIR evaluates proposed Variation No. 5 (a) of the Limerick County Development Plan 2010-2016, alone and in combination with both the existing objectives of the Limerick County Development Plan 2010-2016 and those of other plans and projects.

Following a review of the proposed Variation No. 5 (a) of the LCDP, the AA Screening considered that there was potential for the proposed Variation to have a significant impact on certain Qualifying Interests of the Lower River Shannon SAC. These included Alluvial Woodland and Watercourses of plane to montane levels; and on the qualifying species Atlantic Salmon, Lamprey species and Otter of the Lower River Shannon SAC. It was identified at Screening stage that these impacts would require mitigation at Stage 2 to ensure that the adoption of proposed Variation No. 5 (a) would not have a significant effect on the Lower River Shannon SAC. The completed Natura Impact Report (NIR) was prepared on this basis in respect of the implications of the proposed Variation for the Lower River Shannon SAC in view of its Conservation Objectives.

The findings of the ER and NIR shall inform each other to ensure no adverse impacts on the environment and, specifically, on Natura 2000 sites will occur.

2.5 Requirement for Strategic Flood Risk Assessment

The current Limerick County Development Plan 2010-2016 identifies the need for the Council to prepare a Strategic Flood Risk Assessment for relevant areas of Limerick County. Section 8.3.6 of the Limerick County Development Plan 2010-2016 contains the objectives relating to flood risk for the County. Issues in relation to Flood risk are examined in greater detail in Section 5 (a) of this report and also Section 8 as part of the assessment of the proposed Variation. A separate Flood Risk Assessment has also been carried and has informed the SEA ER. The SFRA can be found as a separate document to the overall Variation.

2.6 Consultation with Environmental Authorities

Under SEA Regulations designated environmental authorities must be consulted in relation to the SEA Environmental Report. In the case of Variation No. 5 (a), the authorities have been identified as statutory consultees;

- The Environmental Protection Agency (EPA);
- Mr Simon Coveney TD, Minister for Housing, Planning, Community and Local Government;
- Mr Denis Naughten TD, Minister for Communications, Climate Action and Environment;
- Ms Heather Humphreys TD, Minister for Arts, Heritage, Regional, Rural and Gaeltacht Affairs¹; (Development Applications Unit, Department of Arts, Heritage, Regional, Rural and Gaeltacht Affairs);
- Mr Michael Creed TD, Minister for Agriculture, Food and the Marine (DAFM²); and,
- Clare County Council as the adjoining planning authority.

2.7 Legislative Conformance

This SEA ER complies with the provisions of the SEA Regulations and is written in accordance with Schedule 2B of the Planning and Development (Strategic Environmental Assessment) Regulations 2004 (SI No. 436 of 2004) as amended.

Table 2.2 is a reproduction of the checklist of information required to be contained in the Environmental Report (DEHLG, 2004) and includes the corresponding sections of this Report which deal with these requirements.

Table 2.2 Checklist of Information to be Contained in the Environmental Report (Schedule 2B - DEHLG, 2004)

Information Required to be included in the Environmental Report	Corresponding Section of this Report
(A) Outline of the contents and main objectives of the Plan (Variation), and of its relationship with other relevant plans and programmes	3 & 4
(B) Description of relevant aspects of the current state of the environment and the evolution of that environment without implementation of the proposed Variation.	5
(C) Description of the environmental characteristics of areas likely to be significantly affected	5
(D) Identification of any existing environmental problems which are relevant to the proposed Variation, particularly those relating to European protected sites	5
(E) List environmental protection objectives, established at international, EU or national level, which are relevant to the proposed Variation and describe how those objectives and any environmental considerations have been taken into account when preparing the proposed Variation	4 & Appendix A
(F) Describe the likely significant effects on the environment	8
(G) Describe any measures envisaged to prevent, reduce and as fully as possible offset any significant adverse environmental effects of implementing the proposed Variation	8
(H) Give an outline of the reasons for selecting the alternatives	7

¹ Where it appears the proposed variation may have a significant effects in relation to the architectural heritage or to nature conservation.

² Where it appears the proposed variation may have significant effects on fisheries or the marine environment.

Information Required to be included in the Environmental Report	Corresponding Section of this Report
considered, and a description of how the assessment was undertaken (including any difficulties)	
(I) A description of proposed monitoring measures	9
(J) Conclusion – Overall findings of the assessment	10
(K) A non-technical summary of the above information	Non Technical Summary (separate document)
(L) Interrelationships between each Environmental topic	Addressed as it arises within each Section

3. DETAILS OF PROPOSED VARIATION NO. 5 (a)

The proposed Variation No. 5 (a) to the Limerick County Development Plan 2010-2016 relates to the incorporation of the preferred route of the Limerick Northern Distributor Road into the Plan. This involves changes to the text of the Plan objectives and also insertion of a Context Map for the development of the LNDR.

The proposed Variation relates to an additional objective to be added to Section 8.2.6.1. "Strategic Regional Roads" of the Plan under Policy IN P8 "Strategic Regional Road Network", together with an additional Context Map, presented as Fig. 3.1.

Proposed wording of the Variation:

"Limerick Northern Distributor Road:

It is an objective of Limerick City & County Council to support the Limerick Northern Distributor Road, which will connect the Coonagh to Knockalisheen Road Scheme to the existing R445 (old N7) and adjoining road network to the east of Limerick City which will incorporate Smarter Travel features in accordance with the requirements of the Habitats, Water Framework, Floods, and EIA Directives. Full consideration of all environmental requirements have been made in the progression of the scheme to date. This will continue up to and including project level.

In relation to the LNDR, it is an objective of Limerick City & County Council:

- a) To ensure all mitigation and monitoring measures outlined in the Environmental Report and Natura Impact Report shall be taken into account at project level. Section 11 of the Natura Impact Report (dated February 2017) for the Proposed Variation provides details of mitigation measures which shall apply to any future development of the LNDR.
- b) To ensure all mitigation and monitoring measures outlined in the Strategic Flood Risk Assessment shall be taken into account at project level.



Figure 3.1 Proposed Context map to be inserted underneath proposed Variation objective showing the location of the preferred LNDR route corridor with indicative area for link road and junction reservation.

3.1 Need for the Scheme

Limerick City is the capital of the Mid West and has to fulfil its leadership role regionally and nationally. As Ireland's economic recovery continues, the city must position itself for investment and growth. Top quality modern infrastructure is an essential requirement for Limerick to maintain its competitive advantage and encourage more investment. Better infrastructure will improve access to new housing developments for citizens, the National Technology Park for investors, the University of Limerick for students and the northern suburbs of the city.

The need for the scheme was identified in the "Mid-West Regional Planning Guidelines 2010-2022" prepared by the Mid-West Regional Authority made up of the then Limerick City Council, Limerick County Council, Clare County Council and North Tipperary County Council. The guidelines identified many strategic issues that required consideration for the future planning of the region including the need for a northern distributor road around Limerick City to support the development of the region.

Additionally, The Fitzgerald Report "Addressing the issues of Social Exclusion in Moyross and other Disadvantaged Areas of Limerick City" (April 2007) recommended that a distributor road to the north of Limerick City be progressed to develop economic activity and end the isolation of this deprived area.

At present all main roads in the north and east of the city are overloaded especially at peak times. The road will give road users more choice to move around the city and distribute traffic more evenly across the city's network. It is especially important for the northern suburbs such as Corbally and will greatly relieve pressure in Annacotty,

Monaleen and Castletroy. It is envisaged that there will be much better connectivity for residents and businesses in east County Limerick and south County Clare.

The Scheme Objectives are:

- To promote balanced regional development in Limerick and South Clare. Delivery of the proposed road is anticipated to encourage increased economic activity as improved access attracts further investments to the area.
- To provide a northern distributor road around Limerick City, improving accessibility to the city from County Clare and relieving pressure on existing river crossings.
- To provide significant improvement in connectivity between different areas along the northern fringe of the city, allowing people living in residential areas to the east of Limerick to access employment opportunities in the west of the county and vice versa.
- To improve access to the University of Limerick and to the National Technological Park.

It is envisaged that the main link of the scheme will comprise a high quality urban dual carriageway, providing two lanes in each direction and including pedestrian and cyclist infrastructure. Access to the local road network and appropriate junction provision will be provided where required.

4. INTERACTIONS WITH OTHER RELEVANT PLANS AND PROGRAMMES

The Strategic Environmental Assessment of the proposed Variation No. 5 (a) of the Limerick County Development Plan 2010-2016 shall be informed and carried out in the context of a set of Policies, Plans and Strategies as set out below. In particular the interaction of the proposed Variation with the Environmental Protection Objectives (EPOs) and standards included within these other plans and programmes must be considered.

The Limerick County Development Plan 2010-2016 nestles within a clear hierarchy of spatial policy documents. This hierarchy of strategies, policies, plans, etc. (follows a format which commences with high level International and/or EU documents feeding progressively downwards into site specific local plans and policies.

The Summary of the likely influence and links/relationships that the proposed Variation of the Limerick County Development Plan may have on the plans and programmes listed below is outlined in **Appendix A**. Where it was identified that the proposed Variation may have a negative impact on the EPOs of these individual plans and programmes, a means of addressing these issues is presented i.e. typically through the assessment by the Strategic Environmental Objectives³ (discussed in Section 6 of this report) and where required through subsequent mitigation measures needed to address any significant impacts.

Table 4.1 Relevant Plans and Programmes that have Influenced the SEA Process

International Level
<ul style="list-style-type: none"> • Johannesburg Plan of Implementation 2002 • Agenda 21 • UN Convention of Biological Diversity, 1992 • Convention on Wetlands of International Importance (Ramsar Convention) 1971 • EU Seventh Environmental Action Programme 2014 • European Spatial Development Perspective 1999 • EU White Paper on Renewable Energy 1997 • COMAH (Seveso III) Directive(96/82/EC) as amended (2012/18/EU) • Water Framework Directive 2000 • SEA – Directive (2001/42/EC) - Assessment of the effects of certain plans and programmes on the Environment 2001 • Environmental Impact Assessment Directive (2011/92/EU) (2014/52/EU), 2014 • Floods Directive 2007 • EU Directive on the Conservation of Natural Habitats and of Wild Flora and Fauna 1992 • EU Directive on the Conservation of Wild Birds (2009/147/EC) 2009 • European Communities Quality of Salmonid Waters Regulations 1998 • EU Drinking Water Directive 1988

³ The Strategic Environmental Objectives (SEOs) are used to assess the potential environmental impacts that the Proposed Variation may have on the environment within the Plan area. The SEOs used were formerly derived from the SEA of the Limerick County Development Plan 2010-2016. These SEOs are now used to assess the likely significant effect that the Proposed Variation changes may have on the Variation environment.

- EU Sewage Sludge Directive 1991 as amended
- EU Urban Waste Water Treatment Directive 1991 as amended
- Waste Framework Directive 2008/98/EC on waste)
- EU Nitrates Directive (91/676/EEC) 1991
- EU Groundwater Directive (2006/118/EC) 2006
- EU Surface Water Directive (75/440/EEC) 1975
- Integrated Pollution Prevention and Control (IPPC) Licensing 2004
- EU Bathing Water Directive (2006/7/EC) 2006
- European Convention on the Protection of the Archaeological Heritage, 1992 (The Valletta Convention)
- Air Quality Directives 1998 as amended
- Environmental Noise Directive 2002
- Climate Change Programme (ECCP II)
- Kyoto Protocol 2005
- European Landscape Convention, 2000
- Strategic Plan for Biodiversity 2011-2020
- Habitats Directive (92/43/EEC) 1992

National

- National Planning Policy Framework
- National Spatial Strategy 2002-2020
- Delivering a Sustainable Energy Future for Ireland - The Energy Policy Framework 2007-2020
- National Development Plan 2007-2013
- National CFRAM Programme
- National Heritage Plan 2002
- Smarter Travel – A Sustainable Transport Future - A New Transport Policy for Ireland 2009-2020
- National Biodiversity Plan 2002
- National Cycle Policy Framework 2009-2020
- The Planning System and Flood Risk Management, Guidelines for Planning Authorities (2009)
- Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas (Cities, Towns & Villages) (2009)
- Appropriate Assessment of Plans and Projects in Ireland. Guidelines for Planning Authorities (2009)
- Architectural Heritage Protection - Guidelines for Planning Authorities 2004
- National Policy on Town Defences 2008
- Noise Regulations, 1994
- Development Management Guidelines (DoEHLG) 2007
- Planning Guidelines on Spatial Planning and National Roads 2012
- National Action Plan for Social Inclusion 2007-2016
- Wildlife (Amendment) Act 2000
- Creating a Green Infrastructure for Ireland- Enhancing Natural Capital for Human Wellbeing 2010
- National Climate Change Strategy, 2007-2012

- Air Pollution Act 1987
- Local Government (Water Pollution) Acts, 1977 and 1990
- Water Quality (Dangerous Substances) Regulations 2001
- National Inventory of Architectural Heritage (NIAH)
- Framework and Principles for the Protection of the Archaeological Heritage 1999
- Landscape and Landscape Assessment Guidelines 2000
- Draft National Landscape Strategy for Ireland 2015-2025
- Building on Recovery: Infrastructure and Capital Investment 2016-2021
- Sustainable Rural Housing Development Guidelines 2005
- Planning and Development Act 2000 (Act 2000 (as mended))
- Planning and Development Regulations (as amended)
- Design Manual for Urban Roads and Streets (2013)

Regional

- Shannon International River Basin Management Plan 2009-2015
- Limerick/Clare Joint Housing Strategy 2010-2017, 2010
- Mid-West Regional Planning Guidelines 2010-2022
- Mid-West Area Strategic Plan (MWASP) 2012-2030
- Mid-West Regional Retail Strategy 2010-2016
- Clare, Limerick City and County Housing Strategy 2010
- Clare County Development Plan 2011-2017
- Shannon Estuary Strategic Integrated Framework Plan (SIFP) 2013-2020

County & Local

- Proposed Draft Variation No.6 of the Limerick City Development Plan 2010 - 2016
- South Clare Local Area Plan 2012-2018
- Castletroy Local Area Plan 2009-2015 (Extended until 2019)
- Limerick County Development Plan 2010-2016 (Extended)
- Limerick City Development Plan 2010-2016 (Extended)
- Clare County Development Plan 2017-2023 (Effective from 25th Jan 2017)
- County Development Board Strategy
- Limerick and Clare Sports and Physical Recreation Strategy - June 2013
- Limerick Clare Joint Housing Strategy 2010-2017
- Limerick City Council Biodiversity Action Plan - 2011
- County Limerick Local Anti-Poverty and Social Inclusion Strategy 2010-2016
- Limerick Regeneration framework implementation Plan 2013
- Limerick Smarter Travel
- Draft Joint Noise Action Plan 2013
- Limerick Hinterland Report 2015
- Draft Local Economic and Community Plan (LECP) for Limerick City and County 2016-2021
- Action Plan for Jobs Mid-West Region 2015-2017
- Limerick 2030 – An Economic and Spatial Plan for Limerick (2013)
- Limerick Planning, Land Use and Transportation Study (PLUTS) 2003

5. BASELINE ENVIRONMENT

5.1 Introduction

The environmental baseline of the proposed Variation area is described in this section. This baseline together with the Strategic Environmental Objectives (SEOs) (outlined in Section 6) are used in order to identify, describe and evaluate the likely significant environmental effects of implementing the proposed Variation in order to determine what if any mitigation and monitoring measures are required.

Baseline data is essential to establish the current state of the environment in order to assist with the identification, evaluation and monitoring of the likely significant effects of the proposed Variation on the environment. The baseline information forms the platform to identify existing environmental problems. From this, the highlighted environmental issues can then be used to establish the Strategic Environmental Objectives. In this case as the process involves a Variation to the current CDP, the SEOs established as part of the Environmental Report of the LCDP 2010-2016 have been used again during the assessment of this proposed Variation in order to ensure that any likely significant impacts on the SEA topics are addressed and can be included as part of future monitoring of the Plan.

Where data gaps are found for particular aspects of the environment, the significance of these data gaps will be evaluated and clearly stated. An examination will also be made as to whether these gaps can be addressed during the SEA process.

The environmental baseline is described in line with the legislative requirements outlined in Schedule 2B of the SEA Regulations 2004-2011, encompassing the following environmental receptors/ topics: biodiversity, flora and fauna, population and human health, soils, geology, water, air and climate, material assets, cultural heritage, landscape and the interrelationship between these components.

5.2 Study Area that applies to the Proposed Variation

The proposed Variation is located in the Limerick City east electoral area which is within the newly formed Limerick City Metropolitan District, located in the north east environs of Limerick City.

The study area is restricted to a geographical area in the north east environs of the City. The LNDR will travel from south Clare and cross the River Shannon into the townlands of Rivers and Ballyvolane in Co. Limerick. It will then proceed through the Mountshannon area to its docking point with the strategic road network to the east of the city. This junction will facilitate connection with the local and strategic road networks including the R445 (old Dublin Road), the M7 motorway and the National Technological Park. The indicative junction reservation study area includes the townlands of Mountshannon, Ballyvolane, Garraunykkee, Carrowkeel and small parts of Richhill and Ballynagowna. The study area also includes for a possible link road crossing of the Mulkear River through the townlands of Rivers and Castletroy.

The sections below examine the baseline information available for each of the SEA environmental receptors for the study area and from this identifies the likely significant environmental impacts that are expected as a result of the proposed Variation.

5.3 Evolution of the Environment in the Absence of the Variation

The SEA Directive requires that the ER includes a description of the likely evolution of the environment in the absence of the proposed Variation. This will be considered under the “Do Nothing Scenario” in Section 7 of this ER.

5.4 Technical Difficulties Encountered and Information Gaps

A Route Corridor Selection Report (September 2012) is available for the proposed LNDR and includes a considerable amount of information on the area in which the proposed Variation is situated. Therefore, no significant data gaps were encountered when carrying out the SEA of the proposed Variation.

5.5 Environmental Topics Scoped Out at SEA Scoping Report Stage

No environmental topics were scoped out at SEA Scoping stage. The SEA Scoping Report highlighted that there may be several issues that could result in likely significant effects on certain SEA topics as a result of the proposed Variation therefore further assessment is required and is undertaken in this ER.

5.6 Description of Baseline Environment and Potential Significant Environmental Effects

5.6.7 Biodiversity

Biodiversity or “biological diversity” is one of the key terms in conservation, encompassing the richness of life and the diverse patterns it forms. The Convention on Biological Diversity (CBD) defines biological diversity as ‘the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems’ (Article 2)

Designated Sites

Natural Heritage Areas

An established legal basis exists to protect rare or threatened habitats. In this regard there are a number of areas within the county designated as Natural Heritage Areas (NHAs) and proposed Natural Heritage Areas (pNHAs) (protected in accordance with the Wildlife Acts, 1976-2012). There is one pNHA, Knockalisheen Marsh pNHA (Site Code: 002001) located within the geographical scope of the proposed Variation (see Figure 5.1). This is located a significant distance downstream from the location of the proposed River Shannon crossing and is in County Clare. Therefore, any significant impacts on this site have been dealt with under the assessment that was carried out on the proposed Variation No. 3 to the Clare County Development Plan 2011-2017 and further included as part of the revised Clare County Development Plan 2017-2023. This area is also covered by the Lower River Shannon SAC.

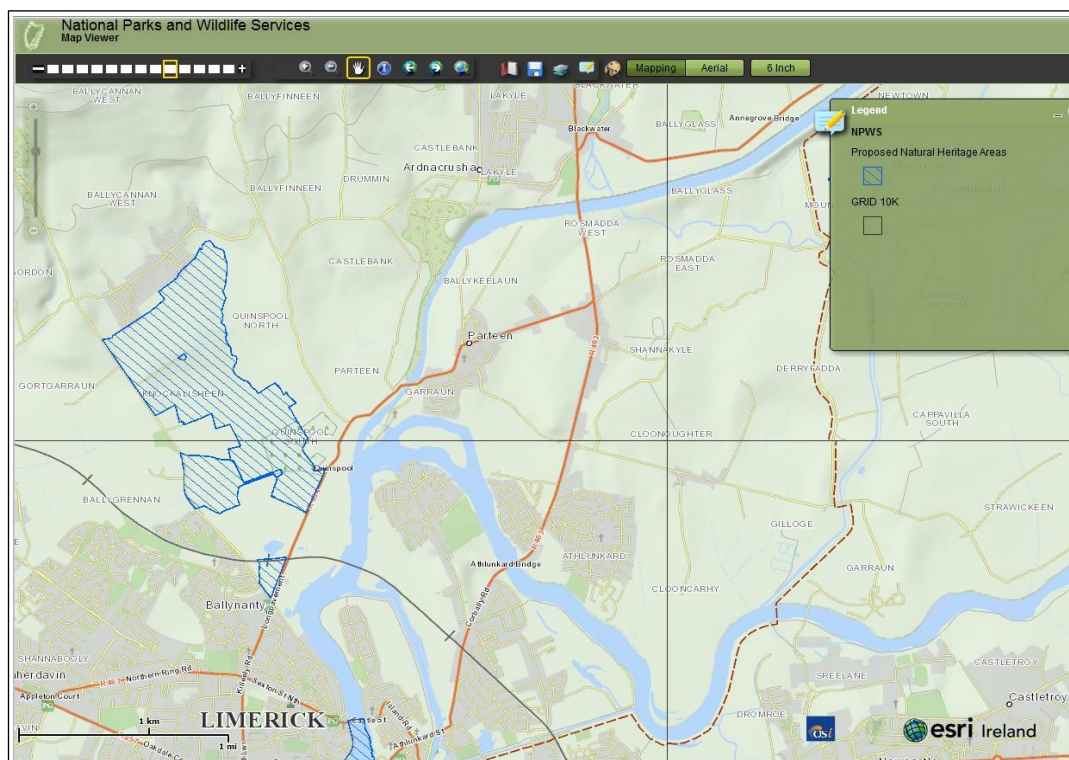


Figure 5.1 Map illustrating the locations of the Knockalisheen Marsh pNHA.
Source: <http://webgis.npws.ie/npwsviewer/>.

Natura 2000 sites

Within 15 km of the preferred route corridor, there are eleven Natura 2000 sites, *i.e.* sites of European importance for nature conservation. Nine of these sites are Special Areas of Conservation (SACs) designated under the Habitats Directive (92/43/EEC) and two are Special Protection Areas (SPAs) designated under the Birds Directive (2009/147/EC). These sites are selected for a total of 21 natural habitat types listed on Annex I of the Habitats Directive, including four priority habitats: Coastal lagoons; Blanket bogs (active); Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae*; and, Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alnion incanae*, *Salicion albae*). Nine species listed on Annex II of the Habitats Directive are also listed as Qualifying Interests of these sites, including Freshwater Pearl Mussel, three Lamprey species, Salmon, Lesser Horseshoe Bat, Bottle-nosed Dolphin, Otter and Killarney Fern. The River Shannon and River Fergus Estuaries SPA is selected for 21 bird species, including four listed on Annex I of the Birds Directive, while the Slievefelim to Silvermines Mountains SPA is selected for breeding Hen Harrier (listed on Annex I of the Birds Directive). The location of each of these Natura 2000 sites in relation to the proposed Variation area is illustrated in Figure 5.2 below.



Article 6(3) of the Habitats Directive requires that all plans and projects not directly connected with or necessary to the management of European sites and likely to have a significant effect thereon be subject to an Appropriate Assessment (AA) of their implications for the integrity of such sites, both individually and in combination with other plans and projects. To this end, AA Screening was undertaken for the proposed Variation and it was found that likely significant effects on the Lower River Shannon SAC could not be ruled. Therefore, a Natura Impacts Report (NIR) was prepared to inform the competent authority in its AA of the proposed Variation. The NIR contained a detailed assessment of the potential impacts of the proposed Variation on the SAC and proposed appropriate mitigation measures to minimise these impacts. The NIR determined that, on the basis the implementation of these measures, the proposed Variation would not be likely to have an adverse effect on the Lower River Shannon SAC or any other European site for nature conservation.

Previous Ecological Surveys

A comprehensive set of ecological data is available for the area to which the proposed Variation applies. This information was previously compiled as part of the LND Route Corridor Selection Report (RCSR, 2012). The principal ecological sites and constraints impacted by the various route corridor options were examined, and a comparison between the various route corridor options on the basis of potential impacts on the ecological environment was provided. The chosen route corridor option, which forms part of the proposed Variation, was examined in detail and a comprehensive baseline of the proposed Variation area's ecological environment was compiled. Any important ecological features present were then highlighted as a result of this study. These features were identified from a variety of sources including the RCSR and Constraints Study for the scheme, existing literature and data sets, consultations with statutory authorities and other sources holding records of rare and protected species and habitats, and a review of aerial photography.

Habitats

Areas of ecological significance within the proposed Variation area were surveyed to identify and map habitats present in accordance with the Heritage Council Habitat Classification (Fossitt, 2000). Particular emphasis was placed on mapping habitats within the Lower River Shannon SAC to identify habitats listed as Qualifying Interests for the SAC or the potential for such, as well as species (and the habitats thereof) listed as Qualifying Interests of the SAC. Surveys at these locations involved detailed vegetation community level surveys, particularly of humid and wet grassland areas and woodlands on alluvial soils. The vegetation composition and structure of the grassland habitats was surveyed in more detail following the National Grassland Survey (O'Neill *et al.*, 2009) approach.

Watercourses

The watercourses in the vicinity of the proposed crossing points of the various route options were surveyed for all protected aquatic species previously recorded or likely to occur. Surveys for the three Lamprey species and Salmon aimed to identify potential spawning and nursery habitat for those species at and in the vicinity of the proposed crossing points on the River Shannon and Mulkear River. The survey was undertaken in July 2011 during a period of low flow and in good lighting conditions. Substrate type, flow regime and water depth were recorded for each survey location. Surveys for other species including Otter and Kingfisher were also carried out in the riparian zones within the preferred route corridor.

Other Surveys

Surveys were also carried out within the proposed Variation area for wintering birds, including Whooper Swan, and also to determine nesting or occurrence of Barn Owl and Long-eared Owl. Mammal surveys including Otter and Badger surveys were also carried out. Signs of Otters and active Badger setts were found within the proposed Variation area.

Bat Surveys

As part of the RCSR, Bat Conservation Ireland (BCI) was consulted with regard to existing records of bat activity including roosts, foraging and lekking sites from within the route corridor. A review of known bat roosts and activity within 10 km of the proposed routes was conducted using the BCI database. Other specialists including members of BCI and local NPWS Conservation Rangers were contacted regarding any survey work that they had carried out in the area.

Bat activity surveys at areas of likely significance for bats along the various routes and in the wider landscape were undertaken using bat detectors. The areas surveyed included were based on habitats recorded within the RCSR and additional areas identified as part of the ecological surveys. The following bat species were recorded:

- Soprano Pipistrelle;
- Common Pipistrelle;
- Daubenton's Bat;
- Brown Long-eared Bat;
- Leisler's Bat; and,
- Unidentified *Myotis* sp.

The main watercourses in the area (River Shannon, River Blackwater, River Mulkear, Errina Canal, Ardnacrusha tailrace) as well as smaller watercourses such as local streams at Cappateemore West, Cappatee, and Ballycannan, are all important features in the landscape for bats providing connectivity across open areas as well as important commuting routes and foraging areas.

Species recorded along the River Shannon within the grounds of the University of Limerick included foraging Common and Soprano Pipistrelles and Daubenton's Bat. Leisler's Bat and unidentified *Myotis* species in addition to Brown Long-eared Bat have been recorded from here in the past. Soprano and Common Pipistrelle were recorded on a widespread basis across the landscape and were commonly encountered along local roads. They would be expected to be recorded foraging along most hedgerows and treelines.

The River Shannon weaves its way through the study area in a westerly direction before entering Shannon Estuary immediately west of Limerick. In the area of the proposed crossing location, the River Shannon is joined by the Mulkear River, these rivers and their riparian habitats are of high conservation interest for bats and are used extensively for commuting and foraging purposes. Agricultural field boundaries within the area are also diverse with good quality hedgerows and tall treelines and these are therefore of local value being used for commuting and foraging by bats. Areas of scrub are also of value for foraging bats.

It is not possible at this stage to ascertain how many individual roosts are within the wider area shall be identified during the project level assessment and associated EIA at detailed design stage.

No significant impacts are expected at this plan level on the bat population in the area as a result of the preferred route corridor or the proposed Variation as there will be limited fragmentation of linear features associated with bat movement.

Consultations on LNDR Route Corridor Options

Consultation was carried out to inform the RCSR. As part of this, the following bodies were consulted:

- National Parks & Wildlife Service (NPWS);
- Inland Fisheries Ireland (IFI) Shannon River Basin District;
- BirdWatch Ireland (BWI);
- Botanical Society of the British Isles (BSBI) recorders for County Clare;
- Bat Conservation Ireland (BCI).

In addition to the information gathered for the RCSR, site walkovers were carried out in March 2015, in December 2016 and in February 2017 to ensure that any changes with regard to species and habitats within the proposed Variation area were identified and assessed. The habitat maps shown in Figures 5.3 and 5.4 illustrate the findings from these walkovers.

Potential Ecological Impacts identified as a result of the proposed Variation

This section outlines the potential ecological impacts within the area of Limerick to which the proposed Variation applies. At the location where the route crosses the Lower River Shannon SAC the river is deep and slow flowing, no spawning habitat for Lamprey species or Salmon is present, though ammocoete beds may occur along the shoreline.

Following survey of the area in March 2015, it was determined that the preferred route corridor contains areas of woodlands with potential in the medium to long term to develop into priority Annex I habitat Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-padion*, *Alnion incanae*, *Salicion albae*) (91E0) along the south bank of the river. These areas will be avoided during the detailed design stage of the LNDR. This Shannon river crossing will pass over a narrow strip of tall herbaceous marsh vegetation (potentially the Annex I habitat, Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels (6430) on the northern bank of the River Shannon. This is not a Qualifying Interest of the SAC.

South of the SAC, the route crosses open agricultural land with occasional hedgerows and treelines. There are anecdotal records of a flock of Whooper Swan periodically utilising the open grassland areas to the south of the preferred route corridor for foraging during the winter. The location of the preferred route corridor was amended during the route selection process to avoid this foraging area.

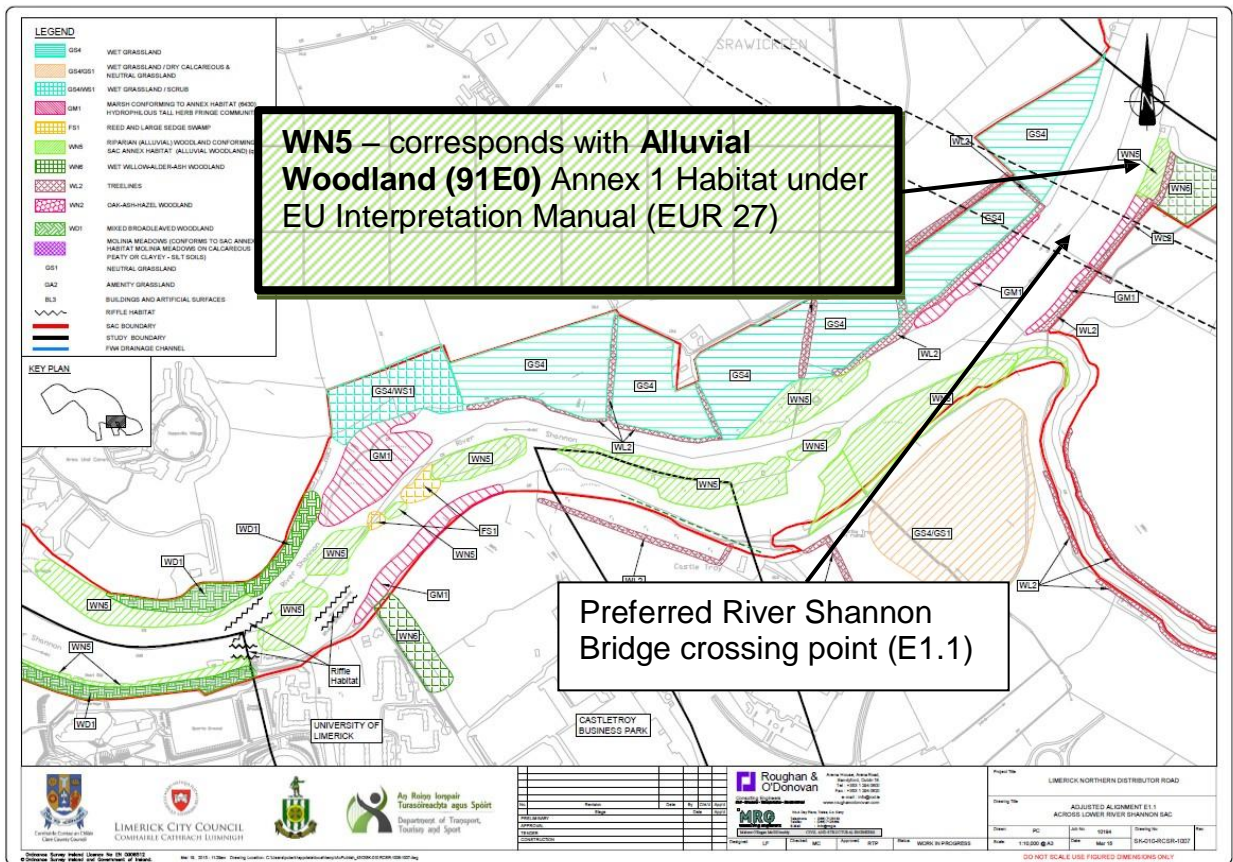


Figure 5.3 Habitats present at the proposed River Shannon crossing point, as illustrated in the RCSR.

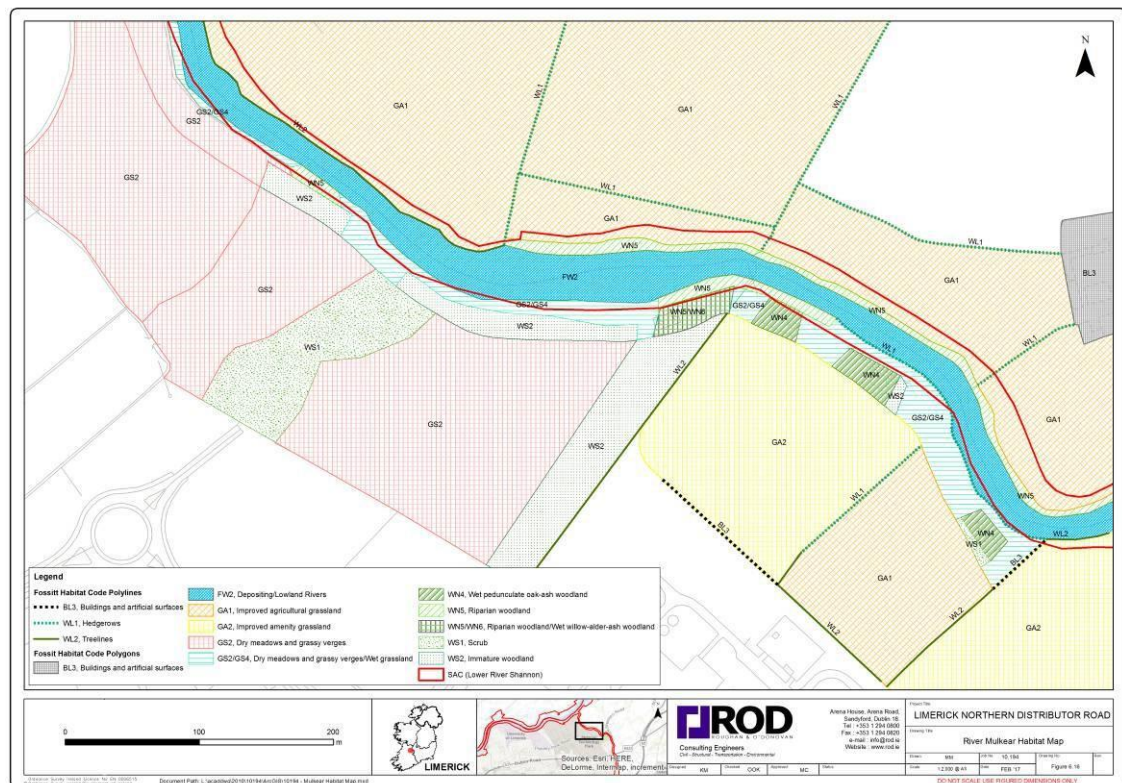


Figure 5.4 Habitats present at the possible River Mulkear crossing point, as illustrated in the NIR.

Invasive Alien Species

The risk of spreading invasive alien species (IAS) listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations, 2011-2015 is a material consideration for any development. In the case of the proposed Variation, the plants Japanese Knotweed (*Fallopia japonica*) and Himalayan Balsam (*Impatiens glandulifera*) are of greatest concern. A number of other IAS occur within the general study area, including Giant Hogweed (*Heracleum mantegazzianum*) and the Zebra Mussel (*Dreissena polymorpha*), which is of particular concern as it is a high-impact IAS found throughout the River Shannon and its associated lakes. It is important that the propagation of native species, characteristic of their respective habitats, is supported and that further expansion of IAS is halted.

Ecological Corridors

Article 10 of the Habitats Directive recognises the importance of ecological networks as corridors and stepping stones for wildlife, including for migration, dispersal and genetic exchange of species of flora and fauna. The Directive requires that ecological connectivity and areas of ecological value outside the Natura 2000 network of designated ecological sites are maintained and it recognises the need for the management of these areas through land use planning and development policies.

Ecological corridors are important in connecting areas of local biodiversity with each other and with nearby designated sites to prevent islands of habitat from becoming isolated. Ecological corridors include linear features such as treelines, hedgerows, disused railway lines, rivers, streams, canals and ditches, all of which occur within the proposed Variation area and provide ecological corridors or stepping stones for wildlife moving within their range. They are particularly important for mammals, especially bats, and small birds. Within and surrounding the overall scheme study area, the ecological networks are made up of components including the waterbodies of the River Shannon and Tailrace Canal, the various areas of woodland consisting of linear and clustered planting, agricultural and roadside hedgerows and lands used for agriculture. These components provide a range of habitats and facilitate networks or linkages to the surrounding countryside for biodiversity, flora and fauna.

Potential Impacts on Fisheries due to bridge construction

Within the study area, the Lower River Shannon SAC has been selected for the following species listed on Annex II of the Habitat's Directive: Sea Lamprey, Brook Lamprey, River Lamprey, Atlantic Salmon and European Otter. Castleconnell Salmon Fishery, on the River Shannon, is owned and controlled by the Electricity Supply Board (ESB). The fishery is divided into eight beats each about 0.5 miles long. As part of the RCSR, Inland Fisheries of Ireland (IFI) were consulted and the organisation's Senior Environmental Officer responded with information in relation to the sensitivities within the River Shannon and its catchment that may be impacted by future development. One of the key points made in the response was that the maintenance of water quality during the construction phase is of paramount importance and that all water course crossings must be agreed with IFI and reference should be made to the document *Guidelines on Protection of Fisheries during Construction Works in and adjacent to Waters* (IFI, 2016).

Existing Environmental Problems/Issues/Threats

In general, development in the County is not significantly impacting upon ecological designations which have been afforded protection through European legislation. Where available the designation, Qualifying Interests, current threats to designation and Conservation Objectives of each site are outlined in the NIR which has been prepared as part of this Variation process. A summary of each immediate site has

been presented in the section above. However, localised adverse impacts on some designated sites may be occurring as a result of individual developments both in the form of multi-unit housing development, one-off dwellings and infrastructural developments. Natural heritage is not confined to statutory designated sites, but is found throughout the countryside and in built-up areas. When development occurs on greenfield sites in the County, natural and semi-natural habitats are replaced with artificial surfaces and there is inevitably an impact on existing flora and fauna.

Developments on greenfield sites often results in fragmentation and a loss of hedgerows, which act as wildlife corridors, stepping stones and ecological networks. These corridors are essential in order for wildlife to move from one area to another for breeding, in search of food, *etc.* The significance of this potential loss is dependent on the scale of development and in-combination effects.

Appropriate Assessment Natura Impact Report

As mentioned previously an NIR has been prepared as part of the Variation SEA process. A detailed assessment of all likely significant adverse effects on the Conservation Objectives of the Lower River Shannon SAC and also the surrounding Natura 2000 sites was carried out as part of the assessment. Where adverse impacts were likely, appropriate mitigation measures were included to ensure this adverse impact would not occur. The proposed mitigation measures are incorporated as part of the Variation text and will address the issues not only in the AA but also those identified as part of the SEA process.

Potentially significant environmental impacts relating to Biodiversity

The key environmental impacts relating to the proposed Variation are the following:

- Potential significant effect on the aquatic and riparian Qualifying Interests (and their respective Conservation Objectives) of the Lower River Shannon SAC as a result of the proposed River Shannon crossing;
- Potential loss of habitat and fragmentation of ecological corridors such as hedgerows, treelines and riparian corridors arising from development;
- Potential impacts on sensitive species, *e.g.* Whooper Swan, outside of protected areas due to development.

5.6.8 Population and Human Health

The proposed Variation may lead to impacts on population and human health due land use changes, land-take, severance, possible noise, air, landscape and visual impacts. Population and Human Health are very much influenced by the presence and state of the other environmental receptors. Thus, all of the issues raised under the other environmental parameters are important issues which cannot be comprehensively covered in this section, but which are considered in each environmental topic and the overall assessment.

Population

Limerick City Council and Limerick County Council amalgamated in 2014 under the provisions of the Local Government Reform Act 2014. The Census figures up to 2011 show a continuous population decline (-13%) over a 30 year period in the City administrative area, while the County area, mainly in the environs of the City, experienced continuous growth (+40%) over the same period. The Census 2016 preliminary results report an increase since the 2011 period in both Limerick City area (2.1%) and Limerick County (1.6%).

After the merger of Limerick City and County Councils, a new Limerick Metropolitan District was defined. This recognises the significant spatial growth and development in the environs of the City in the County area. The Metropolitan District covers the urban area of the City and extends from the city into the former County administrative area, to the south west towards Patrickswell and to the north east to Castleconnell.

As already stated the proposed LNDR is located in the north east environs of the former City administrative area. The proposed Variation is located in the Ballyvarra Electoral Division (ED), which incorporates the settlement of Lisnagry. Preliminary Census 2016 results for Ballyvarra ED report a total population of 4,295, a modest 0.6% increase since the 2011 Census. However, the adjoining EDs have experienced significant increases over the same period. Ballysimon ED population is 13,760 and Castleconnell 3,352 representing a population change of 5.3% and 5.4% respectively. Table 5.1 and Table 5.2 detail the population figures for the respective area and the actual and percentage population change.

Table 5.1 Population Change 2011- 2016

Area	Population 2016	Population 2011	Actual change 2011-2016	Percentage change 2011-2016 (%)
Limerick	195,175	191,809	3,366	+1.8%
Limerick City	58,319	57,106	1,213	+2.1%
Limerick County	136,856	134,703	2,153	+1.6%

Source: Census 2016 Preliminary results (February 2017)

Table 5.2 Population Change by Electoral Division 2011-2016

Electoral Division (ED)	Population 2016	Population 2011	Actual change 2011-2016	Percentage change 2011-2016 (%)
Ballyvarra,	4,295	4,269	26	+0.6%
Adjoining EDs				
Castleconnell	3,352	3,180	172	+5.4%
Ballysimon	13,760	13,073	687	+5.3%

Source: Census 2016 Preliminary results (February 2017)

From the above we can see that the population in both the City and the County is increasing. It is considered that the provision of appropriate transport infrastructure is essential in order to support the sustainable and continued development of the City and region. The Preliminary Census 2016 report the number of households in the Ballyvarra ED is 1,602, an increase of 55 households, 100 of those are reported as being vacant.

Human Health

Health risks associated with road developments can include risks of traffic accidents, air, noise and water, increased risk of flooding or soil contamination issues. Hazards to human health can also result from incompatible land uses. Traffic congestion and increased journey times can increase emissions to the environment and contribute to sedentary lifestyles and levels of obesity. In contrast, the provision of integrated, safe, convenient and sustainable transport networks can provide options over the use of the private car through the provision of walking, cycling and/ or public transport options. Overall, integrated and safer transport networks can contribute to

reducing traffic accidents, improving accessibility into and out of areas and increase levels of physical activity, which can contribute to health and environmental benefits of the local and regional population.

Limerick City and County Council existing Plan implements a Smarter Travel policy which encourage active and sustainable travel among the public. Therefore the incorporation of smarter travel initiatives such as the provision of walking and cycling infrastructure into the proposed Variation is important to ensure support for these policies and initiatives. It also provides the opportunity for the improving the health of the population by providing alternatives to the use of the private car which would also reduce emissions to the environment and improve air quality in these areas.

The proposed Variation is likely to have the potential to impact on several different aspects of population and human health within the Plan area. The primary areas of population that are likely to be directly affected by the proposed Variation are the areas located within the proposed LNDR preferred route corridor and the indicative area for a link road and the indicative junction reservation area. These areas include the populations living in the townlands of Mountshannon, Ballyvolane, Garraunykkee, Carrowkeel and small parts of Richhill and Ballynagowna which will facilitate the development of the connection with the existing local and strategic road network. The possible link road crossing of the Mulkear River would pass through the townlands of Rivers and Castletroy. The proposed Variation is likely to have an impact on populations in these areas, as the new route could cause severance, including possible impacts on agricultural landholdings and introduce additional traffic, noise and air quality issues to the area. However, the possible link road into the Castletroy area could lead to improved access to areas of employment and educational opportunity and reduce congestion in this area. Impacts associated with water quality including potential flooding issues are dealt with under the SFRA process and Water in the ER.

Road users are also likely to be affected especially along R445, local roads and the M7 motorway - including the effects of required junction configuration. Detailed results of travelling to work, school or college are not yet available for Census 2016. However, Census 2011 data indicates a general trend that commuting to work by car is increasing, particularly from lower density suburban areas and rural areas to Limerick City. Census 2011 reports 68% of Limerick City households have a car, while in Limerick County the figure is 98%, one of the highest in the State. The census figures report a strong reliance on the private car for commuting to school, college or work (accounting for 68% of all journeys) while only 7% across the City and County use public transport, (7.3% in Limerick County and 6.9% in Limerick City). The low rate of communal or public transport use is a negative trend in terms of environmental sustainability agenda. However, most commuting times to work, school or college are relatively short, which is positive in terms of air quality and health considerations. The proposed Variation will facilitate the development of the LNDR which will improve connectivity of the area, reduce journey times for the local populations and in turn may have a positive impact on the population and health in the area and the region.

Noise

Measures to deal with noise pollution associated with major noise sources such a transportation and infrastructure in Limerick have been taken into consideration by the Limerick City and County Council by adopting a draft Noise Action Plan. The "Draft Joint Noise Action Plan" for Limerick was published in April 2013 and will span a five year time frame. The Plan is published under the Environmental Noise

Directive (2002/49/EC) to address noise from major transport sources to which individuals are exposed. The Draft Noise Action Plan recognises the development of the proposed Northern Distributor Road will take place in this area. The plan acknowledges that noise impact assessment and noise mitigation measures will be implemented at the Environmental Impact Statement phase of the proposed project.

Following detailed consideration of noise data and the baseline collected as part of the RCSR 2012 it was concluded that the route option with the least impact on the environment in relation to noise was also the preferred option of the LNDR which forms part of this proposed Variation.

Existing Environmental Problems/Issues/Threats

Existing environmental issues in the area include the large percentage of people who travel to work, school or college in the City and County by car and the rising levels of congestion in the area. However, legislative objectives governing population and human health were not identified as being conflicted with as a result of the proposed Variation.

Identification of potential significant environmental impacts relating to Population and Human Health

- In line with the national trend, the 2011 Census data indicates a general trend that commuting to work by car is increasing in County Limerick, particularly from lower density suburban areas and rural areas to Limerick City. This continued car use trend can have a negative effect on land use planning, settlement patterns and investment in services in urban areas such as Limerick City and its environs.
- The provision of the LNDR will provide alternative transport options to the private car through the provision of walking and cycling infrastructure as part of the road scheme. It is expected that in certain areas it will reduce journey times and levels of congestion and provide options to road users;
- A reduction in congestion and consequential emissions to air has the potential to have a positive impact on air quality and human health;
- The proposed Variation may lead to a negative impact on those living in the immediate areas due to land use changes, land-take, severance, possible noise, air, landscape and visual impacts.
- The proposed Variation is likely to have a significant positive impact on the existing and future population of the region with improved connectivity provided to Limerick City, its environs and County Clare.

5.6.9 Soils and Geology

Soils

Soil is comprised for the most part of organic matter, minerals and fine to coarse grained weathered rocks. The variability in the constituent parts and the percentage content of each in the soil matrix results in differing characteristics. This has implications for overall land use and the appropriateness for differing land use practices.

The soil type of the county varies from gleys to grey-brown podzolics, to brown earths. In terms of agricultural use, they support grazing enterprises for the most part with little tillage and hence little direct mechanical intervention. They are also variable in their percolation and drainage characteristics and this has differing implications for both surface and ground water resources of the area. The soil

component of the relevant area comprises of Gleys, Grey Brown Podzolics, Brown Podzols, Brown Earths, Rineanna Complex, Basin Peat, Blanket Peat and Regosol, as presented in Figure 5.5.

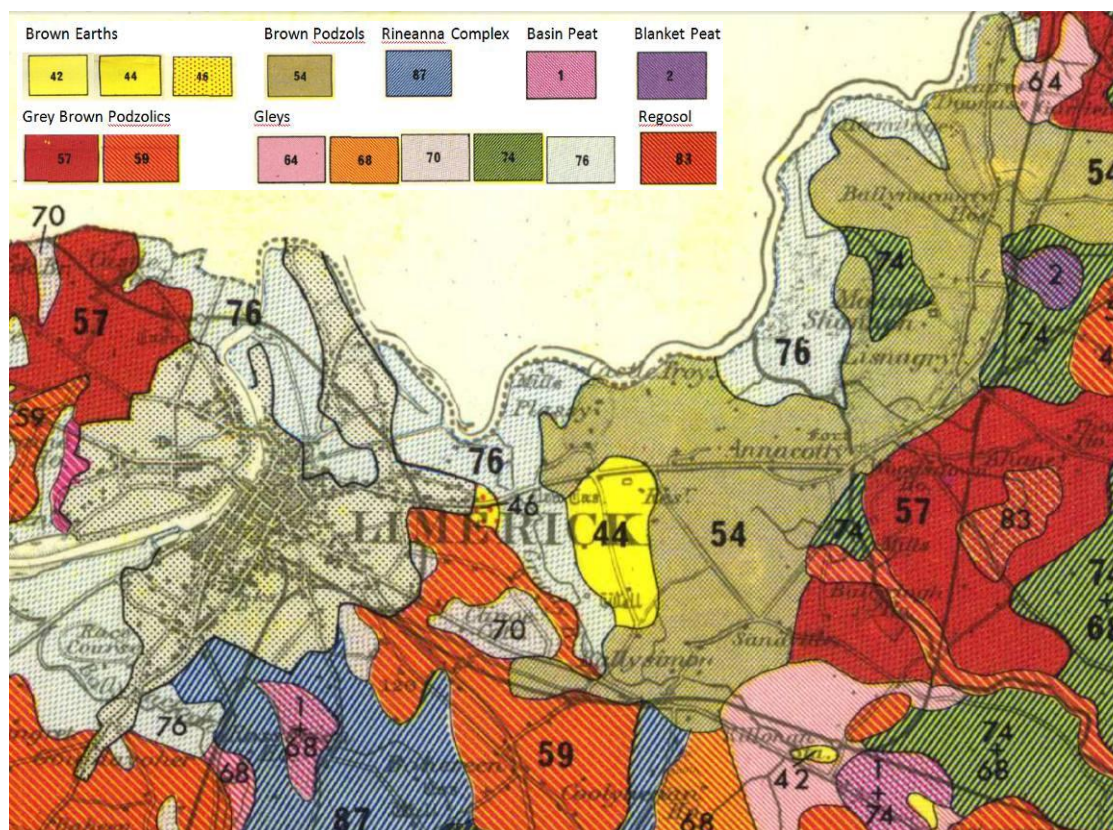


Figure 5.5 Soils Groups in the area surrounding the LNDR in Limerick (Source: Teagasc, National Soil Map of Ireland, <http://www.agresearch.teagasc.ie/johnstown/Soil%20maps/Limerick/map.pdf>)

The majority of soils within the proposed Variation area are well-drained as the ground generally consists of alluvial deposits underlain by fine grained and coarse grained glacial till. These deposits overlie limestone bedrock. With free draining soils there are implications for ground water protection.

Soil depth is also an issue and, in areas where groundwater vulnerability is described as “extreme”, soil depth is generally less than 3m. In some situations, a minimum of 2 m of soil thickness is required below a percolation area of an individual treatment system, which itself may be over 1m below the ground. With free-draining soils, there are implications for groundwater protection. Soil permeability is variable in the county, with permeability varying from high in some situations, though for the most part it is poor. Seasonal variation in water tables is also a factor to be borne in mind as this can have marked effects on rates of surface run-off.

Changes in soil result from natural processes and human activities, both of which contribute to their dynamic and evolving nature. Such changes are matters of concern if they result in the physical, biological or chemical degradation of soils. This can result in the impairment of ecologically essential soil processes, the reduction in productive capacity, the depletion of soil quality and biodiversity and the direct loss of soil. Many of the changes arise as a result of pressures from human activities. The

main pressures on soil resources in the proposed Variation area arise from the following sectors:

- agriculture;
- industry; and
- urbanisation and infrastructure development.

These activities can lead to soil degradation including loss of organic matter, decline in soil fertility, acidification, loss of physical stability, increased erosion, compaction, contamination, loss of biodiversity, increased risk of flooding and loss of soil to buildings and infrastructure.

Please note that the cumulative and in-combination impacts on soils and geology of developing the entire route of the LNDR are examined in Section 8.3.

Geology

The geological baseline information within the vicinity of the preferred LNDR route is presented in Figure 5.6. The predominant rock types within the proposed Variation area include Visean Limestone and Volcaniclastic Rocks. The vast majority of the area consists of Visean Limestone whilst Volcaniclastic Rocks are present at the east of Limerick City. The proposed LNDR route passes through Ballysteen Formation and Lower Limestone Shale at Parteen, North of Limerick City and to the east of the city at Mountshannon.

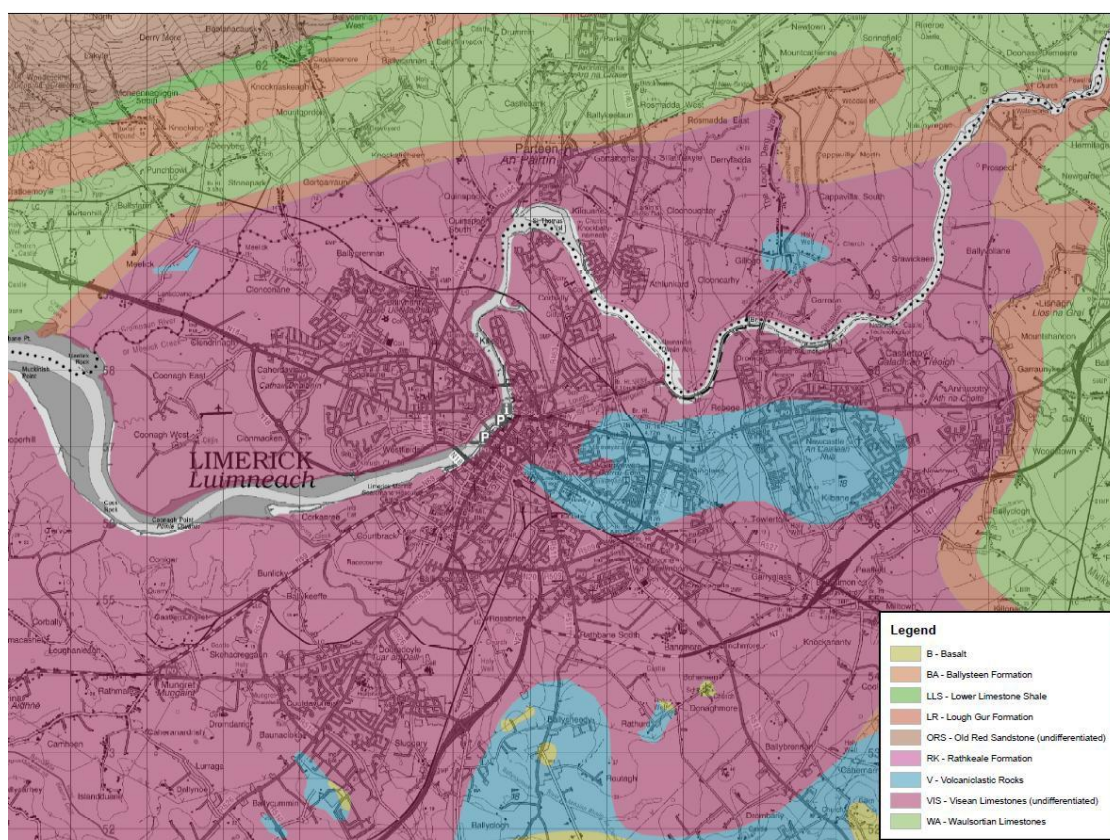


Figure 5.6 Geology in the Area (Source: Geological Survey of Ireland (GSI))

Existing Environmental Problems/Issues/Threats

Existing environmental problems on soil resources in general include the physical, biological and/or chemical degradation of soils. This can cause the direct loss of soil

and indirectly impair ecologically essential soil processes, reduce productive capacity, and deplete soil quality and biodiversity. In general the main pressures on soil resources are caused by intensive agriculture and organic waste disposal, forestry, industry, peat extraction and urbanisation and infrastructure development. The type and depth of soil has direct implications on water movement which can lead to increased pollution threats if not properly considered in the design treatment of the proposed road. The EPA State of the Environment Report (EPA, 2015) states “In the absence of an EU Soils Directive and associated national soil legislation, the challenge remains to ensure a consistent approach to protecting and managing our limited soil resource, in the context of supporting environmentally sustainable economic and population growth.”

Identification of potential significant impacts relating to Soils:

- Eroded soil washed into rivers (siltation) has the potential to increase nutrient content leading to alteration of surface water nutrient balances which can further lead to the eutrophication of rivers and lakes. If contaminated soils are eroded and transported to watercourses, aquatic plants and animals can be severely damaged; and
- Loss of productive agricultural soil in the area (please note loss of agricultural land is also dealt with under material assets).

5.6.10 Water Resources and Flooding

This Section discusses water, i.e. surface water (rivers) and groundwater within the geographical area that may be impacted on by the proposed Variation. The subject of flooding is also dealt with in this Section.

Surface Water

The Plan area contains an abundance of surface water features in the form of rivers, lakes and estuaries. The most notable of these being the River Shannon and the Mulkear River. Crossings of both these rivers are being considered as part of the proposed LNDL road scheme.

Since 2000, Water Management in the EU has been directed by the Water Framework Directive (WFD) 2000/60/EC which was transposed into Irish law under the European Communities (Water Policy) Regulations 2003 (S.I. No. 722/2003). The WFD requires all Member States to protect and manage their water resources based on the natural geographic boundaries, i.e. the river catchment or basin. The WFD establishes a common framework for the sustainable and integrated management of all waters covering groundwater, inland surface waters, transitional waters and coastal water.

Under the WFD, Member States must keep a register of all the water bodies that require extra controls on their quality by virtue of how the water is used by people and by wildlife. In order to achieve “good status” and to protect our good and high quality waters, the provisions of the WFD, are implemented through River Basin Management Plans (RBMPs). For administration, the plans are implemented on a River Basin District basis.

The proposed Variation is located in Unit of Management (UoM) 25. The WFD is now in its draft second cycle. The proposed Variation is within the new National River Basin District (NRBD), which was formed from the merger of the Eastern, South Eastern, South Western, Western and Shannon River Basin Districts from the 1st Cycle of the WFD. The draft second cycle RBMPs sets out the status of waters in

the River Basin District (RBD); the proposed environmental objectives and the draft programme of measures to achieve those objectives by 2021.

By 'risk' it is meant the overall risk that a waterbody will not achieve good ecological or good chemical status/potential at least by 2021. To examine risk the various pressures acting on the waterbody are identified along with any evidence of impact on water status. Depending on the extent of the pressure and its potential for impact, and the amount of information available, the risk to the water body is placed in one of four categories: 1a at risk; 1b probably at risk; 2a probably not at risk; 2b not at risk.

In general, the WFD requirements are to ensure that waters achieve at least good status/potential by 2015, and that their status does not deteriorate. Extended timescales have been set for certain waters due to technical, economic, environmental or recovery constraints. Extended timescales are usually of one planning cycle (6 years, to 2021) but in some cases are two planning cycles (to 2027). Having identified the status of waters as part of the RBMPs, the next stage is to set objectives for waters. Objectives consider waters that require protection from deterioration as well as waters that require restoration and the timescales needed for recovery. Four default objectives have been set initially:-

- Prevent Deterioration
- Restore Good Status
- Reduce Chemical Pollution
- Achieve Protected Areas Objectives

These objectives are refined based on the measures available to achieve them, the latter's likely effectiveness, and consideration of cost-effective combinations of measures. Where it is considered necessary extended deadlines have been set for achieving objectives in 2021 or 2027.

The overall status of the Lower River Shannon is 'moderate'. The overall objective is to restore to good status by 2021. It is deemed to be "1a -at risk of not achieving good status". The Mulkear River, is a tributary of the Lower River Shannon. Its overall status is 'good'. The overall objective is to achieve protected areas objective. It is classified, "1a - at risk of not achieving good status".

There are a number of listed basic measures which apply to both waterbody which include requirements of various Directives including the Habitats Directive, Major Accidents and Emergencies Directive, Environmental Impact Assessment Directive to name but a few. According to the Water Framework Directive River Body Risk Score, the River Shannon and Mulkear River, in the vicinity of the proposed LNDR are both "at risk of not achieving good status" by 2021. Source: Water Matters 'Our Plan' <http://wfdireland.ie/maps.html> [Accessed 07 February 2017]

Groundwater

Groundwater is defined as the water stored underground in formations of saturated rock, sand, gravel, and soil. Surface water and groundwater are intimately linked to each other within the hydrological cycle, and groundwater is an important source of water for rivers, streams, and lakes. According to the Geological Survey of Ireland, the proposed LNDR traverses two groundwater bodies (GWBs) namely Limerick City East GW body and Castleconnel GWB. The bedrock geology in both areas is dominantly pure unbedded limestones.

The majority of the proposed LNDR route is located within Limerick City East GWB is classified as 'locally important aquifer in bedrock that is generally moderately

productive in productive fissured bedrock. The hydrogeological setting is 'Moderate permeability subsoil and overlain by poorly drained gley soil. Soil drainage is classified as wet. The GSI state the groundwater recharge coefficient is 22.5%. According to the EPA, the WFD groundwater body status for Limerick City East is poor.

A small portion of the proposed LNDR route is located within the Castleconnel groundwater body (mainly in areas east of the R445). Parts of it are classified as having high groundwater vulnerability located in a regionally important aquifer - Karstified (diffuse). According to the EPA, the WFD groundwater body status is classified as good.

Flooding

It is now recognised that flood risk management must be treated as a central issue in the development of an area. In 2009 the Department of Environment, Heritage and Local Government published guidance entitled '*The Planning System and Flood Risk Management*'. The guidelines state that flooding:

'When it impacts on human activities, it can threaten people, their property and the environment. Assets at risk can include housing, transport and public service infrastructure, and commercial, industrial and agricultural enterprises. The health, social, economic and environmental impacts of flooding can be significant and have a wide community impact'.

The Department also require the planning system to:

- Avoid development in areas at risk of flooding by not permitting development in flood risk areas, particularly floodplains, unless where it is **fully justified** that there are wider sustainability grounds for appropriate development and unless the flood risk can be managed to an acceptable level without increasing flood risk elsewhere and where possible, reducing flood risk overall;
- Adopt a sequential approach to flood risk management based on avoidance, reduction and then mitigation of flood risk as the overall framework for assessing the location of new development in the development planning processes;
- Incorporate flood risk assessment into the process of making decisions on planning applications and planning appeals;
- In the case of development plans, establish the overall flood risk assessment context for their functional areas including other planning authorities such as Town Councils and any Local Area Plans (LAPs), which may be supplemented by any more detailed site-specific flood risk assessment required to comply with these guidelines at town plan/LAP level.

Flooding of the River Shannon has been an issue over recent years caused by a variety of factors including heavy rainfall/runoff, low lying land, tidal and wind factors as well as drain and channel maintenance, or through a combination of these factors. Development can exacerbate the problems of flooding by accelerating and increasing surface water runoff, altering watercourses and removing floodplain storage. It can also impact on human activities, their property and the environment. Assets at risk can include housing, transport and public service infrastructure, and commercial, industrial and agricultural enterprises.

The health, social, economic and environmental impacts of flooding can be significant and have a wide community impact. Therefore strict adherence to

appropriate zoning of lands and restriction of use applied in the Limerick County Development Plan 2010-2016 in areas liable to flooding must apply. Flood related objectives outlined in the Limerick County Development Plan 2010-2016 must also be adhered to.

The River Shannon has a long history of flooding. The extensive floodplain of the Shannon basin and the occurrence of routine flooding are recognised as significant engineering constraints to the proposed LNDR. Roads constructed across flood plains have the potential to obstruct the path of floodwaters and affect the nature and extent of flooding in the area.

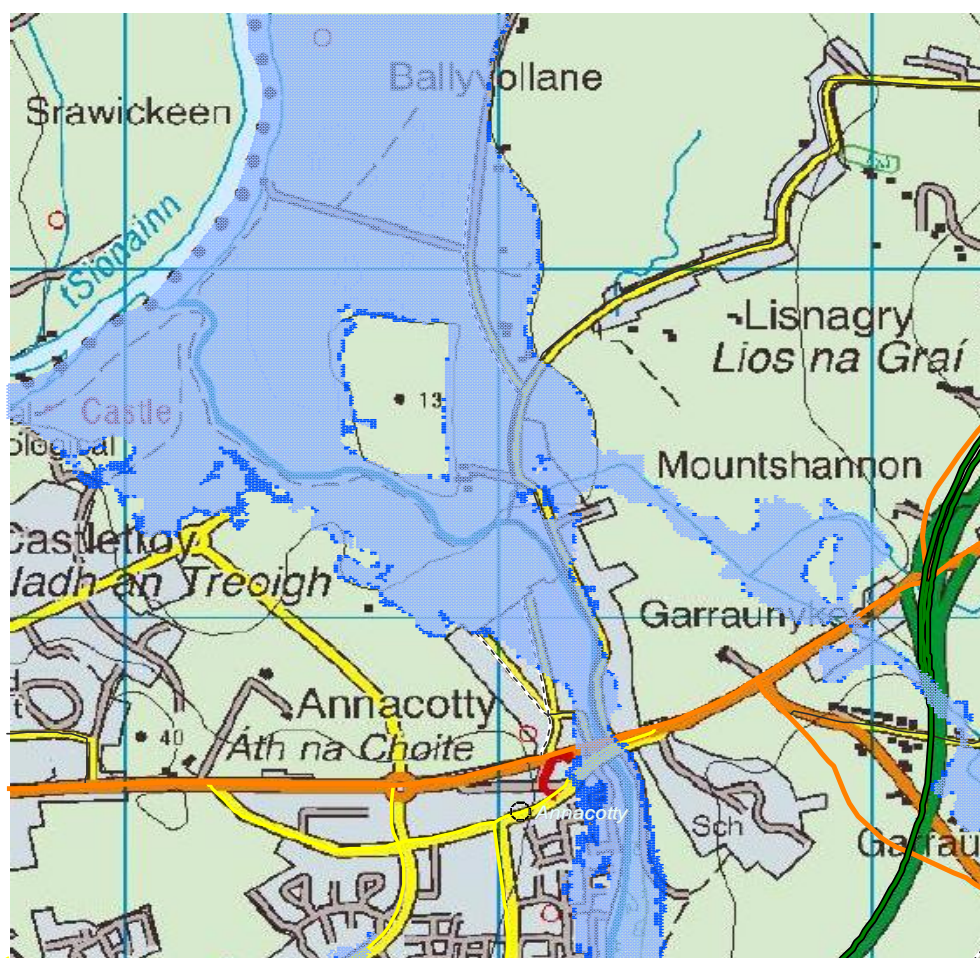


Figure 5.7 – Flood map for the area of the crossing of the proposed LNDR route with the River Shannon. Source: www.floodmaps.ie

The Headrace Canal diverts water from the Lower Shannon thus alleviating flooding in areas such as Castleconnell, Montpellier, Springfield and Mountshannon between Parteen Weir and Limerick City.

During the major flood events in Limerick in November 2009 and December 2016,, Mountshannon and Plassey were affected, Mountshannon Road was closed and two pedestrian bridges in Castletroy were closed. Additionally, the wastewater treatment plant (WWTP) in Castletroy was affected and farmland in the area was submerged due to the flooding event. Some of these areas are affected by the location to which the Proposed Variation applies.

The nature of the extensive Shannon and Mulkear floodplains and the occurrence of routine flooding can be regarded as a constraint as it may give rise to difficult and unsuitable ground conditions that may require significant bridging and culverts. Furthermore, roads constructed across flood plains may, without appropriate mitigation, affect the nature and extent of flooding in the area. Bridges and road embankments can obstruct the path of floodwaters, causing re-direction and re-distribution of the flow over the floodplains and within the channel, although this can be avoided by appropriate design. An assessment has been carried out in accordance with the requirements of '*The Planning System and Flood Risk Management: Guidelines for Planning Authorities*'. As the proposed Variation relates to some areas which are designated as potentially Highly Vulnerable to flooding a Justification Test has been performed in accordance with these guidelines. This assessment can be found in the document "Strategic Flood Risk Assessment for proposed Limerick Northern Distributor Road Corridor" which forms part of the proposed Variation documents.

Water Supply

The proposed LNDR will not require water supply. Therefore, water supply is not considered as part of this proposed Variation.

Existing Environmental Problems/Issues/Threats

Water pollution is an important issue in the County for both its inhabitants and its wildlife. This presents significant challenges in terms of appropriate land use and the long term protection of vulnerable resources. Pressures on water bodies can have a variety of sources including domestic, industrial, agricultural uses and development. Developments and their impact on watercourses, with the removal of floodplain storage may result in lack of permeable areas to mitigate the likely impact of runoff and future water level consistency (particularly regarding freshwater bodies). Based on WFD water quality data both the Shannon and Mulkaer Rivers are both at risk of not achieving the objectives of the WFD within the timeframe set. The catchment of these Rivers will require improvement and protection which are outlined in the WFD measures for these Rivers. The current County Development Plan includes measures as part of the Plan objectives which includes provisions to help ensure new developments do not contribute to water quality or flooding issues. Any potential flood risk issues in existing flood zones and cumulative effects will be addressed at the appropriate project level assessment e.g. EIA stage.

Identification of potential significant environmental impacts relating to Water Resources

- Potential effects on surface water and groundwater resources within proposed Variation area;
- Potential effects on the floodplain of the River Shannon and Mulkear River as a result of the proposed LNDR.

5.6.11 Air and Climate

Air quality monitoring in Ireland is undertaken largely to implement EU Directives on smoke and sulphur dioxide (SO₂), lead, ozone (O₃) and nitrogen dioxide (NO₂) and to assess compliance with national quality standards.

Ireland is divided into four zones for the purpose of monitoring. The area to which the proposed Variation relates is located in a mixture of Zone C (Other Cities and

Large Towns) and Zone D (Rural Ireland). According to the EPA's Envision map viewer (EPA, 2017), the area is located within a 'coal restricted area', due to its proximity to Limerick City.

According to the *Air Quality Index for Health Map* legend (EPA, 2017) the air quality for the area in which the proposed Variation applies is largely considered Good. The index is based on information from monitoring instruments at representative locations in the region, the closest with regard to the proposed Variation's area is the Shannon Estuary monitoring station, north of Askeaton Co. Limerick, with another one located in Ennis. Limerick is grouped within the EPA's Zone C for Air Quality, comprising "Other cities and large towns with a population of >15,000". The EPA's publication "*Air Quality in Ireland 2015*" reported that the average annual Nitrogen Dioxide (NO_x) level in 2015 for Zone C has reduced since 2014. However, Sulphur dioxide (SO₂) levels recorded in Ennis for 2015 were higher than the annual averages of Zones A and D; Dublin and Rural Ireland respectively, with only Cork's average having a higher reading. Out of a total of nine monitoring stations, Particulate Matter (PM_{2.5}) annual averages recorded in Ennis were the highest in Ireland in 2015.

According to studies carried out as part of the Route Corridor Selection Report (RCSR) for the LNDP in 2012, the major source of air pollution within the area of the proposed Variation was from road traffic, predominantly from the regional roads in the area. Pollution from traffic sources increases at low traffic speeds and during congested traffic conditions. The assessment ranked more favourably those options which avoid built up areas and reduce congestion on the R445.

The guidance set out in the National Roads Authority (2011) document entitled "Guidelines for the Treatment of Air Quality during the Planning and Construction of National Road Schemes"⁴ was used as part of the assessment of the various routes during Route Selection Stage. The primary aspects of the assessment relate to existing ambient air quality, proximity of sensitive locations and a review of the overall significance of potential changes in air quality. The major existing source of air pollution within the area is road traffic, predominantly that from the R445 and M7 motorway. Air quality is an environmental receptor that is subject to significant spatial variation, with concentrations generally falling significantly with increased distance from major road sources⁵. The highest levels of air pollution are experienced close to the R445 with the remainder of the general area experiencing background concentrations of pollutants.

The EC Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (the "Habitats Directive") requires an Appropriate Assessment to be carried out where the likelihood of significant effects on the European site cannot be excluded, this has been carried out as part of the AA NIR. The NRA requires the Air Quality Specialist to liaise with an ecologist on schemes where there is a European protected site within 2km of the route. However, as the potential impact of a scheme is limited to local level, detailed consideration need only be given to roads where there is a significant change to traffic flows (>5%) and the designated site lies within 200m of the road centre line. Where these two requirements are fulfilled, the assessment at the route selection stage involves a calculation of nitrogen oxides

⁴ NRA (2011) Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes.

⁵ UK DEFRA (2003) Design Manual for Roads and Bridges Vol 11 Chapter 3 (Document & Calculation Spreadsheet).

(NO_x) concentrations using the DMRB screening method and a calculation of dry deposition using the methodology of the NRA.

The Route Selection Report study investigated the impacts of different route corridors on a variety of receptors including those of ecological importance. Predicted Nitrogen Oxide (NO_x) concentrations were calculated for each of the proposed routes and the results demonstrated that there would be no likely significant impact on any of the ecological receptors as a result of the preferred route corridor. The study also investigated the predicted levels of NO_x that would occur as a result of the various route options on the local environment. The UK DMRB air dispersion model was used to determine the impact of each of the routes on ambient levels of NO_x and dry deposition rates of nitrogen at the Lower River Shannon SAC near Ballyvolane. Predicted NO_x concentrations are below the limit value for the protection of ecosystems for each of the routes assessed at the south-eastern end of the scheme where all routes cross the Lower River Shannon SAC, the results demonstrated that there would be no likely significant impact on the Lower River Shannon SAC. No mitigations measures were recommended at this stage, as concentrations of NO₂, PM₁₀, PM_{2.5}, CO and benzene were not expected to exceed 90% of their limit values at any sensitive receptors along the proposed routes. The proposed Variation states: "Full considerations of all environmental requirements have been made in the progression of the scheme to date. This will continue up to and including project level."

As the proposed Variation is to be located within the Mountshannon/Lisnagry area of Limerick it can be assumed that this area will experience an increase in traffic volumes as vehicles that would have previously used the surrounding regional road network would now use the LNDR. In addition, project level assessment in the form of the Environmental Impact Assessment (EIA) noise assessment is likely to include suitable mitigation measures to ensure levels attained as part of the scheme are within recognised limits.

A review of Integrated Pollution Prevention Control (IPPC) licenses issued by the EPA for the area (EPA 2017) has shown that there are five industrial facilities with emissions to the atmosphere within close proximity to the proposed Variation area.

Table 5.3 IPPC licensed Industrial Facilities

Name	Address
Irish Cement Limited	Castlemungret, County Limeric.
Cook Ireland Limited	O' Halloran Road, National Technology Park, Limerick, Limerick
Info-Lab Ltd	Unit 14, Annacotty Industrial Estate, Annacotty, Co Limerick
Zinc Processors Ltd (trading As Shannonside Galvanizing)	Four Elms, Drombanna, County Limerick, Limerick.
Johnson & Johnson Vision Care (Ireland) Ltd (trading as Vistakon Ireland)	National Technology Park, Plassey, Limerick

Owing to the strict monitoring measures required relating to the licensed facilities and the distance between these facilities and the preferred route corridor, it is not considered that the proposed Variation would result in likely significant effects on the environment.

Climate

The existing climate for the proposed Variation area corresponds with the general climatic conditions for the whole country. Consequently, the region does not suffer from extremes of temperature. Climate change refers to any change in climate over time, whether due to natural variability or as a result of human activity. The release of greenhouse gases into the atmosphere as a result of human activities adds to natural climate variability by increasing the naturally occurring greenhouse effect. Climate change is not limited to changes in temperatures or weather - it can also result in changes in the occurrence of extreme and unstable weather conditions, storms, floods and/ or droughts. Flooding and Flood Risk is being addressed as part 'Water section of this Report. A separate Strategic Flood Risk Assessment (SFRA) is being undertaken as part of the Variation process which has fed into the SEA ER.

Identification of potential significant environmental impacts relating to Air and Climate

- Potential changes to air quality within the proposed Variation area.

5.6.12 Material Assets

The term 'Material Assets' as defined in the EPA SEA Checklist (2008) includes *'Critical infrastructure essential for the functioning of society such as: electricity generation and distribution, water supply, wastewater treatment, transportation etc'.*

The Limerick/Shannon area is designated as a Gateway under the National Spatial Strategy. Gateways are strategically located both nationally and relative to their surrounding areas. Such centres provide national-scale social, economic infrastructure and support services. Further development of these Gateways is a key component of the National Spatial Strategy. This designation has brought forward improvements in transport infrastructure, including the completion of the Newmarket-on-Fergus and Ennis bypass networks.

A strategic Planning, Land Use and Transportation Strategy for the Mid-West region has been developed entitled the Mid-West Area Strategic Plan (MWASP) 2012-2030. MWASP. It provides a comprehensive integrated plan for land use planning and transportation in the Mid-West Region up to 2030 which includes Clare, Limerick, North Tipperary and Limerick City and County Councils. The Strategy states that the Regional Planning Guidelines (RPGs) highlighted the need to prioritise the completion of certain road projects including the LNDR and *"To take a cohesive approach improving infrastructure in terms of transport, business parks and broadband."* It identifies the LNDR as a strategic national and non-national road scheme proposed within the Mid-West region and includes a recommendation for Limerick and Clare to: *"Provide Northern Distributor Road linking the M7 to M18 and northern suburbs;"* It goes on to state: *"A Limerick Northern Distributor Road to the north of Limerick City opening access to the regeneration areas, linking the N7 and M18 to further protect the City Centre, to enhance access to the University of Limerick and its associated knowledge-based industrial zone."* The MWASP provides an evidence base which informs transport and planning policy and infrastructure investment decisions in the Region to 2030. The LNDR will contribute towards Limericks overall transport infrastructure.

County Limerick is a large geographical area, and like much of Ireland travel patterns are very much governed by the use of the private car. Current bus services include Bus Éireann routes along the R445, serving Annacotty and Lisnagry providing connectivity to the City Centre. The City and County is therefore dependent on an efficient and adequate road network. As such, the maintenance and upgrade of the existing road network and where necessary, the provision of new road networks or

realignments of existing roads are essential to ensure that the road network and its carrying capacity are maintained to a safe and high standard for all road users.

The proposed Variation seeks to reduce traffic congestion and improve the quality of transport connections in the area to include improving linkages from the rural areas to the north and east of the city into and out of Limerick City and its environs. However, in order to develop the above transport infrastructure agricultural lands and residential properties are likely to be impacted. The Variation area includes the preferred route corridor and includes an indicative junction area in the vicinity of the R445/M7 interface and a further indicative area to allow assessment of an indicative link road across the Mulkear River. Provision of access to and from facilities, for severed lands or for other property will need to be considered at project level and the appropriate EIA stage and mitigation will be provided at this stage as required.

Existing infrastructure identified within the Variation area include; ESB Network, Board Gáis Network, Water Mains, Eircom and Telecommunications. ESB is supplied to the townland of Rivers through a 38kv cable, which crosses the Variation area in two locations through the proposed Castletroy 'indicative link road' area, connecting the National Technology Park. Gas mains currently run along Mountshannon Road and the R445 before diverting around the N7 on to School Road through Lisnagry. Gas lines also divert off the R445 onto the R506 through the townland of Garraun. There are a number of water mains that exist within the Variation area. The storm and foul sewer network runs through the 'indicative are for link road', while Eircom underground cables run along the R445 servicing the majority of houses in Lisnagry. Fibre Optic cables are also identified along the M7 and R445. Full assessment will be undertaken during the project level EIS stage to ensure services are maintained in the area.

The loss of agricultural land through the possible future use of the area for the proposed LNDP is not expected to have significant impacts on the material assets of this area of Limerick in relation to the availability of agricultural lands. There are however expected to be positive impacts on the transport network in the area from the improved accessibility and connectivity within the area and to areas of South Clare and the northern environs of Limerick City.

Identification of potential significant environmental impacts relating to Material Assets

- Likely significant positive impacts on the transportation network of the region and the surrounding area.

5.6.13 Cultural Heritage

Limerick is rich in the diversity and quality of the archaeological monuments and landscapes within the County. There is a high rate of survival of monuments, which is largely due to the pastoral nature of farming in the County. To date there are over 7,000 sites and individual monuments recorded in Limerick. These range from isolated pits to the ruins of the friary at Askeaton, and include graves, homes, farmsteads and towns. They are an intrinsic part of the landscape, providing a record of our experience and outlook, and are a distinctive feature of the county. They are also, however, a fragile and irreplaceable resource. Limerick City and County Council is dedicated to safeguarding the archaeological heritage of the County.

The Plan area has an important built heritage, including archaeological features and built structures. There are now over 1400 buildings, structures and features listed in

the Record of Protected Structures (RPS) (see volume 3 of the Limerick County Development Plan 2010-2016). Structures are defined as being of special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest, and these include town and country houses, railway stations, churches, bridges and mileposts etc.

There are two RPSs listed within the Variation area namely: a roadside memorial located in Carrowkeel and Brooklawn House in Garraunkee the location of both is identified in Figure 5.9. There are four recorded archaeological sites and two architectural sites located within the Variation area illustrated in Figure 5.9 and described in Tables 5.4 and Table 5.5. These tables also list the specific features in a study area in the immediate vicinity of the proposed Variation area.

Where groups of buildings, including villages, small towns, elements of larger towns and streetscapes are concerned, the Planning Authority relies upon the provisions in the planning legislation, which permits the establishment of Architectural Conservation Areas (ACAs). The creation of areas with such a status does not preclude development but the development permitted must be of a high standard and complement the surviving architectural styles. There are no Architectural Conservation Areas within the Variation area. The closest ACA is Castletroy, located 700m southwest of the indicative link road area. It is not considered likely that Castletroy ACA will be impacted directly by the proposed Variation.

The severity of a given level of land-take, visual intrusion, recorded or unrecorded cultural heritage varies with the type of monument, site or landscape features and its existing environment. Existing protection is afforded through the policies and objectives in the Limerick County Development Plan 2010-2016, ensuring that they are not damaged either by their own decay or destruction or by unsympathetic developments nearby.

Table 5.4 Archaeological Heritage

AH No.:	Townland / NGR	Classification
Within Variation Area		
AH 5 LI006-059	Castletroy	Enclosure
AH 12 LI006-064	Mountshannon	Enclosure
LI006-106	Mountshannon	Heart
LI006-109	Ballynagowan	Ringfort - Rath
Buffer Area - Within 200m of Variation Area		
AH 11 LI006-067	Ballynagowan	Enclosure
AH 17 LI006-093	Ballyvollane 163839/15891	Fulacht fiadh
LI006-110	Ballynagowan	Enclosure
LI006-107001	Rich Hill	Fulacht Fia
LI006-107002	Rich Hill	Fulacht Fia
LI006-107003	Rich Hill	Fulacht Fia

Table 5.5 Built Heritage

AH No.:	Townland / NGR	Classification
Within Variation Area		
BH15	Carrowkeel	Roadside Memorial
BH 33 NIAH 21900619	Garraunkee	House
Buffer Area - Within 200m of Variation Area		
BH 17	Mountshannon	Lodge
BH20 NIAH 21900620	Richhill	Country House
BH21	Richill	School
BH 22 NIAH 21900604 & 0606	Woodstown	Country House (and lodge)
BH 23	Rivers/ Ballyvolla	Foot bridge
BH 28	Rivers	Seven buildings in a group including a creamery and mill
NIAH 21900605	Rivers/ Annacotty	Restaurant
Demesne 4	Rivers/ Ballyvollane/ Mountshannon/ on/	Mountshannon Demesne

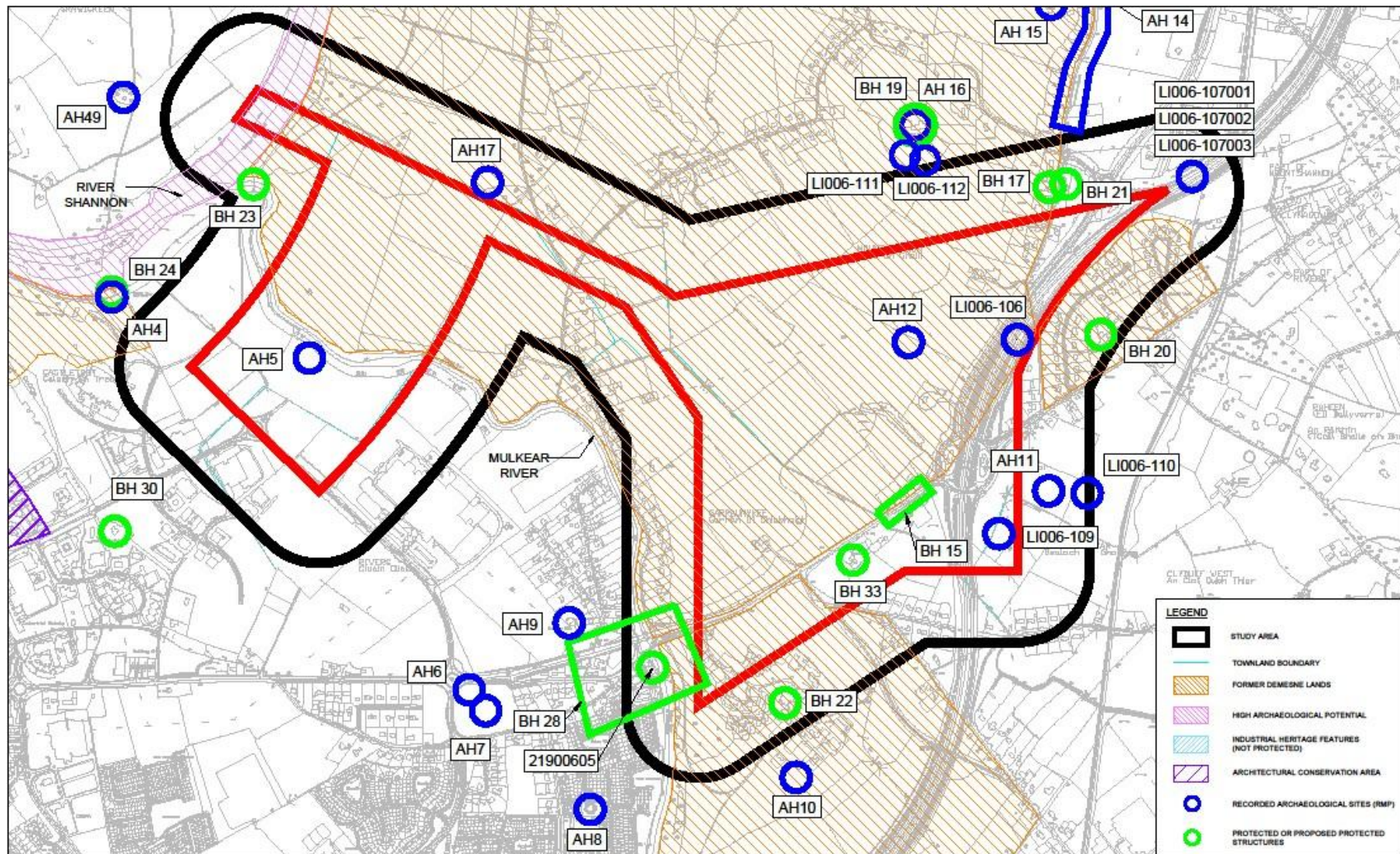


Figure 5.9 Archaeological & Cultural Heritage in the proposed Variation area (Variation route corridor outlined in red)

Areas of Archaeological Potential have been identified within the study area. The Mulkear River Crossing (and town boundary) and Shannon River Crossing (and townland boundary) as referenced in the Route Corridor Selection Report 2012 as AAP 41 and AAP 19 respectively, are identified as Areas of Archaeological Potential. In addition to these, any water courses within Mountshannon and Ballyvollane may also have archaeological potential. Townland boundaries as identified in Figure 5.9 are also considered as possessing archaeological potential. Boundaries within the area of the scheme include portions of which separate the townlands of Castletroy, Rivers, Mountshannon, Garraunykée, Carrowkeel, Ballyvolan and Ballynagowan.

The proposed Variation may cause impacts on the archaeological and architectural heritage sites detailed in Tables 5.4 and Table 5.5 and on known and unknown areas of archaeological potential. These are currently protected by policy and objectives in the Limerick County Development Plan 2010-2016, ensuring that they are not damaged either by their own decay or destruction or by unsympathetic developments nearby. The Plan also mentions that the urban fabric of the rural areas will also be protected and enhanced, and the function of the County's smaller towns and villages will be preserved. The Plan states that the character of the towns and villages of the county will be protected while acknowledging that change is inevitable and that the modern era must also leave its mark in time. Effects on archaeological and architectural heritage sites within and adjacent to the proposed Variation area will be mitigated at project level assessment i.e. EIA process.

Demesne Landscapes

Demesne landscape is present in several areas surrounding Limerick. These areas consist of ornamental gardens and landscapes surrounding large country houses. One of the houses (Mountshannon), which is located outside of the receiving environment of the preferred route, is listed within the RMP as well as being a protected structure. It is also included within the National Inventory of Architectural Heritage (NIAH). The original demesne that accompanied the house was very large consisting, unusually, of three townlands (Ballyvollane, Mountshannon and Gaurraunykée) (see figure 5.9). The demesne is marked as a shaded area on the first edition OS map of 1844. The preferred route corridor option passes through the original demesne lands. An enclosure within Mount Shannon Demesne, listed within the RMP and recorded by the National Monuments Service is located within the proposed Variation area. Mitigation measures to reduce likely significant effects on the same will be implemented during the project level assessment i.e. EIA process.

Underwater Archaeology

Archaeological remains can be found in riverine, lacustrine and in estuarine and marine- foreshore, inter-tidal, and underwater environments. Limerick is particularly rich in these environments which include, inter alia, the River Shannon, its estuary and its tributaries, as well as the lakes and other watercourses around the county. There is the potential for previously unknown and unrecorded underwater archaeological sites to exist. These could include sites such as wharves, jetties, quays, piers, fish traps, anchorages, bridges, fording points, rock-cut steps or caves. In addition, there is a potential for artefact remains, such as boats, from all periods of history and prehistory to exist. Section 3 of The National Monuments (Amendment) Act, 1987 provides for the protection of sites of historic wrecks and lists of known wrecks are available on the website <http://data.gov.ie/dataset/national-monuments-service-shipwreck-inventory-of-ireland>. There are no known underwater archaeological sites located in the Variation area. Preservation of underwater of archaeological heritage is provided for by the current Plan (Objective EH O27A).

Mitigation measures to reduce likely significant effects on the same will be implemented during the project level assessment i.e. EIA process.

Existing Environmental Problems/Issues/Threats

Although cultural heritage is afforded the highest level of legislative protection, impacts may occur due to pressure from new developments. Unknown archaeological remains are regularly discovered during excavations carried out as part of new developments. Development in close proximity to sites and areas of cultural heritage either known or unknown may adversely impact upon the cultural heritage and landscape setting of the area.

Identification of potential significant environmental impacts relating to Cultural Heritage

- Potential significant effects on the unknown terrestrial and underwater cultural heritage to be present and potential archaeological remains arising from any proposed future works. Watercourses have the potential to retain underwater cultural heritage, such potential will be taken into account in any future appropriate assessments.
- Potential impacts on the demesne landscape and historic setting surrounding the Ballyvollane/Mountshannon/Garraunykkee area.
- Potential significant effects on known archaeological and architectural heritage sites and their setting within and adjacent to the proposed Variation area.

5.6.14 Landscape

County Limerick possesses a very varied landscape which is important not just for its intrinsic value and beauty but also because it provides for local residents and visitors both in terms of a place to live and also for recreational and tourism purposes.

There are ten differing Landscape Character Areas (LCA) in Limerick identified in Figure 5.10. These are as follows:

- (i) Agricultural Lowlands
- (ii) Ballyhoura /Slieve Reagh
- (iii) Galtee Uplands
- (iv) Knockfierna Hill
- (v) Lough Gur
- (vi) Shannon Integrated Coastal Management Zone
- (vii) Southern Uplands
- (viii) Tory Hill
- (ix) Slieve Felim Uplands
- (x) Western Hills/Barnagh Gap/Sugar Hill

The proposed Variation's area relates mainly to LCA no. 6 the Shannon Integrated Coastal Management Zone. This zone comprises a large area of northern County Limerick and is bounded on one side by the Shannon Estuary while its southern boundary is defined by the gradually rising ground, which leads onto the agricultural zone and the western hills to the south west. The presence of the estuary is the defining characteristic of the region. The landscape itself is generally that of an enclosed farm type, essentially that of a hedgerow dominant landscape. This differs from the other agricultural landscapes of the County in that the field patterns,

particularly close to the estuary, tend to be less regular than those elsewhere in the County. These important landscape areas require long term protection from inappropriate or insensitive development and the County Development Plan seeks to address this issue.

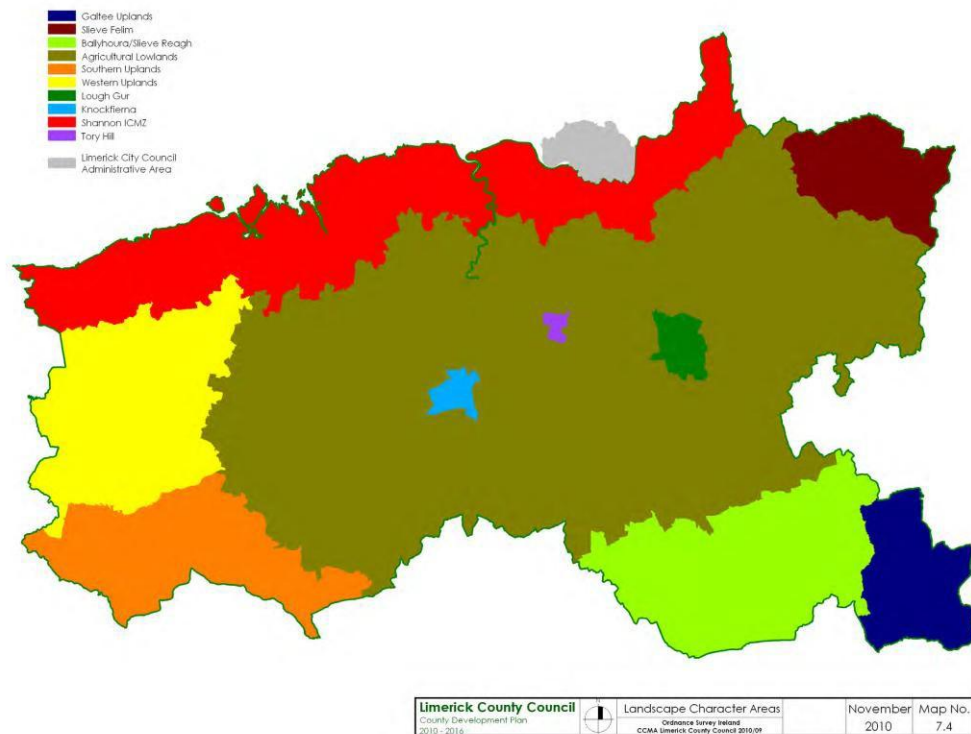


Figure 5.10 Map of Landscape Character Areas (Source: Chapter 7, Limerick County Development Plan 2010-2016)

The proposed Variation relates mainly to an area of the county which is predominantly agricultural lowland in character, albeit on the outskirts of the Limerick City environs. As such the landscape could be considered to have screening potential given its low-lying nature and dense network of hedgerows. Visual effects are most likely to be confined to any crossing points of the Shannon and the Mulkear and these are likely to be local.

Identification of potential significant environmental impacts relating to Landscape

- Potential significant effects on setting of landscape features arising from construction of watercourse/river crossings over the River Shannon and Mulkear River;
- Impacts due to loss of ecological components of the landscape (e.g. hedgerows, ecological corridors);
- Potential effects on landscape character due to change in land use and extent of land take for the proposed LNDR.
- Potential impacts on the demesne landscape and historic setting surrounding in the Ballyvollane/Mountshannon/Garraunykkee area.

5.6.15 Inter-relationships between Environmental Categories

The interactions and interrelationships between the SEA environmental baseline topics is an important consideration for the environmental assessment and a

requirement of the SEA Directive. These potential interrelationships will be taken into account throughout the assessment process. Table 5.6 summarises the various environmental topic interrelationships by way of a matrix.

Table 5.6 Environmental Topic Interactions Matrix

INTERACTIONS	Biodiversity	Population and Human Health	Landscape	Water Resources	Soils & geology	Material assets	Cultural heritage	Air & Climate
Biodiversity			Yes	Yes	Yes	Yes		
Population and Human Health			Yes	Yes	Yes	Yes		Yes
Landscape		Yes				Yes	Yes	
Water Resources	Yes	Yes			Yes	Yes		
Soils & Geology	Yes	Yes				Yes		
Material Assets	Yes	Yes	Yes	Yes	Yes		Yes	Yes
Air & Climate		Yes				Yes		
Cultural Heritage		Yes	Yes			Yes	Yes	

5.6.16 Data Gaps and Limitations

This baseline description is not intended to be an exhaustive description of all baseline environmental data within the area that may be impacted upon by the proposed Variation. Instead, it is focused on providing relevant baseline information at an appropriate scale and detail for the purposes of this proposed Variation to the Limerick County Development Plan. Where possible more detailed information was obtained from existing reports such as the 'LNDR Route Corridor Selection Report (September 2012)'. Overall it is considered that adequate baseline information was gathered to enable an assessment of the likely significant effects on the environment from the proposed Variation.

6. STRATEGIC ENVIRONMENTAL OBJECTIVES (SEO)

6.1 Strategic Environmental Objectives

A range of Strategic Environmental Objectives have been previously established in the SEA Environmental Report for the Limerick County Development Plan 2010-2016. For consistency these were applied to the proposed Variation to the County Development Plan. The objectives are outlined in Table 6.1 below (A list of indicators and targets that will be used to monitor each objective is outlined in table 9.1). These SEOs will be used in the Environmental Report to assess the environmental impacts for each element of the proposed Variation (outlined in Section 3) and also the alternative options (outlined in Section 7).

Table 6.1 Strategic Environmental Objectives identified in the Limerick County Development Plan 2010-2016 SEA Environmental Report

Environmental Receptor	Strategic Environmental Objectives (SEOs)
Biodiversity	Maintain and enhance bio-diversity.
Population and Human Health	Promote compact settlement patterns, and high quality residential development.
Water & Flood Risk	Prevent further deterioration in water quality, achieve improvement in water quality. Promote good practice in flood risk management
Soils and Geology	Conserve and sensitively exploit geological resources. Preserve sensitive geological sites.
Air & Climate	Reduce air pollution, implement climate change aspects of plan.
Material Assets	Sensitively manage natural and man and material assets.
Cultural Heritage	Protect and conserve archaeology, heritage items.
Landscape	Protect historic and natural features of note in landscapes. Sensitively manage landscape change.

This SEA of the proposed Variation is primarily an objectives-led exercise. The Strategic Environmental Objectives above are used in the environmental assessment of the proposed measures contained in the proposed Variation.

The SEOs are methodological measures which are originally developed from international, national, regional and county policies which generally govern Environmental Protection Objectives (EPOs) and against which the likely environmental effects of the proposed Variation can be tested. The SEOs can also be influenced by the comments from the statutory environmental authorities at SEA Scoping stage. The SEOs are used as standards against which the provisions of the proposed Variation can be evaluated in order to help identify areas in which likely significant adverse impact are likely to occur on that SEO, if unmitigated.

A range of SEOs have been previously established by the former Limerick County Council in the SEA Environmental Report for the 'Limerick County Development Plan 2010-2016'. These SEOs are being used as a building block to develop the SEOs for the SEA. This is to facilitate ease of monitoring of SEOs throughout the lifetime of the Plan and beyond. This has been used in this ER to assess any likely significant effects on the environment. The SEOs are outlined in Table 6.1. The environmental effects of the proposed Variation are assessed against the SEOs in Section 8 of this ER.

6.2 Limerick County Development Plan 2010-2016 Environmental Protection Objectives

Initially when the SEA for the Limerick County Development Plan 2010-2016 was carried out, the SEOs listed in table 6.1 were used to assess the Plan. Where significant environmental issues were identified as a result of this SEO Assessment in the Environmental Report at the time, mitigation was provided through additional policies/objectives or changes to the Development Plan written statement or maps where required. In other words this mitigation ensured that the aims of each of the SEOs were addressed in the Development Plan. It is worth noting that the Appropriate Assessment Screening of the Plan included additional mitigation measures in the form of new objectives or additions to text where further environmental protection was needed.

In the following sections of this SEA ER all those environmental protection objectives present in the Limerick County Development Plan 2010-2016 will be considered and examined. Where the likely significant effects are identified as part of the Variation, initially the Plan will be checked for the existence of environmental protection measures which could potentially mitigate these effects, where it is found that the Plan lacks in these, additional mitigation measures will be recommended where necessary.

6.3 SEOs and the Assessment of the Proposed Variation

As mentioned in section 6.1, the SEOs from the existing Plan listed in Table 6.1 above will be used to assess the likely significant impacts of the elements of this proposed Variation on the environment. These include the assessment of the alternative options considered in Section 7 below.

Section 8 of this ER then examines the elements of the determined preferred option in more detail and where further significant effects have been identified as part of this option (which cannot be discounted by the current Strategic Environmental Objectives (SEOs) listed in the Plan) additional mitigation measures (policies / objectives / changes to the Variation) is recommended.

7. ASSESSMENT OF ALTERNATIVES

7.1 Introduction

This chapter summarises the environmental assessment of the alternatives to the proposed Variation. Under Schedule 2 of the European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004, *Article 12 (h)* it is stated that the following should be included in an environmental report of this nature:

“An outline of the reasons for selecting the alternatives dealt with, and a description of how the assessment was undertaken including any difficulties (such as technical deficiencies or lack of know-how) encountered in compiling the required information”.

It also states; *“an environmental report shall be prepared in which the likely significant effects on the environment of implementing the plan or programme, and reasonable alternatives taking into account the objectives and the geographical scope of the plan or programme, are identified, described and evaluated”* (Article 5.1).

It should be noted here that it is not the purpose of this SEA to evaluate all of the route options for the proposed LNDR; this has already been completed in 2012 as part of the route corridor selection, available at <http://www.limerick.ie/council/limerick-northern-distributor-road>.

The purpose of this section of the SEA is to examine the reasonable alternatives available to Limerick City and County Council other than developing the LNDR. The alternatives considered are outlined below:

- Option A – ‘Do-Nothing’ scenario which suggests leaving the road network as it currently stands.
- Option B – ‘Do-Minimum’ involves upgrading the existing road network in the area which would involve both online and offline (approx 50%) upgrade works
- Option C – ‘Do Something’ or the ‘Sustainability Option’ would focus on sustainable transport alternatives to developing new road infrastructure e.g. increasing bus services, encouraging active travel and improving cycling routes, encouraging car pooling etc.
- Option D – ‘Do Something’ – ‘Preferred Route Corridor Option’ (this Variation) development of a high quality urban dual carriageway, providing two lanes in each direction and including footpaths and cycle ways. A junction will facilitate connection with the local and strategic road networks including the R445 (old Dublin Road), the M7 motorway.

As a mechanism of measuring the effects of each alternative on the environment, the alternatives will be tested against the Strategic Environmental Objectives (SEOs) developed in Section 6 above and taking into account the objectives and the geographical scope of the Plan.

The general basis of the alternatives assessment consists of a comparison of the environmental effects that each alternative option may have. An assessment rating from – 3 (major negative) to +3 (major positive) and associated explanatory text has been provided for each alternative against each of the individual Strategic Environmental Objectives (SEOs). The results of the assessment will assist in determining the most practical, reasonable and feasible option (preferred option)

required to meet the SEOs and the policies and objectives of both the County Development Plan and the proposed Variation.

Section 7.2 below presents the results for the alternatives assessment. The following key applies to the ratings listed.

+ 3	Major positive impacts – Improvement to status of SEO
+ 2	Significant Positive impacts – Likely to improve status SEO to significant level
+ 1	Minor positive impacts – Likely to marginally improve status of SEO
0	Neutral – Neutral interaction with status of SEO
- 1	Minor negative impacts – Likely minor conflict with status of SEO – No Mitigation Required unless cumulative impacts are identified with other SEO
- 2	Significant negative impacts – Probable conflict with status of SEO – Mitigation likely to be required.
- 3	Major negative impacts – Conflict identified with status of SEO – Mitigation Required.

7.2 Assessment of Alternative Options

Option A Do-Nothing

This option would imply leaving the road and traffic situation as is currently the case in Limerick, with no change or improvements to be made to the existing road network. At present all main roads in the north and east of the city are overloaded especially at peak times. Accessibility to Limerick City and County Clare would remain a major issue and no relief would be provided to address the pressure that currently exists on roads in the area and at the river crossings in Limerick City centre.

Limerick is the capital of the Mid-West and Limerick/ Shannon is designated as a linked Gateway under the National Spatial Strategy. Current higher level regional policy identifies the LNDR as a strategic road scheme proposed within the Mid-West region and includes a recommendation for Limerick and Clare to “Provide Northern Distributor Road linking the M7 to M18 and northern suburbs.”

If the LNDR is not developed the strategic objectives of the scheme cannot be met. These include the promoting the balanced regional development of Limerick and Clare. The Do-Nothing Option would not relieve any of the current traffic congestion in the area including in the City centre at existing river crossings as development continues these will become more congested. This option prevents or restricts connectivity and access to the respective northern periphery of the city limits and further afield to Shannon and into Clare. It will not improve access to the UL campus and the National Technology Park. In relation to the SEOs, the Do- Nothing option could undermine the development of a sustainable compact City as the road networks become more congested and therefore less attractive to residents, business and investors.

With no proposal to improve the existing routes in the area or provide a new alternative route, the potential for Limerick City and promotion of balanced regional development would remain restricted.

Assessment of Option A against SEOs							
Bio	Pop & HH	Soil & Geology	Water & Flood Risk	Material Assets	Air & Climate	Cultural Heritage	Landscape

0	-3	0	0	-3	-2	0	0
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As can be seen from the assessment, the 'do-nothing option' would result in negative impacts across the SEOs of population and human health, material assets and air and climate. This is primarily due to likely increase in congestion levels in the area, increased pressure on the transport network in the immediate area and across existing river crossings. It does not meet the scheme objectives to improve connectivity to the eastern and northern environs of the City. It is considered that this will have negative impacts on the existing population in the northern and eastern areas. Over time the quality of road infrastructure and service which the specified roads currently provide would deteriorate as traffic volumes increase and more regular maintenance works on the routes would be required to ensure the required safety standards are maintained. No direct connection from the east of the city would be provided to the UL campus and also access from the east to west and vice versa for those using the city area would continue to be restricted. The impacts across all the other SEOs is neutral interaction as there are no changes being proposed to these SEOs however as pressure on environmental resources increase in the area and across the city it is possible for increased pressure on natural and man-made resources including biodiversity SEO. This option would mean there is no additional land-take requirements, no loss of agricultural land or impacts to landscape. It would also mean no impacts to known or unknown cultural heritage and no additional disturbance to biodiversity or habitats or species in the area due to the construction of a road and associated structures.

Justification for not selecting this option

The 'Need for the Scheme' has been established under National, Regional and Local policy documents such as the National Spatial Strategy, the Regional Planning Guidelines for the Mid-West 2010-2022 which identifies the provision of the Limerick Northern Distributor Road as a key investment priority required to support the development of the region. It identifies the LNDR as priority transport infrastructure for Limerick City that will link the N7 and N18 and protect the City Centre. It states it will "enhance access to Shannon International Airport and its related industrial zone from eastern parts of the country, and to enhance access to the University of Limerick and its associated knowledge-based industrial zone."

The Mid West Area Strategic Plan 2010-2030 identifies the LNDR as a key objective to achieving its vision of connectivity and investment in transport infrastructure that will develop Limerick City and further drive the region's economy. It states the LNDR "would enable the region to connect and access the northern periphery of the city limits and protect the City Centre. It also brings the ability to make the regeneration area more accessible, enhance access to Limerick University and the related industrial zones."

Further to the above, the 'Do-Nothing' alternative does not improve the level of service of the existing routes in the area due to the constraints at existing River crossings in addition to the heavy urbanised areas through which the route traverses. The 'Do-Nothing' alternative is not considered to be a reasonable alternative as it does not address the scheme objectives, higher level policy or existing pressures on the environment in the area. It is considered over time, the do-nothing option is likely to have significant negative impacts on population and human health, material assets and air quality due to likely increases in traffic congestion and degradation to the existing road network. Therefore, it is not be practical, reasonable or feasible as an alternative and is eliminated from further consideration due to the aforementioned.

Option B Do-Minimum

This option was listed as one of the alternatives in the 'Route Corridor Selection Report' (September 2012) and was reviewed as part of the initial investigation into the feasibility of the route. The 'Do-Minimum' alternative involves the upgrading of 11.8km of which approximately only 50% is constructed 'on-line'. The route commences in County Clare at the proposed Coonagh – Knockalisheen Scheme docking point, travels east along the Knockalisheen Road, then along the R464 towards Parteen Bridge, crossing the Tailrace Canal at a new bridge crossing. It then merges with the existing R464 at the centre of Parteen Village following the R464 through the village to Griffin's Cross at the existing junction with the R463 where it follows this road until it reaches the River Blackwater and the Errina Canal, where two new offline crossings are required across these water features. From Burlington Industries, the 'Do- Minimum' alternative considered is constructed entirely off-line with a new River Shannon crossing to be constructed upstream of the River Mulkear before docking on the R445 at the existing Cappamore Junction.

The sections of the existing road network to be utilised as part of the 'Do-Minimum' alternative are predominantly substandard, do not meet the service levels required and would require a significant upgrade to sections of the road. In addition, the existing structures are not suitable for use and require replacement or entirely new construction at the following watercourses:

- Tailrace Canal
- River Blackwater
- Errina Canal
- River Shannon

Further to the above, the sections of the 'on-line' upgrade are located adjacent to residential areas in Parteen along the R464 and the R463. In addition, a number of properties along the Gillogue Road front onto the existing road. The extent of properties fronting onto the existing roads will be significantly impacted by the requirement to upgrade to four lanes as part of the 'Do-Minimum' alternative.

Assessment of Option B against SEOs							
Bio	Pop & HH	Soil & Geology	Water	Material Assets	Air & Climat	Cultural Heritag	Landscape
0	-3	0	-2	-2	0	0	0

Justification for not selecting this option

The impact of increasing the width of the existing road adjacent to the large number of properties when combined with the requirement for the new structures to be built at the existing watercourses will have a significant negative impact on several of the SEOs including population and human health, water and material assets.

Under the topic of population and human health which would incorporate safety, the impact is deemed to be significantly negative due to number of accesses to the four lane distributor that would be required from the adjacent properties which would not lead to creating high quality residential development. This impact is further exacerbated by the large volume of traffic that would be directed through the smaller villages along the route corridor.

The 'Do-Minimum' alternative does not serve to promote balanced regional development in Limerick, with extensive residential development already adjacent to

the existing roads. Also, the existing infrastructure is not constructed to current design standards and does not distribute traffic in a sustainable manner along the northern environs of the city. In addition to the increased traffic volumes expected following the opening year, the upgrading of the existing road network during the construction phase would cause additional disruptions and inconvenience to local residents and road users.

The feasibility of the 'Do-Minimum' alternative is negatively impacted by the lack of capacity of the existing road network within the area to deliver the required levels of service and safety in accordance with the applicable design standards and also the volume of residential properties adjacent to the road network. It is therefore concluded that the 'Do-Minimum' option is not feasible as an alternative and is eliminated from further consideration due to the aforementioned.

Option C – Do Something – Sustainability Option

This option would focus on a variety of sustainable alternatives to developing any new road infrastructure within the proposed variation area, for example, by expanding on the public transport system within the northern and eastern sectors of Limerick City and its metropolitan area. This solution would look at developing increased bus services and routes on the northern and eastern part of the city, which would link the smaller settlements in South Clare and East Limerick with Limerick City.

More frequent and reliable bus services may encourage residents in the east Limerick area to use public transport over the private car. Where bus services are not feasible due to low densities, car-pooling and/ or park-and-ride initiatives could be investigated and implemented for these local communities. This option would also include developing walking and cycling facilities between populated areas of south Clare, east Limerick and Limerick City which would support the current Smarter Travel initiatives and investment in the City. An assessment of this option is carried out below.

Assessment of Option C against SEOs							
Bio	Pop & HH	Soil & Geology	Water	Material Assets	Air & Climat	Cultural Heritag	Landscape
0	-3	0	0	-3	-1	0	0

Justification for not selecting this option

Option C would provide sustainable alternatives to car usage however, it is considered that these are not practical or achievable in terms of the delivering the scheme objectives which includes relieving pressure on existing river crossings, improving accessibility of residential areas in the north and west to employment opportunities and vice-versa. The assessment shows that this alternative would result in major negative impacts on population and human health SEO, the road network and is likely to reduce air quality in the area due to increased levels of congestion in the area and across the City over the long-term.

In terms of implementation of the 'Sustainability Option' such as car-pooling system in rural areas can often prove difficult compared to the equivalent in urban areas. Park-and-ride facilities are often used in areas where the cost of car parking within urban centres is high. However, Limerick parking prices would not appear to deter people from using car transport. Also, car parking is provided in a lot of the larger businesses in the environs. Therefore, the additional time that would have to be

spent getting a connecting bus at a park-and-ride facility may not be an attractive alternative to the population. With regard to cycling connections, new infrastructural development would still be required to ensure safe and useable cycling routes between the settlements of east Limerick and Limerick City and possible extra space on bridges would be required to cater appropriately for increased number of bike users.

In addition to above, as outlined previously in Option 1 the 'Need for the Scheme' has been established under National, Regional and Local policy documents such as the National Spatial Strategy, the Regional Planning Guidelines for the Mid-West 2010-2022 which identifies the provision of the Limerick Northern Distributor Road as a key investment priority required to support the development of the region. The Mid West Area Strategic Plan identifies the LNDR as a key objective to achieving its vision of connectivity and investment in transport infrastructure that will develop Limerick City and further drive the region's economy. Furthermore, the LNDR is considered to be priority transport infrastructure required to support the economic development of regeneration areas in the northern limits of the City. The LNDR is required in order to increase accessibility and improve the connectivity of the regeneration area to the national road network. Bearing this in mind the sustainability option does not have the capacity to address this priority objective. Therefore, this option is not considered to be practical or reasonable. Furthermore, it does not support the necessary transport infrastructure in order to support the economic development of the areas being targeted.

The sustainability option could include reducing emissions to air due to provision of bus transport and carpooling and could have the potential to benefit human health associated with increased levels of physical activity, due to improving walking and cycling infrastructure in the area. However, these potential benefits do not take into account the existing pressures, population growth, economic development, rising car traffic and therefore increased levels of congestion in the immediate area and across the City, which could in turn result in more emissions and environmental pollution, stifle economic development and safety risks in the City and the region.

Therefore, it is considered that the sustainability option is not considered practical or feasible and would not support the growth of the City or the strategic objectives set for the city, the communities in the east and north of the City and the wider mid-west region. Therefore on balance, it is considered that the net effects are likely to result in a significant negative effect on population and human health topic and material assets in the region.

Option D - Do Something (Preferred Route Corridor Option)– Development of new offline Route (Limerick Northern Distributor Road) and proposed Variation to Limerick County Development Plan 2010-2016 to include new objective to support the future progress of the Limerick Northern Distributor Route Scheme.

It is envisaged that the main link of the Do- Something (Preferred route option) will comprise a high quality urban dual carriageway, providing two lanes in each direction and including pedestrian and cyclist infrastructure. Access to the local and strategic road network (R455 and M7) and appropriate junction provision will be provided. The Do-Something Option involves the development of a new off-line road that will travel from south Clare and cross the River Shannon into the townland of Rivers and Ballyvolane in Co. Limerick. It will then proceed through the Mountshannon area to its docking point with the strategic road network (M7) to the east of the city. This

junction will facilitate connection with the local and strategic road networks including the R445 (old Dublin Road), the M7 motorway and the National Technological Park.

The indicative junction reservation area includes crossing into the townlands of Mountshannon, Ballyvolane, Garraunykee, Carrowkeel and small parts of Richhill and Ballynagowna which will facilitate the development of the connection with the existing local and strategic road network. The indicative area for a possible link road will require a crossing of the Mulkear River through the townlands of Rivers and Castletroy. The assessment area is located between the existing settlements of Castletroy to the west and Lisnagry to the north. This option also includes sustainable transport elements including walking and infrastructure which would encourage an option for active travel in the proposed Variation area and the road users it serves. This could result in offering safe, cheap and convenient alternatives to the private car as a mode of transport which could reduce car usage and in turn reduce fossil fuel consumption and emissions to the air.

Assessment of Option D against SEOs							
Bio	Pop & HH	Soil & Geology	Water	Material Assets	Air & Climate	Cultural Heritag	Landscape
--2	+3	0	-1	+3	+1*	0	0
* A reduction in congestion and consequential emissions to air has the potential to have a positive impact on air quality and also human health.							

Justification for Selecting this option

As can be seen from above assessment The 'Do-Something Option' - Preferred Corridor Option indicates improvements in the status of SEOs as part of the SEA alternatives assessment. The Do-Something Option provides for improvements on the status of the SEOs across population and human health, material assets and air and climate. Furthermore, this option is consistent with scheme objectives and higher level policies at National and Regional and at Local level. This option will reduce congestion levels in the immediate areas and will provide for the integration of sustainable travel options, including supporting a modal shift away from the private car, through the provision of walking and cycling infrastructure as part of the scheme which is likely to reduce air pollution SEO. It will also contribute towards supporting the compact settlement patterns in the region.

Overall, this alternative is considered to be the most reasonable, practical, feasible and capable of delivering the scheme objectives while also resulting in improvements in SEOs. It also has the potential to improve biodiversity and water SEO, subject to the implementation of the appropriate mitigation measures and implementation of existing policies and objectives contained within the Plan. Further assessment across the SEOs is undertaken in Section 8.

Background to Preferred Route

For the purposes of transparency and clarity, a summary of how the preferred route option was determined is outlined below. However, as previously stated, it is not the purpose of this SEA to assess these options, but merely to outline each and demonstrate the rationale behind the selection of the most environmentally desirable option.

Potential Route Options

Following the identification and mapping of initial constraints within the Study Area, the route selection process commenced. The design team developed a number of feasible route options, taking into account a variety of environmental factors, e.g. ecological, hydrogeological, socio-economic, archaeological and landscape. Details of the route assessment carried out on all available options can be found at <http://www.clarecoco.ie/roads-and-transport/schemes-and-projects/limerick-northern-distributor-road/>.

The existing infrastructure within the study area, settlement patterns, in particular in the main urban conurbations and the economic functions, facilities and amenities that these centres provide were all examined in detail. A full environmental assessment of the Route Corridor Options, including specific detailed ecological surveys of the Knockalisheen Marsh and the River Shannon (both included within the Lower River Shannon SAC) was also carried out. Extensive consultation was carried out with the National Parks & Wildlife Service (NPWS) on this issue. Public consultation also formed an important part of the route selection process as the issues and problems faced by local residents had to be taken into account. The main issues raised by local residents were, the increased risk/fear of flooding in the area and the issue of land take which would be necessary to provide room for the proposed route.

Description of Preferred Route (Counties Clare and Limerick)

The proposed route corridor originates on the Knockalisheen Road at the termination point of the proposed Coonagh to Knockalisheen Road Scheme. From this point, the route traverses Knockalisheen Marsh before crossing the L-3056-16 Quinspool Road to the north of Quinsborough House. From Quinspool Road, the route passes to the south of Castlebank House in an easterly direction crossing the Tailrace Canal to the north of the existing Parteen Bridge. After crossing the Tailrace Canal, the route travels south east and passes through two existing areas of zoned agricultural land and a strip of existing residential development in Parteen before connecting to the R464 at Gortatogher and the R463 at Cloonoughter. From the R463 the route heads in an easterly direction and cuts through an area of existing residential properties and a vacant site in the Gilloge Cluster. The route intersects the Derryfadda Road before crossing the River Blackwater and the Errina Canal in Cappavilla. From here it traverses Cappavilla South and Srawickeen respectively before crossing the River Shannon.

To the south of the River Shannon and within the jurisdiction of Limerick City & County Council (the purpose of this Variation). The preferred LNDR will travel from south Clare and cross the River Shannon into the townland of Rivers and Ballyvolane in Co. Limerick. It will then proceed through the Mountshannon area to its docking point with the strategic road network (M7) to the east of the city and a possible link road crossing the Mulkear River. This junction will facilitate connection with the local and strategic road networks including the R445 (old Dublin Road), the M7 motorway and the National Technological Park.

7.3 Summary of Alternatives options against SEOs

Each of the Alternative options above was considered and measured against the Strategic Environmental Objectives to determine which option would be most suitable i.e. which would have the least significant negative and most significant positive impacts on the environment. It is not the purpose of the Environmental Report to take into consideration the economic and social aspects of each option however the scheme objectives are required to be considered which includes improving access and connectivity across the region for populations.

As can be seen from the assessment the Options A, B and C did not improve the status of the SEOs across a number of the environmental receptors. While these Options had a neutral impact across many of the SEOs, these options did not meet the scheme objectives in their entirety. All rated negatively in terms impacts on the population and human health SEO which relates to the promotion of compact settlements patterns and high quality residential developments.

They also did not improve the status of the material assets or air quality objectives which relates to sensitively managing natural, manmade material assets. This is due to none of these Options not improves these SEOs by adequately addressing the existing congestion identified in the immediate area, congestion at existing river crossings or improving connectivity and accessibility across the region particularly in the northern and eastern fringes of the City.

Option D, improves the status of SEO across population and human health, material assets and air quality. There are potential negative interactions with the biodiversity and water SEOs however it is considered that with application of the mitigation measures proposed as part of the preferred alternative together and with the existing policies and objectives of the Plan these can be mitigated against.

Option D is considered to be most reasonable, practical and feasible which is supported by National, Regional and Local policy. Furthermore, this option allows for sustainable elements such as the inclusion of cycling and walking infrastructure as part of the scheme. A detailed assessment of the various elements of the proposed Variation is included in Section 8.2.

8. EVALUATION OF PROPOSED VARIATION PROVISIONS

8.1 Methodology

This section evaluates the provision of the proposed Variation. The Strategic Environmental Objectives (SEOs) outlined in Section 6 are used for this purpose as outlined below. These SEOs have been extracted and amended from the Limerick County Development Plan's SEA ER (2010-2016) and were developed from international, national, regional and county policies which generally govern all the environmental protection objectives. Use has also been made of the environmental baseline descriptions and where available the maps of the environmental topics provided in Section 5 above.

Section 8.2 below examines the likely significant effects on the environmental topics listed as part of the SEA Directive e.g. water, biodiversity, material assets etc. as a result of the proposed Variation (which include an objective and map).

This assessment includes an examination of all effects including secondary, cumulative, synergistic, short, medium and long-term permanent and temporary, positive and negative effects. The provisions of the proposed Variation are evaluated using the same scoring system used to evaluate the alternative options in Section 7 (and repeated below in Table 8.1).

The impact of the proposed Variation on each of the SEOs is examined to identify which interactions, if any, would cause likely significant impacts on specific components of the environment.

Table 8.1 Evaluation Scoring System

+ 3	Major positive impacts – Improvement to SEA Objective
+ 2	Significant Positive impacts – Likely to improve status SEA Objective to significant level
+ 1	Minor positive impacts – Likely to marginally improve status of SEA Objective
0	Neutral – Neutral interaction with status of SEA Objective
- 1	Minor negative impacts – Likely minor conflict with status of SEA Objective – No Mitigation Required unless cumulative impacts are identified with other SEA Objectives
- 2	Significant negative impacts – Probable conflict with status of SEA Objectives – Mitigation likely to be required.
- 3	Major negative impacts – Conflict identified with status of SEA Objectives – Mitigation Required – Identified in Section 8.4.

8.1.7 Note on Appropriate Assessment

An NIR was prepared in respect of the proposed variation. The NIR found that the adoption of proposed Variation, without mitigation, had the potential to have an adverse impact on the Lower River Shannon SAC. In order for Limerick City & County Council to conclude that there would be no adverse impact on the Lower River Shannon SAC or any other Natura 2000 site as a consequence of the adoption of proposed Variation additional mitigation measures were required to be introduced into the LCDP.

8.1.8 Note on Strategic Flood Risk Assessment

The current Limerick County Development Plan 2010-2016 identifies the need for the Council to prepare a Strategic Flood Risk Assessment for relevant areas of Limerick County. Section 8.3.6 of the Limerick County Development Plan 2010-2016 contains the objectives relating to flood risk for the County.

In particular Objective IN O39 makes specific reference to development on flood plains and across river channels as follows:

Objective IN O39 - To minimise the impact of structures and earthworks on flood plains and river flow.

It is an objective of the Council in general not to permit development of the following types in or across flood plains or river channels unless it can be clearly demonstrated using flood impact assessments, that they would not create or exacerbate risk of flooding in sensitive locations such as:

- a) construction of embankments, wide bridge piers or similar structures.*
- b) raising of ground levels where this would interfere with natural river flow or currents.*

As a means of addressing the issues of flooding in the area, the current County Development Plan proposes that the sequential approach and the development management 'Justification Test' will be applied to any proposals for development in the area, with particular regard being paid to any aspect of development that may incorporate a use that is vulnerable to flooding. An appropriate flood risk assessment will also be required to support development proposals, as is stated in Section 10.12 of the Development Plan.

In order to address Objective IN 039 above an assessment has been carried out in accordance with the requirements of 'The Planning System and Flood Risk Management: Guidelines for Planning Authorities'. As the proposed Variation relates to an area which is designated as potentially Highly Vulnerable to flooding a Justification Test has been performed in accordance with these guidelines. This Flood Risk Assessment can be found as a separate document entitled *Flood Risk Assessment for Proposed Limerick Northern Distributor Road Corridor* which was placed on display as part of the proposed Variation consultation process.

8.2 Assessment of Proposed Variation Provisions

8.2.7 Introduction

As stated previously in Section 3, the proposed Variation is required to incorporate the preferred route of the Limerick Northern Distributor Road into the Plan, which involves changes to the text of the Plan objectives and also reference to a Context Map. The additional objective below is to be added into Section 8.2.6.1. "Strategic Regional Roads" of the Plan under Policy IN P8 "Strategic Regional Road Network", together with an additional Context Map illustrated in Figure 3.1 above.

In order to assess the potential environmental effects of each aspect of the proposed Variation, the various elements have been assessed below. Again the likely significant impacts on the SEOs have been scored to illustrate the significance of effect whether positive or negative.

8.2.8 Environmental Assessment of Proposed Variation: Additional objective and map to be included in Section 8.2.6.1

Table 8.2 below contains the assessment of the proposed Variation against the SEOs which have previously been listed in Section 6, Table 6.1 and are further explained in Table 9.1 of Section 9. The baseline information presented in Section 5 has also been used as a basis for the assessment below. The existing baseline information and the potential significant impacts identified that relate to each of the SEOs have been taken into account when assessing the impacts of the proposed Variation on the environment.

It is important to reiterate that the purpose of the SEA is to carry out a high level or 'strategic' level assessment of the proposed Variation. Site specific issues are more appropriately dealt with at the project level assessments and will involve a more detailed assessment as part of the statutory an Environmental Impact Assessment (EIA) process, Appropriate Assessment (AA) and Flood Risk Assessment processes that are required to be undertaken at detailed design stage for the proposed LNDR route, junction and any possible link road.

Table 8.2 SEO Assessment Matrix of the Proposed Variation

SEA Assessment of the Proposed Variation Wording and Context Map (Figure 3.1):

" Proposed wording of the Variation:

"Limerick Northern Distributor Road:

It is an objective of Limerick City & County Council to support the Limerick Northern Distributor Road, which will connect the Coonagh to Knockalisheen Road Scheme to the existing R445 (old N7) and adjoining road network to the east of Limerick City which will incorporate Smarter Travel features in accordance with the requirements of the Habitats, Water Framework, Floods, and EIA Directives. Full consideration of all environmental requirements have been made in the progression of the scheme to date. This will continue up to and including project level.

In relation to the LNDR, it is an objective of Limerick City & County Council:

- a) To ensure all mitigation and monitoring measures outlined in the Environmental Report and Natura Impact Report shall be taken into account at project level. Section 11 of the Natura Impact Report (dated February 2017) for the Proposed Variation provides details of mitigation measures which shall apply to any future development of the LNDR.
- b) To ensure all mitigation and monitoring measures outlined in the Strategic Flood Risk Assessment shall be taken into account at project level

Biodiversity SEO	Population and Human Health SEO	Soils and Geology SEO	Water and Flood Risk SEO.	Material Assets SEO	Air & Climate SEO	Cultural Heritage SEO	Landscape SEO
-2	+3	0	-1	+3	+1*	0	0
* A reduction in congestion and consequential emissions to air has the potential to have a positive impact on air quality and also human health.							

8.2.3 Narrative for the Assessment of Likely Significant Effects of the Proposed Variation on the Status of the SEOs

Biodiversity Assessment

SEO: To maintain and enhance biodiversity

The proposed Variation seeks to support the development of the LNDR. A map illustrating the preferred corridor and indicative junction reservation and indicative area for link road to areas in Castletroy is to be inserted into the main Plan text. The map will give context to the LNDR and the surrounding area, including showing the potential location of the proposed bridge crossings, indicative junction reservation area and possible link road over the River Mulkear to areas in Castletroy. An examination of the detailed habitat mapping (Figure 5.3) from the RCSR was carried out as part of the assessment and certain issues were identified for further consideration. These included:

- The River Shannon Crossing – The preferred route crosses the River Shannon between Srawickeen (Co. Clare) and Ballyvollane (Co. Limerick). The proposed new bridge will cross the River Shannon SAC. A full assessment of the possible impacts from the proposed Variation including the crossing point on the SAC has been carried out in the NIR for the proposed Variation, which identified the need for mitigation measures in relation to the protection of water quality, as well as possible secondary impacts on Qualifying Interests of the SAC including Otter, Salmon, Lamprey and Alluvial woodland. The NIR examined these impacts in detail and mitigation measures were devised specifically to ensure that any bridge crossing and associated works would not result in an adverse impact on site integrity. These mitigation measures are outlined in Section 8.1.1 above and included as part of the proposed Variation wording. The design of the bridge crossing was also considered and it was determined that it will be necessary for the bridge to clearly span the areas of alluvial woodland on the banks of the Shannon and Mulkear to ensure no direct impact and also that sufficient light reaches any alluvial woodland present. As these mitigation measures address the possible adverse impacts that may result from the proposed Variation on the River Shannon crossing there is no requirement for additional mitigation as a result of the SEA ER assessment.
- Possible impacts on wintering Whooper Swan population (Qualifying Interest of the River Shannon and River Fergus Estuaries SPA) – As part of the work carried out for the RCSR, an area was identified in a large field to the northeast of the Mulkear confluence that was used by overwintering Whooper Swan. A survey was carried out as part of the RCSR and no swans were recorded. However, as a precaution, the proposed route corridor was amended and moved further north to avoid this area. Therefore, no likely significant effect is expected on this species and no additional mitigation measures are required.
- Loss of hedgerows and treelines – The preferred route corridor, as illustrated in Figure 3.1, travels across the mainly agricultural landscape east of Limerick City. The proposed route, if developed, could have significant negative impacts on the hedgerows that border agricultural fields in the area and provide an important ecological network and linkage for various species, e.g. badgers, bats, birds etc. Measures to address disturbance to hedgerows and treelines are included in the CPD through Objectives EH O1, EH O2, EH O3, EH O5 and EH O6, it is thought that these Objectives sufficiently address any possible future loss or need for replacement of hedgerows and ecological/wildlife corridors.

The wording of the proposed Variation includes mitigation measures to address the identified likely significant negative impacts. Furthermore, the existing Policies and Objectives of the Plan will contribute towards improving the status of the biodiversity SEO. The existing policies and objectives of the Plan include:

- **Objective EH O1: Nature Conservation Sites** – seeks to maintain the conservation value of those identified sites including European sites and “Ensure that development projects and development plans likely to have significant effects on European Sites (either individually or in combination with other plans or projects) are subject to an appropriate assessment and will not be permitted under this plan unless they comply with article 6 of the Habitats Directive.”
- **Objective EH O2: Species Protection**
- **Policy CP 10:** To identify, conserve, protect and enhance the unique and diverse natural and built heritage of Limerick County and to implement the provisions of the National Biodiversity Plan to secure the conservation, including where possible the enhancement, and sustainable use of biological diversity in Limerick.
- **Policy SE 01: Strategic Integrated Framework Plan for the Shannon Estuary**
- **Objective SE O15: Protected Areas** Development proposals within areas designated as nature conservation areas (Special Areas of Conservation, Special Protection Areas for wild birds or Natural Heritage Areas) shall be considered where it has been demonstrated that the proposal would not result in significant direct or indirect adverse impacts on the area, or on protected species and habitats and would fulfil the requirements of Article 6 of the Habitats Directive.
- **Objective SE O16: Water Quality** Development proposals in the Shannon Estuary Area will be required to have regard to the quality of the water resources in the area. They will be required to demonstrate that they will have no significant adverse consequences for water quality.
- **Policy ED P7: Integrated planning of the Shannon estuary**
Facilitate integrated planning to develop the capacity of the Shannon Estuary as a prime transport, industrial development and tourist asset. Limerick City and County Council will promote overall sustainable development within the Shannon Estuary and support all legislative environmental commitments provided in the Strategic Integrated Framework Plan for the Shannon Estuary, inter alia The EU Habitats Directive, The EU Birds Directive, The Floods Directive and the Water Framework Directive.
- **Objective COM O32: Accessibility to Waterways**
It is the objective of the Council to:
 - a) Promote and protect and improve public accessibility to the County's rivers and lakes, and
 - b) Protect the Shannon Estuary, rivers, and lakes from ecological damage.
 - c) Seek the provision of a riparian corridor/ buffer zone, where appropriate and subject to Article 6 of the Habitats Directive, along river banks and streams for the purposes of providing habitat, river maintenance, access for anglers, walkers and to not permit development encroaching on these corridors where appropriate.

Population and Human Health Assessment

SEO: To promote compact settlement patterns, and high quality residential development.

The description of the baseline environment established that Limerick City is the capital of the Mid West region and is a linked Gateway City with Shannon in County Clare. The scheme objectives state that the development of the LNDR is expected to significantly improve connectivity and access to the respective north and eastern periphery of the city and county environs and improve links to the national and local road network. The Mid West Area Strategic Plan 2010-2030 identifies the LNDR as a key objective to achieving its vision of connectivity and investment in transport infrastructure that will develop Limerick City and further drive the region's economy. It states the LNDR "would enable the region to connect and access the northern periphery of the city limits and protect the City Centre. It also brings the ability to make the regeneration area more accessible, enhance access to Limerick University and the related industrial zones."

At a strategic level the proposed Variation is likely to have significant positive effect on the population and human health environment for the Limerick area and wider Mid-West region. It is expected that the proposed Variation will provide greatly improved access and reduce traffic congestion in the immediate areas of Castletroy, Lisnagry and Castleconnell and the surrounding environs including access to the National Technology Park and the University of Limerick. Furthermore, the LNDR is expected to significantly improve the connectivity between different areas along the northern fringe of the city, allowing people in residential areas to the north and east of Limerick to access the east of the City and county and into County Clare and vice versa. The LNDR will alleviate significant traffic and congestion, and may reduce noise and air pollution, which is currently experienced in Limerick City centre and eastern environs.

However, negative impacts are likely to occur where individual properties are impacted by the new route, due to land use changes, potential for severance, noise, air, visual impacts. These negative impacts are likely to be most evident within the immediate area of the proposed road development which is subject to specific design details of the road scheme and junction arrangement. From the assessment of the Variation against this SEO it is considered that the proposed Variation promotes and supports the development of a more sustainable compact City and settlement pattern in the City and the Mid-west region. It will help to alleviate traffic congestion and will provide walking and cycling facilities as part of the Scheme which will contribute to supporting health benefits to the population and reduce rising levels of car use. Potential interactions with other environmental topics are discussed under the relevant environmental topics including noise, air, water and flooding.

The wording of the proposed Variation together with the implementation of the existing Policies and Objectives of the Plan will contribute towards improving the status of the population and human health SEO. They will also address the identified likely significant negative impacts. Therefore no additional mitigation measures are proposed. The existing policies and objectives of the Plan include:

- **Policy IN P1: Integration of transport with land use**

The Council shall seek to develop a robust evidence-based framework of Decision making in infrastructure and development management, to ensure the efficient and timely provision of suitable facilities for access when and where needed. The Council shall also require that the facilities and the land uses they would serve are mutually integrated so as to make optimum use of

investment in transport infrastructure. To this end the Council shall seek in particular to implement the provisions of the emerging Mid-Western Area Strategic Plan (MWASP) once fully assessed and adopted.

- **Policy IN P3: Land Use planning and accessibility**
It is policy of the Council to ensure that considerations of accessibility and mobility are properly incorporated into the assessment and planning of land uses and services, and that land uses are connected to good quality transportation infrastructure.
- **Policy IN P4: Promotion of sustainable patterns of transport use**
It is policy of the Council to seek to implement in a positive manner, in cooperation with other Authorities and agencies, the policies of the Mid-Western Regional Planning Guidelines, and the Department of Transport Policy 'Smarter Travel, A Sustainable Transport Future 2009-2020' to encourage more sustainable patterns of travel, and greater use of sustainable forms of transport, including public transport, cycling, and walking.
- **Objective IN O1: Promotion of Sustainable Travel** as part of this objective it states "Use the emerging Mid-Western Area Strategic Plan (MWASP) as a Strategic Transport Assessment (STA) to inform all zoning decisions likely to generate significant additional traffic, and to inform infrastructural commitments likely to have significant affect on traffic patterns;
- **Objective IN O2: Traffic and Transport Assessments (TTAs);**
- **Objective EH O23: Noise** It is the objective of the Council to prevent public noise and light nuisance through the regulation of industrial and construction activities.
- **Policy IN P5: Socially Inclusive Access** It is policy of the Council to ensure that in the design and planning of infrastructure and the integration of land use, infrastructure and transport modes that the widest spectrum of needs, including pedestrians, cyclists and those with diverse cognitive, mobility and sensory abilities and impairments, are taken into account.
- **Policy IN P6: Protection of public transport assets and facilitation of public transport.** It is Council policy to protect strategic public transport assets; to facilitate accessibility by public transport in development layouts; and to support the enhancement of public transport infrastructure and use through initiatives such as park and ride. To this end the Council shall seek, in particular, to implement the provisions of the emerging Mid- Western Area Strategic Plan (MWASP) once fully assessed and adopted.
- **Objective IN O8: Cycle and pedestrian facilities** It is an objective of the Council to encourage the successful incorporation of safe and efficient cycle and pedestrian facilities, and accessible cycle ways, footpaths and pedestrian routes into the design schemes for residential, educational, employment, and recreational developments. Consideration will be given in these schemes to existing or proposed routes where applicable.
- **Policy IN P7: Road Safety and Capacity** To seek the improvement of road safety and capacity throughout the County, through minimising existing traffic hazards, preventing the creation of additional or new traffic hazards in the road network and securing appropriate signage.

Soils and Geology Assessment

SEO Objective: Conserve and sensitively exploit geological resources. Preserve sensitive geological sites.

The proposed Variation supports the future development of the LNDR which will result in construction of a road through mainly agricultural land within Limerick Metropolitan District in east Limerick. However, the construction of this road will result in loss of soil resources and soil sealing. It is considered that the loss of mainly agricultural soil resources in this area is not considered significant when examined in the context of the surrounding available agricultural lands. There are no sensitive geological sites identified in the proposed Variation area therefore it has been determined that there will be no likely significant impacts to soils and geology resources and the SEA assessment results in a neutral impact to the status of this SEO. Therefore no additional mitigation measures are proposed.

Existing Policies and Objectives of the Plan that will contribute towards improving the status of the soils and geology SEO to include:

- **Policy EH P1: Sustainable Management and Conservation**

It is the policy of the Council to ensure the sustainable management and conservation of areas of natural environmental and geological value within the County.

Water and Flood Risk Assessment

SEO Objective: Prevent further deterioration in water quality, achieve improvement in water quality.

Promote good practice in flood risk management

The baseline environment established that the proposed Variation is located within a Flood Risk area and the WFD identifies failures in the Lower Shannon Estuary due to lead in the water.

Issues in relation to water pollution have already been discussed under the Biodiversity, Flora and Fauna topic. The NIR which was completed for the proposed Variation includes detailed mitigation in relation to water pollution prevention and the adherence to these measures will ensure no adverse impacts on water quality. These mitigation measures will be included as part of the proposed Variation wording and therefore no additional measures will be required as a result of the SEA.

In relation to the proposed Variation an assessment has been carried out in accordance with the requirements of '*The Planning System and Flood Risk Management: Guidelines for Planning Authorities*'. As the proposed Variation relates to an area which is designated as potentially Highly Vulnerable to flooding a Justification Test has been performed in accordance with these guidelines.

Hydrological analysis has been carried out on the existing River Shannon and Mulkear flood regimes in order to determine the effect of the proposed LNDR scheme. Analysis carried out was based on a combination of one dimensional and two dimensional computer modelling techniques. A number of scenarios representing different bridge opening widths were examined in order to determine the extent of any possible changes to existing flood levels. From this exercise a minimum bridge length has been determined which will avoid any appreciable

increase in water levels, or increased frequency, at properties or other areas which are sensitive to the effects of flooding.

The provisions of the current County Development Plan 2010-2016 and requirement to undertake project level Flood Risk Assessment will contribute towards the achievement of the reducing flood risk and the objectives of the WFD. It is considered that any likely significant negative impacts will be addressed and mitigated against in accordance with the required project level assessments as part of the respective EIA, Flood Risk Assessment and Habitats Directive assessment processes respectively.

The wording of the proposed Variation includes mitigation measures to address the identified likely significant negative impacts. Furthermore, implementation of the existing Policies and Objectives of the Plan will contribute towards improving the status of the Water and Flood Risk SEO. The existing policies and objectives of the Plan include:

Policy IN P11: Management of Water Resource

It is the policy of the Council to seek to ensure water resources and services are managed and planned, in association with other policies and objectives in this plan, to meet the following goals:

- a) To protect human health and the environment.
- b) To facilitate the provision of proper water services for domestic and non-domestic requirements.
- c) To support proper planning and sustainable development, including sustainable use of water resources.
- d) To ensure the danger of flooding risk is averted as far as possible and where flooding is inevitable its consequences minimised.

Policy IN P12: Catchment Management

Seeks to ensure the proper development and use of water resources and associated activities the Council will work with relevant authorities to better secure a consistent management approach across river catchments and river basin districts.

Objective IN O24: Protection of Surface water bodies

It is the objective of the Council to ensure the integrity of surface water bodies is maintained; and where damaged, to seek, as resources allow, to restore their integrity. Priority will be given to those waters deemed to be sensitive in respect of their uses, and vulnerable due to low assimilation capacity. The Council shall give particular priority to the need to protect human health, designated habitats, and to minimise costs of water/wastewater treatment.

Objective IN O33: Water Conservation

It is an objective of the Council to promote the awareness of sustainable water use and to encourage water conservation and demand minimisation by

- a) metering and control of leaks in the Water Conservation programme;
- b) promoting Sustainable Urban Drainage Systems and grey water recycling in developments;
- c) minimising the potential for wastage through appropriate design and layout of pipe networks; and
- d) recovering costs of providing water through the use of these services in keeping with Article 9 of the EU Water Directive and the Water Services Act 2007. This is currently applied through the imposition of water charges for the non-domestic sector.

Objective IN O35: Minimise threat and consequences of flooding

It is the objective of the Council to avert, or where this is not possible, to minimise the threat of flooding in new developments and existing built up areas. Priority will be given to the protection of vulnerable uses that would be seriously affected by the consequences of flood events. The Council will have regard to Government Guidelines, 'The Planning System and Flood Risk Management' and OPW data and advice in the assessment of all development proposals and any subsequent amendments.

Objective IN O36: Manage river catchments and surface water run-off

It is the objective of the Council to assist in the sustainable management of river catchments to reduce both the quantity of water run-off and its speed and unpredictability, allow rivers to take their natural flow, and allow flooding only to occur in lower sensitivity areas.

Objective IN O 38: Flood risk management and development

It is an objective of the Council to ensure that land uses are zoned, and developments allowed where there is minimum flood risk, prioritising the protection of certain land uses particularly vulnerable to the affects of flooding

Objective IN O39: To minimise the impact of structures and earthworks on flood plains and river flow.

It is an objective of the Council in general not to permit development of the following types in or across flood plains or river channels unless it can be clearly demonstrated using flood impact assessments, that they would not create or exacerbate risk of flooding in sensitive locations such as:

- a) construction of embankments, wide bridge piers or similar structures.
- b) raising of ground levels where this would interfere with natural river flow or currents.

Objective SE O16: Water Quality Development proposals in the Shannon Estuary Area will be required to have regard to the quality of the water resources in the area. They will be required to demonstrate that they will have no significant adverse consequences for water quality.

Objective SE O17: Flooding and Development

In areas that are at risk of flooding proposed development will have regard to the Planning System and Flood risk Guidelines and any future amendments or revisions to these guidelines.

Objective SE O18: Development not Sensitive to Flooding

Appropriately designed development which is not sensitive to flooding may, subject to proper planning and sustainable development and subject to the incorporation and implementation of the requirements of the Planning System and Flood Risk Management Guidelines (DoEHLG/OPW, 2009), be permitted in flood plains provided it does not significantly alter the flood plain area or otherwise restrict water flow in the flood plain area.

Objective SE O19: Access for Maintenance:

Developments adjacent to water courses in the estuary area will be required to ensure that there is adequate provision for access to allow maintenance and clearance, future improvement works or emergency works by local authorities.

Air & Climate Assessment

SEO Objective: Reduce air pollution, implement climate change aspects of plan.

According to studies carried out as part of the Route Corridor Selection Report (RCSR) for the LNDR, the major existing source of air pollution within the area of the proposed Variation is road traffic predominantly from the regional roads in the area. According to the Air Quality Index for Health Map (EPA, 2017) the air quality for the area in which the proposed Variation applies is largely considered good. The RCSR assessment ranked more favourably those options which avoid built up areas and reduce congestion on the R445. Pollution from traffic sources increases at low traffic speeds and during congested traffic conditions. The RCSR investigated the impacts of different route corridors on a variety of receptors including those of ecological importance. Predicted Nitrogen Oxide (Nox) concentrations were calculated for each of the proposed routes and the results demonstrated that there would be no likely significant impact on the Lower River Shannon SAC.

The proposed Variation (LNDR) is to be located within the Mountshannon/Lisnagry area of Limerick it can be assumed that this area will experience an increase in traffic volumes as vehicles that would have previously used the surrounding regional road network would now use the LNDR. This may in turn result in an increase in air pollution in the area. However, when examined at a strategic level (as is the purpose of this SEA Environmental Report) it has been determined that the preferred route corridor as detailed in the proposed Variation is the option with the least amount of impact on all surrounding areas. In addition, project level assessment in the form of the Environmental Impact Assessment (EIA) air assessment is likely to include suitable mitigation measures to ensure levels attained as part of the scheme are within recognised limits.

The release of greenhouse gases into the atmosphere as a result of human activities adds to natural climate variability by increasing the naturally occurring greenhouse effect. Climate change is not limited to changes in temperatures or weather - it can also mean changes in the occurrence of extreme and unstable weather conditions, storms and floods and droughts which is considered as part of the SFRA. Overall, the SEA assessment considers there will be a minor positive interaction with the status of the air and climate SEO. This proposed Variation will reduce congestion levels in the immediate areas and will provide for the integration of sustainable travel options, including supporting a modal shift away from the private car, through the provision of walking and cycling infrastructure as part of the scheme which is likely to reduce air pollution. It will also contribute towards supporting the compact settlement patterns in the region.

The wording of the proposed Variation together with the implementation of the existing Policies and Objectives of the Plan will contribute towards improving the status of the air and climate SEO. Therefore no additional mitigation measures are proposed. The existing policies and objectives of the Plan include:

- **Objective EH 022: Air Quality & Objective EH 024 Renewable Energy Strategy.**

Material Assets Assessment

SEO Objective: Sensitively manage natural and man and material assets.

The provision of the LNDR will have an overall positive impact on the material assets of the area. The standards of transport infrastructure in the area will be considerably

improved and so too will the opportunities to enhance sustainable modes of travel. For example consideration will be given to the incorporation of bus lanes in the new route and therefore provide a wider choice of alternative modes of transport for people in the area. There may also be the opportunity as the road develops to expand certain routes on the 'Smarter Travel Limerick' network to include longer and more linked cycling and walking routes across the City and County. Therefore, the Variation is likely to improve the status of this SEO.

The wording of the proposed Variation together with the implementation of the existing Policies and Objectives of the Plan will contribute towards improving the status of the material assets SEO. They will also address the identified likely significant negative impacts. Therefore no additional mitigation measures are proposed. The existing policies and objectives of the Plan include:

- **Objective IN O12: Improvements to regional and local roads** It is an objective of the Council to provide for and carry out sustainable improvements to sections of Regional roads and local roads that are deficient in respect of alignment, structural condition, or capacity, where resources permit and to maintain that standard thereafter.
- **Objective IN O13: Reservation of corridors for major road improvements:** It is an objective of the Council to support major improvements by reserving such corridors of any such proposed routes free of developments that would interfere with such improvements.
- **Policy IN P10 Protection of Corridors and Route Alignments**
The Council will continue to work with the NRA in protecting corridors and route alignments identified for national roads projects from prejudicial development, in accordance with the Mid-West Regional Planning Guidelines, Transport 21 and the National Development Plan.
- **Policy ED P8: Infrastructural capacity**
Improve infrastructural capacity, taking a strategic approach to ensure that infrastructure serves the requirements for economic development in a timely and cost effective manner.
- **Objective COM O33: New Urban Development and Waterways**
It is an objective of the Council to encourage new development in urban areas including the environs, towns and villages to front onto waterways, and where possible the developer to provide new public walkways to acceptable safety standards along the waterways which may include the provision and maintenance of public rescue equipment, signage and communication facilities.
- **Objective EH O19: River Basin Management Plans**
It is the objective of the Council to implement the programmes of measures developed by the River Basin District Projects under the Water Framework Directive in relation to:
a) Surface and groundwater interaction b) Dangerous substances
c) Hydro-morphology d) Forestry
e) On site wastewater treatment systems f) Municipal and industrial discharges
g) Urban pressures h) Abstractions
- **Objective EH O20: Ground Water and Surface Water Protection and River Basin Management Plans**

- a) It is the objective of the Council to protect ground water resources of the County and surface waters of the County. There will be a general prohibition on the filling of wetlands and surface water features.
- b) In assessing planning applications and their consequences for ground water the Council will implement the measures put forward in the Limerick Groundwater Protection Plan.
- c) It is the objective of the Council to implement the measures recommended in the River Basin Management Plans.

Cultural Heritage Assessment

SEO Objective: Protect and conserve archaeology, heritage items.

An assessment of the cultural heritage interests in the vicinity of the proposed Variation was carried out as part of the RCSR (2012). As part of this assessment and this SEA assessment all known archaeological and built heritage interests are mapped and care was taken to avoid sensitive sites as part of the route corridor selection. Archaeological heritage features within the proposed Variation area include: two enclosure's, one Heart, one Ringfort – Rath. There are two built heritage features identified to include: a roadside memorial in Carrowkeel and a house located in Garraunkee. Areas of Archaeological Potential (AAP) were also identified within the proposed Variation area.

The River Shannon is a significant waterway and has identified been designated as AAP 19. There are no known underwater archaeological sites located in the Variation area. Preservation of underwater archaeological heritage is provided for by the current Plan (Objective EH O27A). Rivers and lakes are a focus for human habitation due to the obvious transport and food resources. They also have the potential to preserve organic archaeological deposits or artefacts such as wood or leather, which do not usually survive within the alkaline conditions associated with terrestrial archaeology. They may have also played a role in prehistoric ritual, as significant artefacts from the prehistoric periods and into the early medieval period are often found within river bed deposits. This is certainly the case with regards to other parts of the River Shannon where an extensive range of archaeological artefacts have been recovered from the river further to the northeast at Killaloe. Future development will have to take into account the archaeological and architectural heritage provisions of the Development Management Guidelines listed in section 10.10.2 and 10.10.3 of the County Development Plan.

Potential significant adverse effects include:

- on the setting of unknown archaeological remains arising from construction of a new route, including underwater archaeology
- on the demesne landscape and historic setting within the townlands of Ballyvollane/Mountshannon/Garraunkee area, and;
- effects on known archaeological and architectural heritage sites and their setting within and adjacent to the proposed Variation area.

The wording of the proposed Variation together with the implementation of the existing Policies and Objectives of the Plan will contribute towards addressing the likely significant adverse effects of Cultural heritage, particularly known or unknown terrestrial or underwater archaeology. Therefore no additional mitigation measures are proposed. The existing policies and objectives of the Plan include:

- **Objective EH O25: Preservation of the Archaeological Heritage**
- **Objective EH O26:** Preservation of the unrecorded/newly discovered archaeological heritage seeks to preserve both the existing and unrecorded elements of Limerick's archaeological heritage.
- **Objective EH O27:** Protection of the setting of archaeological monuments seeks to ensure that any proposed development shall not have a negative impact on the character or setting of an archaeological monument.
- **Objective EH027A:** Preservation of the Underwater Archaeological Heritage "It is the objective of the Council to seek the preservation (in situ, or at a minimum, preservation by record) of all known and all previously unrecorded sites and features of historical and archaeological record in riverine, lacustrine, estuarine and or marine environments."
- **Objective EH O29:** Assessment and recognition of archaeological landscapes. It is an objective of the council to designate archaeological landscapes as part of an ongoing appraisal for Historic Landscape Characterisation of the County.
- **Objective EH O31:** General Protection of Structures
- **Objective EH O32:** Promotion of Conservation of Protected Structures
- **Objective EH O36:** Historic Gardens, Designed Landscapes and their associated Non Structural Elements
- **Objective EH: O38 County Council Works**
- Development Management Guidelines listed in section 10.10.2 and 10.10.3
- **Objective EH O29: Assessment and recognition of archaeological landscapes**

The SEA process has identified there is likely to be significant negative impacts as a result of the proposed Variation. However, it has been shown that existing policies within the Plan are sufficient to address any likely significant negative impacts.

Landscape Assessment

SEO Objective: Protect historic and natural features of note in landscapes. Sensitively manage landscape change.

The landscape itself is generally that of an enclosed farm type, essentially that of a hedgerow dominant landscape interspersed with Riverine environment, residential development, services and road infrastructure associated with the local and national road network. This differs from the other agricultural landscapes of the County in that the field patterns, particularly close to the estuary, tend to be less regular than those elsewhere in the County. As outlined under the cultural heritage section above there is a possibility that the proposed Variation may lead to possible significant effects on the setting of a historic demesne landscape in the Ballyvollane / Mountshannon / Garraunykkee area and the River Shannon and Mulkear, however it is expected that the existing Objectives in the Plan, in particular EH O36 Historic Gardens, Designed Landscapes and their associated Non Structural Elements – which seeks to protect demesne, hedgerow and other features associated with built heritage of protected structure.

The wording of the proposed Variation together with the implementation of the existing Policies and Objectives of the Plan will contribute towards addressing the identified likely significant negative impacts. Landscape changes will be sensitively managed which supports the landscape SEO. Therefore no additional mitigation measures are proposed.

The proposed Variation is within the Shannon Coastal Zone Landscape Character Area. Existing Objective EH012 of the Plan identifies considerations relating to the future development in this landscape type. The existing policies and objectives of the Plan include:

- **Policy EH P2:** It is the policy of the Council to promote the distinctiveness and where necessary safeguard the sensitivity of Limerick's landscape types through the landscape characterisation process and also where possible to develop the means to successfully integrate differing kinds of development within them.
- **Objective EH 035, EH 06** which seek to '*Ensure the adequate integration of development into the landscape by the retention of existing trees and landscape features and/or suitable planting*' and Development Management Guidelines to name put a few will ensure that the project level assessment for the proposed LNDR will occur in a way that is most sympathetic to the surrounding landscape.
- **Objective EH 012: Shannon Coastal Zone Landscape Character Area**
Objective (j) may be required to be consulted at project level EIA stage which states "Development identified under the SIFP will adhere to the mitigation measures for landscape management as appropriate."

Objective SE 07: Integrating Developments

Proposals for development within the Shannon estuary will require a high standard of landscaping and design, and should be designed so as to avoid altering the character and integrity of the landscape.

8.2.4 Mitigation Measures required as a result of the Assessment

The SEA process and use of the SEO objectives has resulted in identifying any likely significant negative effects on the environment and suitable mitigation measures to address these. Avoidance of conflict with SEOs and the environment is dependent upon compliance with the existing policies and objectives of the Plan together with the mitigation measures which have emerged through both the SEA, Habitats Directive Assessment process and the Strategic Flood Risk Assessment process which have been integrated into the proposed Variation process.

Due to the nature of the proposed variation, which involves introducing a preferred route corridor within which the road will be located there still remains a considerable amount of uncertainty as to the exact scale, type and construction methodology of the river crossings in particular. However, by undertaking the SEA, AA and assessing the in-combination effects, the most significant effects have been eliminated through avoidance, removal or specifying certain bridge design measures at crossing locations. In order to ensure that no significant effects remain at project level and to ensure that the current Variation has been appropriately assessed, further mitigation (as outlined in Table 11.1 of the NIR) have also been included to ensure any remaining scientific uncertainty is avoided at project level.

Therefore, the SEA process identified that sufficient mitigation measures to address the likely significant impacts including those on the Lower River Shannon SAC were established as part of the NIR and SFRA and are currently included in the proposed Variation wording.

Limerick City & County Council has determined that, on the basis of the objective information provided in the NIR and SFRA and with the adoption of the additional mitigation measures described above, the proposed Variation No. 5 (a) to the LCDP will not, either alone or in-combination with the existing Policies and Objectives of the LCDP and other plans and projects, have any adverse effect on any Natura 2000 site or Flood regime.

8.3 Cumulative Effects

8.3.1 Introduction

Cumulative Effects are effects on the environment that result from incremental changes caused by the strategic action (in this case the proposed Variation) together with other past, present, and reasonably foreseeable future actions. These effects can result from individually minor but collectively significant actions taking place over time or spatially.

Cumulative effects are referred to in a number of SEA guidance documents and are defined in the EPA SEA Process Checklist (2011) as *“effects on the environment that result from incremental changes caused by the strategic action together with other past, present, and reasonably foreseeable future actions. These effects can result from individually minor but collectively significant actions taking place over time or space”*. Therefore, it is considered that the combined effect of human activities can pose a serious threat on our environment. These effects can be insignificant individually but cumulatively over time and from a number of sources can result in the degradation of sensitive environmental resources.

8.3.2 Legislation

The consideration of cumulative effects is a requirement of the SEA Directive (2001/42/EC). It states under Article 5(1) that an Environmental Report shall be prepared and the relevant criterion is provided in Annex I, which states that; *“The likely significant effect (these effects should include secondary, cumulative, synergistic, short, medium and long-term permanent and temporary, positive and negative effects) on the environment, including on issues such as biodiversity, population, human health, fauna, flora, soil, water, air, climate, material assets, cultural heritage including architectural and archaeological heritage, landscape and the interrelationship between the above factors”*.

Under Article 3(5) of the SEA Directive the determination of likely significant effects is addressed and within this it is stated that Member States shall take into account the relevant criteria within Annex II. Under Annex II (2) it is stated that *“characteristics of the effects and of the area likely to be affected, having regard, in particular, to the cumulative nature of the effects”*.

8.3.3 Assessment

The provisions of the current County Development Plan as part of the development management process provide for the thorough assessment of cumulative impacts at project level. Where significant adverse effects - including positive, negative, cumulative and indirect, have the potential to occur upon the environment. By undertaking the respective SEA and SFRA and assessing the in-combination effects, the likely significant effects have been eliminated through avoidance, removal or specifying certain mitigation measures as part of the proposed wording of the Variation at this Plan level stage.

An assessment of the potential impacts on the SAC has been carried out as part of the HDA detailed in the NIR for the proposed Variation and appropriate mitigation measures to address both individual and in-combination effects are outlined in Section 8.2 above. On the basis of the assessment it was determined that, in the absence of appropriate mitigation, significant adverse effects on the Conservation Objectives of the Lower River Shannon SAC would likely arise from the proposed Variation. By undertaking the AA and assessing the in-combination effects, the likely significant effects have been eliminated through avoidance, removal or specifying certain bridge design measures at crossing locations. Mitigation measures to counteract this negative impact were established as part of the NIR and are included in the varied plan wording. Therefore, no further mitigation measures are required to be included in the Plan to address the likely negative impact on Lower River Shannon SAC.

8.3.4 Cumulative Assessment of Other Plans and Programmes

In order to assess if there are any impacts from the proposed Variation cumulatively or in-combination with other Plans or Programmes an additional column was added to the table in **Appendix A** to assess this. As can be seen from the results recorded in this column no significant cumulative or in combination effects are perceived at this Plan level stage.

9. MONITORING

9.1 Introduction

This chapter sets out the proposed monitoring programme to be implemented with the adoption of Proposed Variation No. 5 (a) to the Limerick County Development Plan 2010-2016. The SEA Directive states that monitoring of the likely significant environmental effects of the implementation of plans and programmes must be undertaken in order to identify at an early stage unforeseen effects and be able to undertake appropriate remedial measures.

9.2 Proposed Monitoring Programme

The SEA monitoring programme for the plan is set-out below in Table 9.1. Both the positive and negative effects of the plan on the environment are to be considered in the monitoring programme and recorded for all the SEOs. The future monitoring process will be undertaken with a view to better understand the effects of the plan's implementation across all environmental topics.

The intention when developing the monitoring programme is to build upon the existing data already being collected by Limerick City and County Council and the other national and local agencies in Limerick.

9.3 Potential Impact and Indicators

Monitoring is based around the indicators which were chosen initially as part of the County Development Plan SEA process. These indicators allow the quantitative measurement of trends and progress over time relating to the SEOs used in the evaluation. Focus will be given to indicators which are relevant to the likely significant environmental effects of implementing the Variation and existing monitoring arrangements will be used, where possible, in order to monitor the selected indicators. Table 9.1 outlines the objectives for each environmental parameter together with their associated indicators and the responsible Authority.

9.4 Reporting

Policy IMP P3: Monitoring the Plan stating “*The Planning Authority will continue to monitor the effectiveness of policies and objectives in the Plan and will take account of the changing circumstances in the physical, social and economic environment in order to review and update the Plan*”

It is recommended that the existing biennial Monitoring Report is prepared to report on the progress of the SEA monitoring programme and that a summary of key actions required addressing both predicted and also unforeseen significant environmental effects is included.

If monitoring identifies a regular frequency of a negative significant environmental effect, then more frequent monitoring and reporting may be required to determine if remedial action is effective in addressing the negative effect.

The availability of data and the development of new or more detailed data sets are likely to be important issues and should be noted in all Monitoring Reports.

Table 9.1 Proposed Monitoring Framework

Environmental Topic	Potential Impact	Indicators	Comments
Biodiversity	Fragmentation, loss of habitats, species.	Known losses, reports, surveys by relevant bodies, NPWS, Fisheries.	Requires cooperation and liaison with other bodies.
	Habitat removal, fragmentation, disturbance, pollution events and sedimentation.	Impact on the Conservation Objectives of the Lower River Shannon SAC. Implementation of the NIR mitigation measures (February 2017).	Cooperation with the NPWS, IFI and other bodies.
Population and Human Health	Ground surface/water pollution. Traffic accidents. Noise.	Pollution incidents, Traffic reports.	Could be obtained through Traffic impact assessments produced as part of planning applications.
Water & Flood Risk	Pollution of ground and surface waters, estuary waters. Excessive abstraction.	Water pollution surveys, incidents as brought to light as a result of complaints, sampling.	Cooperation with other bodies such as Fisheries NPWS and Health Board required.
	Risk of Flooding.	Flooding and Increased Risk of Flood. Application of the mitigation contained in the SFRA (February 2017).	Application of CFRAMS (Proposed CFRAM Flood Protection Measures for the Annacotty-Mountshannon Area are presented in the CFRAM Preliminary Options Report for unit of management 25/26 (July 2016). Co-operation with Limerick City and County Council and The Office of Public Works.
Air & Climate	Local air pollution. Green house gas emissions.	Traffic volumes. Comments in individual EIS's submitted.	Contents of EIS submitted to the Planning Authority in the monitoring time frame may be indirect sources of data
Soil & Geology	Contamination.	Reports/Surveys.	Local contamination may occur as a result of pollution.
Material Assets	Use of brown field sites.	Planning applications.	Nil.
Cultural Heritage	Development in or close to protected sites, habitats or structures	Known loss of sites or structures.	Increased liaison with other bodies required.
Landscape	Protect historic and natural features of note in landscapes. Sensitively manage landscape change.	No. of developments permitted and their impacts on cultural/historic landscapes.	Limerick City and County Council planning application records.

10. CONCLUSION - OVERALL FINDINGS OF ASSESSMENT

The proposed Variation No. 5 (a) to the Limerick County Development Plan 2010-2016 relates to the incorporation of the preferred route of the Limerick Northern Distributor Road into the Plan. This involves changes to the text of the Plan objectives and also insertion of a Context Map for the development of the LNDR.

The proposed Variation relates to an additional objective to be added to Section 8.2.6.1. "Strategic Regional Roads" of the Plan under Policy IN P8 "Strategic Regional Road Network", together with an additional Context Map, presented as Fig. 3.1.

Proposed wording of the Variation:

"Limerick Northern Distributor Road:

It is an objective of Limerick City & County Council to support the Limerick Northern Distributor Road, which will connect the Coonagh to Knockalisheen Road Scheme to the existing R445 (old N7) and adjoining road network to the east of Limerick City which will incorporate Smarter Travel features in accordance with the requirements of the Habitats, Water Framework, Floods, and EIA Directives. Full consideration of all environmental requirements have been made in the progression of the scheme to date. This will continue up to and including project level.

In relation to the LNDR, it is an objective of Limerick City & County Council:

- a) To ensure all mitigation and monitoring measures outlined in the Environmental Report and Natura Impact Report shall be taken into account at project level. Section 11 of the Natura Impact Report (dated February 2017) for the Proposed Variation provides details of mitigation measures which shall apply to any future development of the LNDR.
- b) To ensure all mitigation and monitoring measures outlined in the Strategic Flood Risk Assessment shall be taken into account at project level.

This SEA process has been informed by the previous Variation No. 4 process, and by the environmental baseline (i.e. the current state of the environment – biodiversity, flora and fauna, water, cultural heritage etc.). This baseline assessment was used to facilitate the identification and evaluation of the likely significant environmental effects of implementing the Proposed Variation and the subsequent monitoring of the effects of the Variation as made to the Limerick County Development Plan 2010-2016.

Reasonable alternatives were identified and assessed as part of the ER. As a result of this assessment the preferred option was determined. The preferred option was formulated to address the requirements of the scheme objectives which is demanded by National, Regional and Local policy as well as incorporating sustainable travel elements such as walking and cycling. The preferred option was then carried forward for detailed assessment as part of Chapter 8.

On the basis of the assessment it was determined that, in the absence of appropriate mitigation, significant adverse effects on the Conservation Objectives of the Lower River Shannon SAC would likely arise from the proposed Variation. . By undertaking the AA and assessing the in-combination effects, the likely significant effects have

been eliminated through avoidance, removal or specifying certain bridge design measures at crossing locations. Mitigation measures to counteract this negative impact were established as part of the NIR and are included in the varied plan wording. *Therefore, no further mitigation measures are required to be included in the Plan to address the likely negative impact on Lower River Shannon SAC.*

As a result of undertaking a Strategic Flood Risk Assessment it is proposed to include mitigation measures to address the possible Flood Risk in the area. These mitigation measures are included in the varied plan wording as above.

Limerick City & County Council has determined that, on the basis of the objective information provided in the SEA, NIR and SFRA and with the adoption of the additional mitigation measures as part of the wording described above, the proposed Variation No. 5 (a) to the LCDP will not, either alone or in-combination with the existing Policies and Objectives of the LCDP and other plans and projects, have any likely significant effects on the environment or any adverse effect on any Natura 2000 site.

This Environmental Report will be placed on public display alongside the Proposed Variation. The Environmental Report provides the decision-makers (the members of the Council) who decide whether or not to make the Variation, as well as the public, with a clear understanding of the likely environmental consequences of the Proposed Variation.

If any modifications to the Variation are made after this consultation period, the Environmental Report will have to be altered to assess any changes for likely significant effects on the environmental topics contained in the ER.

Monitoring of the Plan throughout its lifetime will ensure that any potential adverse environmental impacts, unforeseen at this stage, will be identified early so as to prevent any deterioration of the environment in the future.

Appendix A

Plan and Programme Policy Context

Policy, Plan, Programme or Project	Summary and likely influence & links/relationship to Proposed Variation of Limerick County Development Plan 2010-2016	Relevant Influence on SEA process	Is there a risk from the proposed Variation of significant 'in combination' effects with this policy/plan/ programme/project?
International and European legislation and policy			
Johannesburg Plan of Implementation 2002	This International policy initiative sets out an action plan for the implementation of the activities adopted at the World Summit on Sustainable Development in 2002. It covers topics such as poverty eradication, changing unsustainable patterns of production and consumption, managing natural resources, sustainable development and other aspects of the implementation of Agenda 21.	SEA objectives (SEOs) have been developed and are included in the SEA ER to ensure that sustainable development and likely significant effects on the environment are addressed during the SEA process in accordance with higher level plans and policies.	No significant cumulative or in combination effects perceived at this Plan level stage.
Agenda 21	Sustainable Development emerged as an idea in the late 1980s and led to the United Nations' Conference on Environment and Development (Earth Summit) in Rio de Janeiro in 1992. At the Summit, world leaders agreed to implement an action programme for Sustainable development called, Agenda 21. Agenda 21 is a process which facilitates sustainable development at community level. It is an approach, based on participation which respects the social, cultural, economic and environmental needs of the present and future citizens of a community in all its diversity, and which relates that the community and its future to the regional, national and international community of which it is a part. The key role of Environmental Impact Assessment is stressed in respect of activities that may have significant affect on the environment. Local Agenda 21 aims to promote sustainable development at local and regional level.	SEA objectives (SEOs) have been developed and are included in the SEA ER to ensure that sustainable development and likely significant effects on the environment are addressed during the SEA process in accordance with higher level plans and policies.	No significant cumulative or in combination effects perceived at this Plan level stage.
UN Convention of Biological Diversity 1992	The main objectives of this Convention (ratified in 1996) were to conserve biological species, genetic resources, habitats and ecosystems; to ensure the sustainable use of biological materials; and to guarantee the fair and equitable sharing of benefits derived from genetic resources Monitoring programmes and appropriate	SEA objectives (SEOs) have been developed and are included in the ER to ensure that sustainable development including biodiversity and likely significant effects on the environment are addressed during	No significant cumulative or in combination effects perceived at this Plan level stage.

Policy, Plan, Programme or Project	Summary and likely influence & links/relationship to Proposed Variation of Limerick County Development Plan 2010-2016	Relevant Influence on SEA process	Is there a risk from the proposed Variation of significant 'in combination' effects with this policy/plan/programme/project?
	designations for protected areas must be established, while undesirable alien species which threaten ecosystems should be controlled.	the SEA process in accordance with higher level plans and policies.	
Convention on Wetlands of International Importance (Ramsar Convention) 1971	The Convention on Wetlands, signed in Ramsar, Iran, in 1971, is an intergovernmental treaty, which provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources.	SEA objectives (SEOs) have been developed and are included in the ER to ensure that sustainable development including biodiversity and likely significant effects on the environment are addressed during the SEA process in accordance with higher level plans and policies.	No significant cumulative or in combination effects perceived at this Plan level stage.
EU Environmental Action Programme 2014	The Seventh Environment Action Programme (EAP) takes a broad look at the challenges of environmental policy and provides a strategic framework for the Commission's environmental policy up to 2020. The seventh EAP calls to protect, conserve and enhance the Union's natural capital, to turn the Union into a resource-efficient, green and competitive low-carbon economy and to safeguard the Union's citizens from environment-related pressures and risks to health and wellbeing. The strategic approaches include among others: the better implementation of legislation, better information by improving the knowledge database, full integration of environment protection requirements in other community policies and more and wiser investment for environment and climate policy.	SEA objectives (SEOs) have been developed and are included in the ER to ensure that sustainable development including biodiversity and likely significant effects on the environment are addressed during the SEA process in accordance with higher level plans and policies.	No significant cumulative or in combination effects perceived at this Plan level stage.
European Spatial Development Perspective 1999	The European Spatial Development Perspective (ESDP) is a legally non-binding document. It is a policy framework for better co-operation between EU sectoral policies with significant spatial impacts and between Member States, their regions and cities. The main policy		No significant cumulative or in combination effects perceived at this Plan level stage.

Policy, Plan, Programme or Project	Summary and likely influence & links/relationship to Proposed Variation of Limerick County Development Plan 2010-2016	Relevant Influence on SEA process	Is there a risk from the proposed Variation of significant 'in combination' effects with this policy/plan/programme/project?
	aims of the ESDP are directed primarily towards a more balanced and multicentric system of cities and a new urban-rural relationship, the parity of access to infrastructure and knowledge and the prudent management and development of the natural and cultural heritage.		
EU White Paper on Renewable Energy 1997	This paper identified a potential growth in the contribution of renewable energy to total energy supply from 14.3% in 1997 to 23.5% by 2010. The indicative target addressed to Ireland in the Directive is to increase green electricity usage from 3.6% of gross electricity consumption in 1997 to 13.2% by 2010.		No significant cumulative or in combination effects perceived at this Plan level stage.
COMAH (Seveso III 2012/18/EU) Directive – European Communities (Control of Major Accident Hazards involving Dangerous Substances) Regulations 2015	<p>The Seveso III Directive, sometimes referred to as COMAH, stipulates certain requirements for storage of relatively large quantities of substances classified as dangerous.</p> <p>The directive sets out that each Member State must ensure that the operator:</p> <ul style="list-style-type: none"> • takes all measures necessary to prevent major accidents and to limit their consequences for man and the environment; • Is required to prove to the competent authority that all the necessary measures provided for by the Directive have been taken. <p>The Directive includes an obligation to notify under the principle that it is illegal for enterprises to hold large quantities of dangerous substances without informing the competent authorities within the time-limits specified by the Directive. It is not envisaged that the Proposed Variation will involve the storage of any large quantities of substances classified as dangerous. The SEA Objective for Population and Human Health however</p>	SEA objectives (SEOs) have been developed and are included in the ER to ensure that sustainable development including biodiversity and likely significant effects on the environment are addressed during the SEA process in accordance with higher level plans and policies.	No significant cumulative or in combination effects perceived at this Plan level stage.

Policy, Plan, Programme or Project	Summary and likely influence & links/relationship to Proposed Variation of Limerick County Development Plan 2010-2016	Relevant Influence on SEA process	Is there a risk from the proposed Variation of significant 'in combination' effects with this policy/plan/ programme/project?
	does include a measure to protect human health from hazards if any should arise as the process evolves.		
EU Water Framework Directive 2000 (2000/60/EC)	This is otherwise known as the Water Framework Directive and it represents a major revision of EU water policy and establishes a framework for the protection of inland surface waters, transitional waters and groundwater. One of the main requirements of the Water Framework Directive is the development of "River Basin Management Plans" and the designation of a competent authority for each river basin district (RBD). This EU Directive was transposed into Irish law in 2003 and Aims to prevent any deterioration in the status of any waters and to achieve at least "good status" in all waters by 2015. Most Notably the Shannon River Basin	SEA objectives (SEOs) have been developed and are included in the ER to ensure that sustainable development including water resources and likely significant effects on the environment are addressed during the SEA process in accordance with higher level plans and policies.	No significant cumulative or in combination effects perceived at this Plan level stage.
SEA – Directive (2001/42/EC) - Assessment of the effects	This Directive requires plan-makers to carry out an assessment of the likely significant environmental effects of implementing a plan or programme before the plan or	A full SEA as required under the Planning and Development (Strategic Environmental	No significant cumulative or in combination effects perceived at this Plan level

Policy, Plan, Programme or Project	Summary and likely influence & links/relationship to Proposed Variation of Limerick County Development Plan 2010-2016	Relevant Influence on SEA process	Is there a risk from the proposed Variation of significant 'in combination' effects with this policy/plan/ programme/project?
of certain plans and programmes on the Environment 2001	<p>programme is adopted. There are two statutory instruments which transposed the SEA Directive into Irish Law:</p> <ul style="list-style-type: none"> European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004, S.I. No. 435 of 2004 <p>Planning and Development (Strategic Environmental Assessment) Regulations 2004, S.I. No. 436 of 2004.</p> <p>Under the SEA Directive a Variation to the development plan requires an SEA. The development plan must take into account protection of the environment and the integration of the development plan into the sustainable planning of the country as a whole.</p>	Assessment) Regulations 2004, S.I. No. 436 of 2004 (as amended 2011) has been completed for the Proposed Variation.	stage.
Environmental Impact Assessment Directive 2011/92/EU (as amended by 2014/52/EU, 2011)	Environmental Impact Assessment Directive 2011/92/EU (amended by Directive 2014/52/EU) requires Member States to carry out Environmental Impact Assessments (EIA) of certain public and private projects, before they are authorised, where it is believed that the projects are likely to have a significant impact on the environment.	Further detailed Environmental Impact Assessment will be carried out at project level should the Proposed Variation be carried forward.	No significant cumulative or in combination effects perceived at this Plan level stage.
Floods Directive 2007	The Directive requires that the PFRA, flood maps and flood risk management plans are prepared in cooperation and coordination with neighbouring states in cross-border river basins, and with the implementation of the Water Framework Directive. The Directive also requires that the PFRA and flood maps are published, and that public and stakeholder consultation and engagement is undertaken in the preparation of the flood risk management plans. Flood risk management plan for	A Strategic Flood Risk Assessment (SFRA) has been undertaken on the proposed Variation to the Plan. The results from the SFRA have informed the SEA ER. Mitigation measures were required and introduced as a as part of the wording of the Variation and assessed as part of	No significant cumulative or in combination effects perceived at this Plan level stage.

Policy, Plan, Programme or Project	Summary and likely influence & links/relationship to Proposed Variation of Limerick County Development Plan 2010-2016	Relevant Influence on SEA process	Is there a risk from the proposed Variation of significant 'in combination' effects with this policy/plan/ programme/project?
	Shannon and tributaries including Groody and Mulkear / Shannon Estuary for Limerick City.	the SEA process.	
EU Directive on the Conservation of Natural Habitats and of Wild Flora and Fauna 1992	<p>The main aim of the Directive is to promote the maintenance of biodiversity by requiring Member States to take measures to maintain, protect or restore natural habitats, animal and plant species to a favourable conservation status, introducing robust protection for those habitats and species of European importance.</p> <p>The Directive provides for a network of protected sites known as The Natura 2000 network, which limits the extent and nature of development which may have a detrimental effect on the flora or fauna identified therein. Animals and plant species that are in need of strict protection are listed in Annexes to the Directive. The Habitats Directive is considered the most important EU initiative to support National and International biodiversity.</p>	<p>SEOs have been included in the ER which cover the issues in relation to the protection of designated sites, habitats and species, non-designated sites, habitats and species, aquatic habitats. Invasive species are dealt with as part of the Natura Impact Report. Specific mitigation measure are included to ensure no adverse impact on the site integrity of the Lower River Shannon SAC.</p>	<p>No significant cumulative or in combination effects perceived at this Plan level stage.</p>
EU Directive on the Conservation of Wild Birds 2009	<p>The Council Directive on the Conservation of Wild Birds (known as the Birds Directive) (2009/147/EC) provides a common framework for the conservation of naturally occurring species of wild birds and their habitats throughout the EU. It obligates EU states to preserve, maintain and re-establish sufficient areas in order to safeguard the habitats of listed migratory and wetland Species in order to ensure their survival and reproduction in their area of distribution. The most suitable areas for these species are classified as Special Protection Areas (SPAs) under the Natura 2000 network. Ireland is obliged to "take appropriate steps to avoid pollution or deterioration of habitats or any Disturbances affecting the birds" The Birds Directive also requires the avoidance of pollution or deterioration of habitats generally outside</p>	<p>SEOs have been included in the ER to ensure that any significant effects on the environment are identified. Where these occur the NIR and ER presents appropriate mitigation measures as part of the SEA process and proposed wording of the Variation.</p>	<p>No significant cumulative or in combination effects perceived at this Plan level stage.</p>

Policy, Plan, Programme or Project	Summary and likely influence & links/relationship to Proposed Variation of Limerick County Development Plan 2010-2016	Relevant Influence on SEA process	Is there a risk from the proposed Variation of significant 'in combination' effects with this policy/plan/programme/project?
	specifically protected sites.		
European Communities Quality of Salmonid Waters Regulations 1998	European Communities (Quality of Salmonid Waters) Regulations 1998 (S.I. No. 293 of 1998) supports and protects designated Salmonid Waters, which are capable of supporting salmon (<i>Salmo salar</i>), trout (<i>Salmo trutta</i>), char (<i>Salvelinus</i>) and whitefish (<i>Coregonus</i>).	SEOs have been included in the ER to ensure that any significant effects on the environment are identified.	No significant cumulative or in combination effects perceived at this Plan level stage.
EU Drinking Water Directive 1988	The European Communities (Drinking Water) Regulations 2007 give formal effect in Irish law to the EU Drinking Water Directive of 1988. They establish strict quality standards for water used for human consumption. They set out the maximum and guideline values for various different physical, bacteriological and chemical contaminants. Not all of these parameters are monitored on a regular basis. A group of 8 to 14 contaminants form the basis of water quality testing in Ireland.	SEOs have been included in the ER to ensure that any significant effects on the environment are identified. Where these occur the ER presents appropriate mitigation measures.	No significant cumulative or in combination effects perceived at this Plan level stage.
EU Sewage Sludge Directive 1991	The Sewage Sludge Directive 86/278/EEC seeks to encourage the use of sewage sludge in agriculture and to regulate its use in such a way as to prevent harmful effects on soil, vegetation, animals and man	SEOs have been included in the ER to ensure that likely significant effects on the environment are identified and assessed under material assets.	No significant cumulative or in combination effects perceived at this Plan level stage.
EU Urban Waste Water Treatment Directive 1991	Directive 91/271/EEC aims to protect surface inland waters by regulating collection and treatment of urban waste water and discharge of certain biodegradable industrial waste water (basically from the agro-food industry). The Directive sets targets dates for the provision of specified level of collection and treatment facilities. In particular it requires, for all agglomerations above 2,000 population equivalents, sewerage systems and secondary, i.e. biological waste water treatments.		No significant cumulative or in combination effects perceived at this Plan level stage.
EU Groundwater Directive (2006/118/EC) 2006	Groundwater Directive 2006/118/EC requires Member States to apply a system of investigation and authorisation to waste disposal and other activities in	SEA objectives (SEOs) have been developed and are included in the ER to ensure that sustainable	No significant cumulative or in combination effects perceived at this Plan level

Policy, Plan, Programme or Project	Summary and likely influence & links/relationship to Proposed Variation of Limerick County Development Plan 2010-2016	Relevant Influence on SEA process	Is there a risk from the proposed Variation of significant 'in combination' effects with this policy/plan/programme/project?
	order to ensure that groundwater is not polluted by dangerous substances.	development and likely significant effects on the environment are addressed during the SEA process in accordance with existing plans and policies incorporated into the LDGP.	stage.
EU Surface Water Directive (75/440/EEC) 1975	The Directive aims to protect public health by ensuring that surface water abstracted for use as drinking water reaches certain quality standards before it is supplied to the public. The Directive lays down nonbinding 'guide' values and binding 'imperative' values and requires Member States to monitor the quality of surface waters from which drinking water is abstracted and to take measures to ensure that it complies with the minimum quality standards.	SEA objectives (SEOs) have been developed and are included in the ER to ensure that sustainable development and likely significant effects on the environment are addressed during the SEA process in accordance with existing plans and policies incorporated into the LDGP.	No significant cumulative or in combination effects perceived at this Plan level stage.
Integrated Pollution Prevention and Control (IPPC) Licensing 2004	IPC licences aim to prevent or reduce emissions to air, water and land, reduce waste and use energy/resources efficiently. An IPC licence is a single integrated licence which covers all emissions from the facility and its environmental management. All related operations that the licence holder carries in connection with the activity are controlled by this licence. Before a licence is granted, you must satisfy the Environmental Protection Agency that emissions from the activity do not cause a significant adverse environmental impact.	SEA objectives (SEOs) have been developed and are included in the ER to ensure that sustainable development and likely significant effects on the environment are addressed during the SEA process in accordance with existing plans and policies incorporated into the LDGP.	No significant cumulative or in combination effects perceived at this Plan level stage.
EU Bathing Water Directive (76/160/EEC) S.I. No. 155 of 1992, S.I. No. 230 of 1996	Directive 76/160/EEC concerns the quality of bathing water, with the exception of water intended for therapeutic purposes and water used in swimming pools. It lays down the minimum quality criteria to be met by	SEA objectives (SEOs) have been developed and are included in the ER to ensure that sustainable development and likely significant	No significant cumulative or in combination effects perceived at this Plan level stage.

Policy, Plan, Programme or Project	Summary and likely influence & links/relationship to Proposed Variation of Limerick County Development Plan 2010-2016	Relevant Influence on SEA process	Is there a risk from the proposed Variation of significant 'in combination' effects with this policy/plan/ programme/project?
	bathing water.	effects on the environment are addressed during the SEA process in accordance with existing plans and policies incorporated into the LDGP.	
EU Nitrates Directive (91/676/EEC) 1991	The Council Directive concerning the Protection of Waters against Pollution caused by Nitrates from Agricultural Sources (The Nitrates Directive) (91/676/EEC) was adopted in 1991. Its aim is to reduce water pollution and protect all aquatic ecosystems from nitrate pollution caused by agricultural sources, (livestock effluents and the excessive use of fertilisers) and prevent further such pollution, with the primary emphasis being on the management of livestock manures and other fertiliser.	SEA objectives (SEOs) have been developed and are included in the ER to ensure that sustainable development and likely significant effects on the environment are addressed during the SEA process in accordance with existing plans and policies incorporated into the LDGP.	No significant cumulative or in combination effects perceived at this Plan level stage.
European Convention on the Protection of the Archaeological Heritage, 1992 (The Valletta Convention)	The aim of the Convention is to 'protect the archaeological heritage as a source of the European collective memory and as an instrument for historical and scientific study'. It requires that appropriate consideration be given to archaeological issues at all stages of the planning and development process.	SEA objectives (SEOs) have been developed and are included in the ER to ensure that sustainable development and likely significant effects on the environment are addressed during the SEA process in accordance with existing plans and policies incorporated into the LDGP.	No significant cumulative or in combination effects perceived at this Plan level stage.
Air Quality Directives 1998 (as amended)	It is the objective of new EU Directive to take a new approach to the monitoring, assessment and management of air quality in recent years. The Objectives include avoiding, preventing and reducing the impact of harmful air emissions on human health and the environment. It is likely that the implementation of the	SEA objectives (SEOs) have been developed and are included in the ER to ensure that sustainable development and likely significant effects on the environment are addressed during the SEA process	No significant cumulative or in combination effects perceived at this Plan level stage.

Policy, Plan, Programme or Project	Summary and likely influence & links/relationship to Proposed Variation of Limerick County Development Plan 2010-2016	Relevant Influence on SEA process	Is there a risk from the proposed Variation of significant 'in combination' effects with this policy/plan/programme/project?
	<p>Plan, due to a renewed focus on sustainable development, sustainable transportation and climate change initiatives driven by new European Legislation will have long-term benefits with respect air quality and climate change. However, any localised potential for adverse effects will be managed through the appropriate procedures and controls such as EIA, IPC Licensing etc.</p> <p>A detailed investigation into the likely significant impacts of the LNDR was carried out as part of the Route Selection Report. This report concluded that there would be no significant impact on the quality of air in the area as a result of the new route.</p>	<p>in accordance with existing plans and policies incorporated into the LDCP.</p>	
Environmental Noise Directive 2002	<p>The Environmental Noise Directive (2002/49/EC) aims to put in place a European wide system for identifying sources of Environmental noise, informing the public about relevant noise data and taking the necessary steps to avoid, prevent or reduce noise exposure. Under the regulations, Strategic Noise Maps and Noise Action Plans were required to be prepared in respect of noise from the following sources: Sections of rail route above a flow threshold of 30,000 train passages per year.</p> <p>Major airports with more than 50,000 movements per year -a movement being a takeoff or landing. Sections of major roads with a flow threshold of 3 million vehicles per annum. Agglomerations with more than 100,000 inhabitants. As no airports or rail routes were above the threshold and as the agglomeration of Limerick is below the threshold, only noise from major roads is considered in this plan.</p> <p>Noise Action Plan has been developed for Limerick and consulted during the SEA process. Noise will be</p>	<p>SEA objectives (SEOs) have been developed and are included in the ER to ensure that sustainable development and likely significant effects on the environment are addressed during the SEA process in accordance with existing plans and policies incorporated into the LDCP.</p>	<p>No significant cumulative or in combination effects perceived at this Plan level stage.</p>

Policy, Plan, Programme or Project	Summary and likely influence & links/relationship to Proposed Variation of Limerick County Development Plan 2010-2016	Relevant Influence on SEA process	Is there a risk from the proposed Variation of significant 'in combination' effects with this policy/plan/programme/project?
	examined in greater detail at project level stage (EIA). Any mitigation required would be more appropriately addressed at this stage.		
Climate Change Programme (ECCP II)	Objectives seek to develop the necessary elements of a strategy to implement the Kyoto protocol. No likely significant impacts are expected in relation to the environmental topic of air quality or climate change at plan stage.	SEOs have been developed and are included in the ER to ensure that sustainable development and likely significant effects on the environment are addressed during the SEA process in accordance with existing plans and policies incorporated into the LDCP.	No significant cumulative or in combination effects perceived at this Plan level stage.
Kyoto Protocol, 2005	The Kyoto Protocol is an agreement made under the United Nations' Framework Convention on Climate Change. It was decided in December 1997 and entered into force on 16th February 2005. Its objective is to substantially reduce greenhouse gas emissions in response to climate change. Developed countries, the so-called Annex 1 states, must reduce their greenhouse gas emissions by a collective average of 5% below their 1990 levels by 2012. Following the Conference of Parties to the Climate Change Convention (COP) meeting in Copenhagen, 2009, the EU revised its commitment to reducing greenhouse gases by increasing the target to 20% reduction on 1990 levels by 2020	SEOs have been included in the SEA ER to ensure that likely significant effects on the environment are identified. Where these occur the ER presents appropriate mitigation measures in accordance with higher level plans and policies.	No significant cumulative or in combination effects perceived at this Plan level stage.
European Landscape Convention, 2000	Landscape Character Assessment is a process which describes, maps and classifies landscapes Objectively. It can be a tool to aid decision making and management or simply to promote particular attractions. Defining landscape character enables an understanding to be formed of the inherent value and importance of individual	SEOs have been included in the SEA ER to ensure that likely significant effects on the environment are identified. Where these occur the ER presents appropriate mitigation measures in	No significant cumulative or in combination effects perceived at this Plan level stage.

Policy, Plan, Programme or Project	Summary and likely influence & links/relationship to Proposed Variation of Limerick County Development Plan 2010-2016	Relevant Influence on SEA process	Is there a risk from the proposed Variation of significant 'in combination' effects with this policy/plan/ programme/project?
	landscape elements and the processes that may alter landscape character in the future. The cultural and ecological aspects of the landscape cannot be divorced from its physical and visual characteristics so all these elements are considered.	accordance with higher level plans and policies.	
Strategic Plan for Biodiversity 2011-2020	This Plan sets out a framework for action by all countries and stakeholders to safeguard biodiversity and the benefits it provides to people. To ensure this, pressures on biodiversity are reduced, ecosystems are restored, biological resources are sustainably used and benefits arising out of utilization of genetic resources are shared in a fair and equitable manner; adequate financial resources are provided, capacities are enhanced, biodiversity issues and values mainstreamed, appropriate policies are effectively implemented, and decision-making is based on sound science and the precautionary approach."	SEOs have been included in the ER to ensure that biodiversity is examined in the ER and as part of the Habitats Directive Assessment. Further assessment will be undertaken at project level stage during the EIA and Habitats Directive Assessment.	No significant cumulative or in combination effects perceived at this Plan level stage.
Habitats Directive (92/43/EEC)	<p>The Habitats Directive ensures the conservation of a wide range of rare, threatened or endemic animal and plant species. Some 200 rare and characteristic habitat types are also targeted for conservation in their own right.</p> <p>An NIR was prepared in respect of the proposed Variation No. 5 to the LCDP. The NIR determined that the proposed variation, either alone or in combination with other plans and projects, would be likely to have</p>	The results from the NIR informed the SEA assessment process particularly in relation to biodiversity SEO and interactions across all other SEOs. Mitigation measures were devised as part of the NIR process and are incorporated into the proposed wording and the SEA process.	No significant cumulative or in combination effects perceived at this Plan level stage.

Policy, Plan, Programme or Project	Summary and likely influence & links/relationship to Proposed Variation of Limerick County Development Plan 2010-2016	Relevant Influence on SEA process	Is there a risk from the proposed Variation of significant 'in combination' effects with this policy/plan/programme/project?
	significant effects on one European site, notably the Lower River Shannon SAC. It determined that subject to the successful and proper implementation of the Policies and Objectives contained within the LCDP itself and mitigation measures detailed in Section 11 of this NIR, there will be no adverse effects on the integrity of any European site for nature conservation as a result of the adoption of the proposed Variation No. 5 to the LCDP, either individually or in combination with other plans and projects, and that no reasonable scientific doubt remains in this regard.		
National			
National Planning Policy Framework (NPPF)	<p>A new National Planning Framework is currently being developed to succeed the National Spatial Strategy. It will provide a framework for national planning, pulling together relevant Government policies and investment on national and regional development. It will have a focus on economic development and investment in housing, water services, transport, communications, energy, health and education infrastructure.</p> <p>The roles of regional cities, including Cork, Limerick/Shannon and Galway and Waterford will feature as part of the NPPF.</p>	The SEOs have been integrated into the SEA process to ensure the sustainable development and future progression of any changes to the Plan including the Proposed Variation is considered in accordance with existing higher level plans and policies.	Once the Plan is finalised it will be subject to SEA in its own right. However, no significant cumulative or in combination effects perceived at this Plan level stage.
National Spatial Strategy 2002-2020	The National Spatial Strategy (NSS) is a 20 year strategic planning framework designed to achieve a better balance of social, economic, physical development and population growth in Ireland. The NSS is based upon the European Spatial Development Perspective (ESDP). Its focus is on people, on places and on building communities. It is hoped that it will deliver more balanced	SEOs have been included in the ER to ensure the sustainable development is incorporated into the SEA and Proposed Variation process.	No significant cumulative or in combination effects perceived at this Plan level stage.

Policy, Plan, Programme or Project	Summary and likely influence & links/relationship to Proposed Variation of Limerick County Development Plan 2010-2016	Relevant Influence on SEA process	Is there a risk from the proposed Variation of significant 'in combination' effects with this policy/plan/programme/project?
	<p>Regional development, hence a reduction in disparities between and within regions, thereby facilitating all areas of country contributing to their full potential. In order to further these aims, the NSS sets down a series of policies in relation to: employment, housing, rural development, access to services, and quality of life/environmental quality.</p> <p>One of the key aims of the NSS is to deliver more balanced regional development. The Proposed Variation seeks to connect various areas and provide access for people to increased educational and employment opportunities. Limerick/Shannon has been designated as a gateway under the existing NSS. Ennis has been designated as a hub under the NSS.</p>		
Delivering a Sustainable Energy Future for Ireland - The Energy Policy Framework 2007-2020	<p>This White Paper sets out the Government's Energy Policy Framework 2007-2020 to deliver a sustainable energy future for Ireland. It is set firmly in the global and European context which has put energy security and climate change among the Most urgent International challenges. The White Paper sets out the actions to be taken in response to the energy challenges facing Ireland. The objective is to Deliver a sustainable energy future, starting now, with a time horizon of 2020 but also looking beyond that.</p>	<p>SEOs have been included in the SEA ER to ensure that likely significant effects on the environment are identified. Where these occur the ER presents appropriate mitigation measures.</p>	<p>No significant cumulative or in combination effects perceived at this Plan level stage.</p>
National Development Plan 2007-2013	<p>The National Development Plan and Community Support Framework (NDP/CSF) 2000-2006 made a major contribution to the State's strong economic performance over the plan period. The completion of many of these programmes has both improved the social infrastructure and encouraged Regional development. NDP 2000 – 2006 invested over €54 billion up to December 2006</p>	<p>SEOs have been included in the SEA ER to ensure that likely significant effects on the environment are identified. Where these occur the ER presents appropriate mitigation measures.</p>	<p>No significant cumulative or in combination effects perceived at this Plan level stage.</p>

Policy, Plan, Programme or Project	Summary and likely influence & links/relationship to Proposed Variation of Limerick County Development Plan 2010-2016	Relevant Influence on SEA process	Is there a risk from the proposed Variation of significant 'in combination' effects with this policy/plan/programme/project?
	<p>throughout the country benefiting education, roads, public transport, rural development, industry, water and waste services, social housing, childcare and local development.</p> <p>The National Development Plan emphasises the importance of a good transport infrastructure as being crucial to the promotion of national competitiveness and sustainable development and that this can be achieved by further investment in roads to improve traffic flows, reduce congestion and thus result in lower rates of traffic emissions.</p>		
Urban Regeneration and Housing Act 2015	There are two main strands to the legislation. Firstly, a new vacant site levy on housing or regeneration lands suitable for housing but not coming forward for development and, secondly, measures to streamline housing delivery including revisions to social housing and development contributions requirements.	The SEOs have been integrated into the SEA process to ensure the sustainable development and future progression of any changes to the Plan including the Proposed Variation is considered.	No significant cumulative or in combination effects perceived at this Plan level stage.
National Heritage Plan 2002	The core objective of the National Heritage Plan (2002) is to protect our heritage. In this regard the 'polluter pays' principle and the precautionary principle are operable. Specifically in regard to archaeological heritage the 'Framework and Principles for the Protection of the Archaeological Heritage' document (1999). A key objective of the National Heritage Plan is to promote the role that local communities play in protecting and enhancing Local Heritage. This is achieved through the preparation and adoption of Local Heritage Plans by Local Authorities.	SEOs have been included in the ER to ensure the protection and conservation of archaeology, heritage items to ensure that likely significant effects on the environment are identified. Where these occur the ER presents appropriate mitigation measures.	No significant cumulative or in combination effects perceived at this Plan level stage.
Framework and Principles for the Protection of the Archaeological Heritage – Published by Dúchas The	The document describes the administrative framework for the protection of the archaeological heritage by the then Department of Arts, Heritage, Gaeltacht and the Islands and draws attention to relevant international	SEOs have been included in the SEA ER to ensure that likely significant effects on the environment are identified	No significant cumulative or in combination effects perceived at this Plan level stage.

Policy, Plan, Programme or Project	Summary and likely influence & links/relationship to Proposed Variation of Limerick County Development Plan 2010-2016	Relevant Influence on SEA process	Is there a risk from the proposed Variation of significant 'in combination' effects with this policy/plan/ programme/project?
Heritage Service).	conventions which provide a basis for policy development. Part III sets out principles for the protection of the archaeological heritage. Part IV summarises the provisions of the National Monuments Acts 1930 to 1994 and the National Cultural Institutions Act 1997 and sets out policies on their use. It includes policy in relation to the archaeological assessment of large-scale developments on sites where there are no previously recorded monuments.	including those on archaeology. Where these occur the ER presents appropriate mitigation measures.	
Smarter Travel – A Sustainable Transport Future – A New Transport Policy for Ireland 2009-2020	<p>Recognises the vital importance of continued investment in transport to ensure an efficient economy and continued social development as well as identifying the necessary steps to ensure that people choose more sustainable transport modes such as walking, cycling and public transport. The policy is a response to the fact that continued growth in demand for road transport is not sustainable, bearing in mind recent projections that our population is predicted to grow to around 5.1 million by 2020: it will lead to further congestion, further local air pollution, contribute to global warming, and result in negative impacts to health through promoting increasingly sedentary lifestyles.</p> <p>The Proposed Variation will seek to improve connectivity between different areas of County Clare, County Limerick and Limerick City. The inclusion of cycle lanes on LNDR will increase connectivity and access from Limerick City to the surrounding suburbs and countryside encouraging a modal shift to more sustainable modes of transport in the future.</p>	SEOs have been included in the SEA ER to ensure that likely significant effects on the environment are identified including those on material assets. Where these occur the ER presents appropriate mitigation measures.	No significant cumulative or in combination effects perceived at this Plan level stage.
National CFRAMS Programme (DECLG)	CFRAM is Catchment Flood Risk Assessment and Management. The national CFRAM programme	SEOs have been included in the SEA ER to ensure that likely	No significant cumulative or in combination effects

Policy, Plan, Programme or Project	Summary and likely influence & links/relationship to Proposed Variation of Limerick County Development Plan 2010-2016	Relevant Influence on SEA process	Is there a risk from the proposed Variation of significant 'in combination' effects with this policy/plan/ programme/project?
	<p>commenced in Ireland in 2011. The CFRAM Programme is central to the medium to long-term strategy for the reduction and management of flood risk in Ireland.</p> <p>The Water Framework Directive is being implemented in parallel to the National CFRAM Programme and the EU 'Floods' Directive. The implementation of the two directives is being coordinated to promote integrated river basin management.</p>	<p>significant effects on the environment are identified including those on flood risk. Where these occur the ER and specifically the SFRA presents appropriate mitigation measures.</p>	<p>perceived at this Plan level stage.</p>
National Biodiversity Plan 2002	<p>The National Biodiversity Plan (NBP) 2002, prepared in response to the UN Convention of Biological Diversity, comprises 15 themes and sectors setting out 91 actions to halt the current and continuing loss of plant species, as well as the vegetation and habitats they compose by 2010. The overall objective of the Plan is to secure the conservation, including where possible the enhancement, and sustainable use of biological diversity in Ireland and to contribute to conservation and sustainable use of biodiversity globally.</p>	<p>SEOs have been included in the SEA ER to ensure that likely significant effects on the environment are identified including those on biodiversity. Where these occur the ER presents appropriate mitigation measures.</p>	<p>No significant cumulative or in combination effects perceived at this Plan level stage.</p>
National Cycle Policy Framework 2009-2020	<p>Ireland's first National Cycle Policy Framework (NCPF) was launched in April 2009. It outlines 19 specific objectives, and details the 109 individual but integrated actions, aimed at ensuring that a cycling culture is developed in Ireland to the extent that, by 2020, 10% of all journeys will be by bike. It proposes a comprehensive package of planning/infrastructure and communication/education measures, and emphasises the need for stakeholder participation and adequate funding of the required initiatives. The NCPF requires that cycle-friendly planning principles be incorporated in all national, regional, local and sub-local plans</p> <p>The proposed Variation includes walking and cycling infrastructure as part of the LNDR.</p>	<p>SEOs have been included in the SEA ER to ensure that likely significant effects on the environment are identified including those on material assets. Where these occur the ER presents appropriate mitigation measures.</p>	<p>No significant cumulative or in combination effects perceived at this Plan level stage.</p>

Policy, Plan, Programme or Project	Summary and likely influence & links/relationship to Proposed Variation of Limerick County Development Plan 2010-2016	Relevant Influence on SEA process	Is there a risk from the proposed Variation of significant 'in combination' effects with this policy/plan/programme/project?
The Planning System and Flood Risk Management. Guidelines for Planning Authorities (2009)	In September 2009 the DoEHLG in conjunction with the Office of Public Works (OPW) issued consultation guidelines for Planning Authorities on 'The Planning System and Flood Risk Management'. The new guidelines focus on a number of areas. First, the likelihood that the frequency, pattern and severity of flooding incidents both in County Limerick and across the State are expected to increase flood risk as a result of climate change. Such patterns are likely to become more common during the lifetime of the Plan and beyond. Secondly, built development can, and most likely has, exacerbated the problems of flooding by accelerating and increasing surface water runoff, altering watercourses and removing Floodplain storage. The principal aim of the Guidelines is that flood risk prevention must now be firmly built into the planning process as a result of the sustained population and Economic growth in Ireland during the course of the previous plan which has resulted in significant additional built development across all areas of the State including County Limerick.	These guidelines have been used when formulating the flood risk assessment of LNDP and the proposed Variation. The results of the SFRA have informed the proposed Variation wording and the SEA ER.	No significant cumulative or in combination effects perceived at this Plan level stage.
Guidelines for Planning Authorities on Sustainable Residential Development in Urban Areas (Cities, Towns & Villages) (2009)	These guidelines focus on creating sustainable communities by incorporating high design standards and providing a co-ordinated approach to the delivery of essential infrastructure and services. The guidelines describe the key planning principles which must feature in Development Plans and local area plans, and which will later act as reference points in the process of the preparation and assessment of planning applications for residential development in urban areas. Planning authorities are urged to ensure that an adopted local area plan is the only effective policy framework within which to consider major development proposals.	The SEA aims to carry out an assessment of the Proposed Variation and the impacts that it may have on the physical structure and population of those living in any of the settlements that may be affected.	No significant cumulative or in combination effects perceived at this Plan level stage.

Policy, Plan, Programme or Project	Summary and likely influence & links/relationship to Proposed Variation of Limerick County Development Plan 2010-2016	Relevant Influence on SEA process	Is there a risk from the proposed Variation of significant 'in combination' effects with this policy/plan/programme/project?
Appropriate Assessment of Plans and Projects in Ireland. Guidelines for Planning Authorities (2009)	This guidance is intended to assist and guide local and planning authorities in the application of Article 6(3) and 6(4) of the Habitats Directive as it relates to their roles, Functions and responsibilities in undertaking Appropriate Assessment (AA) of plans and projects. It explains the concepts, tests and steps involved in the assessment procedure, the provisions of which are the primary mechanism for ensuring the protection of Natura 2000 sites and their conservation objectives when considering whether to authorise or adopt a plan or project. Natura 2000 sites in Ireland are European sites, including Special Protection Areas (SPAs), and Special Areas of Conservation (SACs).	A separate NIR has been completed for this Proposed Variation. The findings of this NIR have been incorporated into the SEA and where necessary mitigation measures have been included.	No significant cumulative or in combination effects perceived at this Plan level stage.
Architectural Heritage Protection - Guidelines for Planning Authorities 2004	<p>These guidelines provide relevant guidance in the context of Part IV of the Planning and Development Act 2000. These guidelines are a response to Section 52 of the Act, which requires that guidelines are issues to Planning Authorities on the need to protect structures of architectural, historical or other importance and on the preservation of the character of Architectural Conservation Areas (ACA). These guidelines include the criteria to be applied when selecting proposed protected structures for inclusion in the Record of Protected Structures (RPS), guidance to planning authorities on declarations and determining planning applications in relation to a protected structure, a proposed protected structure or the exterior of a building within an ACA.</p> <p>A separate publication originally covered issues relating to churches and cathedrals: Architectural heritage protection for Places of Public Worship – Guidelines for Planning Authorities. This has now been included as Chapter 5 of the Architectural Heritage Protection – Guidelines for Planning Authorities.</p>	The SEA Objective for Cultural Heritage takes these issues and designations into account.	No significant cumulative or in combination effects perceived at this Plan level stage.

Policy, Plan, Programme or Project	Summary and likely influence & links/relationship to Proposed Variation of Limerick County Development Plan 2010-2016	Relevant Influence on SEA process	Is there a risk from the proposed Variation of significant 'in combination' effects with this policy/plan/ programme/project?
National Policy on Town Defences 2008	This document sets out national policy for the protection, preservation and conservation of historic urban defences in Ireland. Town defences are "monuments" as defined in the National Monuments Acts 1930-2004 and are protected under the provisions of this legislation.	The SEA Objective for Cultural Heritage takes these issues and designations into account.	No significant cumulative or in combination effects perceived at this Plan level stage.
Noise Regulations, 1994	These Regulations, relating to the 1992 EPA Act, simplify and strengthen the procedures for dealing with noise nuisance, and give Local Authorities power to take action when they consider that it is necessary to do so in order to prevent or limit noise.	SEOs have been included in the SEA ER to ensure that likely significant effects on the environment are identified including those on noise including in population and human health section. Where these occur the ER presents appropriate mitigation.	No significant cumulative or in combination effects perceived at this Plan level stage.
Development Management Guidelines (DoEHLG) 2007	'Development Management Guidelines for Planning Authorities' was published in June 2007, replacing 'Development Control Advice and Guidelines' which was issued in 1982. These guidelines are of relevance to all types of planning applications, including Local Authorities, applicants and their advisers, on the operation of the planning process. They are also intended to promote best practice levels within Planning Authorities. They therefore act as an essential guide to anybody who wishes to interact with the development management (assessment of planning applications), planning system.	SEOs have been included in the SEA ER to ensure that likely significant effects on the environment are identified. Where these occur the ER presents appropriate mitigation.	No significant cumulative or in combination effects perceived at this Plan level stage.
Planning Guidelines on Spatial Planning and National Roads 2012	These guidelines set out planning policy considerations relating to development affecting national primary and secondary roads, including motorways and associated junctions, outside the 50-60 km/h speed limit zones for cities, towns and villages. The guidelines replace the document, Policy and Planning Framework for Roads, published by the	SEOs have been included in the SEA ER to ensure that likely significant effects on the environment are identified including those on material assets. Where these occur the ER presents appropriate mitigation.	No significant cumulative or in combination effects perceived at this Plan level stage.

Policy, Plan, Programme or Project	Summary and likely influence & links/relationship to Proposed Variation of Limerick County Development Plan 2010-2016	Relevant Influence on SEA process	Is there a risk from the proposed Variation of significant 'in combination' effects with this policy/plan/programme/project?
	<p>Department in 1985, supplement other policy guidance on roads related matters in other Ministerial guidelines in relation to retail planning and sustainable rural housing and replace the National Roads Authority policy statement on national roads published in May 2006.</p> <p>The recommendations in these guidelines have been taken on board in the development of the preferred route.</p>		
National Action Plan for Social Inclusion 2007-2016	The Government is committed to a coherent strategy for social inclusion based on the lifecycle approach set out in the National partnership agreement. The new strategic framework will facilitate greater co-ordination and integration of structures and procedures across Government at National and local levels, as well as improved reporting and monitoring mechanisms.	The Proposed Variation seeks to improve social inclusion in the area based on improved connectivity. The SEA assesses the various options through the SEOs which includes promotion of compact settlements.	No significant cumulative or in combination effects perceived at this Plan level stage.
Wildlife (Amendment) Act 2000	The Wildlife (Amendment) Act 2000 supersedes the Wildlife Act 1976 as the principal National legislation provided for the protection of wildlife and the control of activities that may adversely affect wildlife.	SEA Objectives have been included with regards to the protection and conservation of wildlife.	No significant cumulative or in combination effects perceived at this Plan level stage.
Creating a Green Infrastructure for Ireland- Enhancing Natural Capital for Human Wellbeing 2010	Creating a Green Infrastructure for Ireland 2010, commissioned by Comhar Sustainable Development Council (SDC) sets out a broad definition of Green Infrastructure and explores and proposes an approach and a set of principles that should be followed in Green Infrastructure planning. The promotion and development of the 'Green Infrastructure' concept,	The SEA ER addresses the importance of habitat networks and ecological networks.	No significant cumulative or in combination effects perceived at this Plan level stage.
National Climate Change Strategy, 2007-2012	The National Climate Change Strategy 2007-2012 was published in April 2007 and builds on the commitment for sustainable development as set out in Towards 2016 and the National Development Plan 2007-2013. The Strategy provides a framework for the achievement of reductions in greenhouse gas emissions as an essential step in	SEOs have been included in the SEA ER to ensure that likely significant effects on the environment are identified including those on climate change. Where these occur the ER	No significant cumulative or in combination effects perceived at this Plan level stage.

Policy, Plan, Programme or Project	Summary and likely influence & links/relationship to Proposed Variation of Limerick County Development Plan 2010-2016	Relevant Influence on SEA process	Is there a risk from the proposed Variation of significant 'in combination' effects with this policy/plan/programme/project?
	achieving the targets agreed under the Kyoto Protocol. This strategy developed from the 2000 Climate Change Strategy, taking into account the review contained in Ireland's Pathway to Kyoto Compliance (2006). Its purpose is to demonstrate how Ireland is to meet its 2008-2012 Kyoto Commitments and to identify further policy measures needed for the period from 2012 and after 2020. To ensure Ireland reaches its target under the Kyoto Protocol and, building on measures put in place following the publication of the Climate Change Strategy in 2000, the Government has published the National Climate Strategy 2006. This Strategy builds on the commitment to sustainable development, to address climate change and energy issues.	presents appropriate mitigation measures.	
Air Pollution Act 1987	This Act defines air pollution and enables Local Authorities to take measures to prevent or limit pollution.		No significant cumulative or in combination effects perceived at this Plan level stage.
Local Government (Water Pollution) Acts, 1977 and 1990	These Acts and associated regulations set out quality standards for Phosphorus in surface waters, particularly rivers and lakes and makes provisions for the protection of watercourses. The Phosphorus Regulations require that water quality be maintained or improved by reference to the baseline biological quality rating (rivers) or trophic status (lakes) assigned by the EPA.	SEOs have been included in the SEA ER to ensure that likely significant effects on the environment are identified including those on water environment. Where these occur the ER presents appropriate mitigation measures.	No significant cumulative or in combination effects perceived at this Plan level stage.
Water Quality (Dangerous Substances) Regulations 2001	These Regulations give effect to the Dangerous Substances Directive 76/464/EC and the Water Framework Directive 2000/60/EC. They prescribe water quality standards and aim to ensure that, in relation to a substance present, where the existing condition of a water body does not meet a specific standard there shall be no dis-improvement in the condition of the water		No significant cumulative or in combination effects perceived at this Plan level stage.

Policy, Plan, Programme or Project	Summary and likely influence & links/relationship to Proposed Variation of Limerick County Development Plan 2010-2016	Relevant Influence on SEA process	Is there a risk from the proposed Variation of significant 'in combination' effects with this policy/plan/programme/project?
	body.		
National Inventory of Architectural Heritage (NIAH)	The National Inventory of Architectural Heritage (NIAH) is a state initiative under the administration of the Department of the Environment, Heritage and Local Government. The purpose of the NIAH into identify, record, and evaluate the post-1700 architectural heritage of Ireland, uniformly and consistently as an aid in the protection and conservation of the built heritage	SEOs have been included in the SEA ER to ensure that likely significant effects on the environment are identified including those on architectural and archaeological environment. Where these occur the ER presents appropriate mitigation measures to support existing higher level plans and policies and those contained with the existing Plan.	No significant cumulative or in combination effects perceived at this Plan level stage.
Framework and Principles for the Protection of the Archaeological Heritage 1999	This document is intended to set out the basic principles of National policy on the protection of the archaeological heritage. The document has a particular focus on the principles which should apply in respect of development and the archaeological heritage.		No significant cumulative or in combination effects perceived at this Plan level stage.
Landscape and Landscape Assessment Guidelines 2000	The Guidelines favour a method of characterisation which is the discernment of the character of the landscape based initially on land cover – trees, vegetation, settlement, water etc. and landform which results from geological and geomorphologic history and secondly, the value of the landscape is assessed in terms of historical, cultural, religious and other understandings of the landscape. A Landscape Character Assessment allows for a proactive approach to landscape management. It aids the development management process as it gives indicators of development types which would be suited to certain locations using certain design criteria and consequently the character of the landscape remains intact.	A Landscape Character Assessment was developed for County Limerick and included in the County Development Plan. The SEA has taken on board the landscape character areas designated in this document. Landscape SEO ensure that likely significant effects on the environment are identified. Where these occur the ER presents appropriate mitigation measures.	No significant cumulative or in combination effects perceived at this Plan level stage.
Draft National Landscape Strategy for Ireland 2014-2024	The National Landscape Strategy will be used to ensure compliance with the European Landscape Convention as ratified by Ireland in 2002 and to establish principles for	As above.	No significant cumulative or in combination effects perceived at this Plan level

Policy, Plan, Programme or Project	Summary and likely influence & links/relationship to Proposed Variation of Limerick County Development Plan 2010-2016	Relevant Influence on SEA process	Is there a risk from the proposed Variation of significant 'in combination' effects with this policy/plan/programme/project?
	protecting and enhancing the landscape while positively managing its change. It will provide a high level policy framework to achieve balance between the management, planning and protection of the landscape by way of supporting actions.		stage.
Building on Recovery; Infrastructure and Capital Investment 2016-2021	The Capital Plan presents the Government's framework for infrastructure investment in Ireland over the period 2016-2021. The Plan prioritises spending on those areas of greatest need as the economy continues its strong recovery.	The proposed Variation is primarily targeted at addressing priority needs in transport, facilitating high quality infrastructure and social cohesion.	No significant cumulative or in combination effects perceived at this Plan level stage.
Sustainable Rural Housing Development Guidelines 2005	The Sustainable Rural Housing Development Guidelines give guidance on putting the National Spatial Strategy policy framework into practice. The guidelines support balanced regional development by providing quality housing in rural areas that meets the needs of rural communities, strengthening rural towns and villages, strengthening hub towns and taking account of local circumstances.	SEOs have been included in the SEA ER to ensure that likely significant effects on the environment are identified including those on water environment. Where these occur the ER presents appropriate mitigation measures.	No significant cumulative or in combination effects perceived at this Plan level stage.
Planning and Development Act, 2000 (as amended) Planning and Development Regulation 2001 (as amended)	The Planning & Development Act establishes a hierarchy in relation to planning. It governs the making of the national, regional and county level Plans including variations to the Development Plan. The County Development Plan represents the strategic level planning and will inform the relevant development plan together with other local level planning strategies.	The Variation process has been undertaken in line with The Act and Regulations (as amended).	No significant cumulative or in combination effects perceived at this Plan level stage.

Design Manual for Urban Roads and Streets (2013)	The DMURS present a series of principles, approaches and standards that are necessary to achieve balanced, best practice design outcomes with regard to street networks and individual streets. It does so by presenting these in a structured format, ranging from macro level to micro level considerations.	DMURS will be implemented in design stage at project level.	No significant cumulative or in combination effects perceived at this Plan level stage.
Regional			
Shannon River Basin Management Plan (2009-2015) (For the 2nd Cycle, 2015-2021 the Eastern, South Eastern, South Western, Western and Shannon River Basin Districts will be merged to form one national River Basin District).	<p>This River Basin Management Plan for the Shannon International River Basin District, covering the period 2009 to 2015, aims to protect all waters within the district and, where necessary, improve waters and achieve sustainable water use. Waters include rivers, canals, lakes, reservoirs, groundwater's, protected areas (including wetlands and other water-dependent ecosystems), estuaries (transitional) and coastal waters. In accordance with the EU Water Framework Directive, Ireland is committed to manage all waters through a catchment based process, and the River Basin Management Plan is the Mechanism for achieving this.</p> <p>The overriding purpose of this plan is to achieve 'good ecological status' of all waters by 2027 at the latest in accordance with the EU Water Framework Directive. The plan identifies bodies of water that do not meet satisfactory standards and proposes a 'programme of measures' to improve this status. The implementation of this plan will result in the long-term improvement of water quality (as well as addressing artificial modifications to the river and barriers to fish passage) and consequently the conservation status of SAC's qualifying interests.</p>	SEA objectives (SEOs) have been developed and are included in the ER to ensure that sustainable development including water resources and likely significant effects on the environment are addressed during the SEA process.	No significant cumulative or in combination effects perceived at this Plan level stage.

<p>Limerick/Clare Joint Housing Strategy 2010-2017</p>	<p>Part V of the Planning and Development Act 2000 places an onus on all Local Authorities to prepare a Housing Strategy for their areas. The Housing Strategy provides for housing for the existing and projected future populations of the development plan area in accordance with the principles of proper planning and sustainable development and aims to provide an equitable level of social and affordable housing. The Planning Authority must ensure that sufficient and suitable land is zoned to meet the requirements of the Housing Strategy and that a scarcity of such land does not occur at any time during the period of the Plan.</p>	<p>SEA objectives (SEOs) have been developed and are included in the ER to ensure that sustainable development and likely significant effects on the environment are addressed during the SEA process.</p>	<p>No significant cumulative or in combination effects perceived at this Plan level stage.</p>
<p>Mid-West Regional Planning Guidelines 2010-2022</p>	<p>The Mid-West Regional Planning Guidelines (MWRPGs) 2010-2022 give effect, at a Regional level, to the National Planning Framework put forward in the National Spatial Strategy (NSS) and National Development Plan (NDP).</p> <p>This Regional guidance has influenced the development of the settlement strategy for County Limerick. Impacts on the settlements that may be impacted by the Proposed Variation have been assessed in the SEA ER and where necessary mitigation measures have been included.</p>	<p>SEA objectives (SEOs) have been developed and are included in the ER to ensure that sustainable development and likely significant effects on the environment are addressed during the SEA process.</p>	<p>No significant cumulative or in combination effects perceived at this Plan level stage.</p>

<p>Mid-West Area Strategic Plan (MWASP) 2012-2030</p>	<p>A strategic Planning, Land Use and Transportation Strategy for the Mid-West region has been developed which includes the County Councils of Clare, Limerick, North Tipperary and Limerick City Council. MWASP provides for a comprehensive integrated plan for Land Use Planning and Transportation in the Mid-West Region up to 2030.</p> <p>The Strategy states that the RPGs, Mid-West Task Force Report and the Forfás report highlighted the need to prioritise the completion of certain road projects including the LNDR and “To take a cohesive approach improving infrastructure in terms of transport, business parks and broadband.”</p> <p>It identifies the LNDR as a strategic road national and non-national road schemes proposed within the Mid-West region and includes a recommendation for Limerick and Clare to:</p> <ul style="list-style-type: none"> • “Provide Northern Distributor Road linking the M7 to M18 and northern suburbs;” <p>It goes on to state:</p> <ul style="list-style-type: none"> • “A Limerick Northern Distributor Road to the north of Limerick City opening access to the regeneration areas, linking the N7 and M18 to further protect the City Centre, to enhance access to the University of Limerick and its associated knowledge-based industrial zone.” <p>This MWASP provides an evidence base which informs transport and planning policy and infrastructure investment decisions in the Region to 2030.</p>	<p>SEA objectives (SEOs) have been developed and are included in the ER to ensure that sustainable development and likely significant effects on the environment are addressed during the SEA process.</p>	<p>No significant cumulative or in combination effects perceived at this Plan level stage.</p>
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Mid-West Regional Retail Strategy 2010-2016	The general approach is to improve provision to support the existing role of the towns and the level of service they provide to their local catchment populations, including where relevant their tourist and visitor functions.	SEA objectives (SEOs) have been developed and are included in the ER to ensure that sustainable development and likely significant effects on the environment are addressed during the SEA process in accordance with existing plans and policies in the Region.	No significant cumulative or in combination effects perceived at this Plan level stage.
Clare, Limerick City and County Housing Strategy 2010	Limerick City Council with Limerick and Clare County Councils has carried out review of the Housing Strategy in 2010. It has examined the need for coordinated housing policies between the local authorities to support the regeneration project and the populations targets set out the RPGs.	SEOs have been included in the SEA ER to ensure that likely significant effects on the environment are identified including those on water environment. Where these occur the ER presents appropriate mitigation measures.	No significant cumulative or in combination effects perceived at this Plan level stage.
Shannon Integrated Framework Plan (SIFP)	Variation No. 3 of the Limerick County Development Plan involved making changes to policies and objectives of to the Limerick County Development Plan 2011-2017 to incorporate the Strategic Integrated Framework Plan (SIFP) for the Shannon Estuary and to zone lands for marine-related industry. The SIFP is included in the development plan as a new policies and objectives and also as new volume of the Plan (Volume 7).	SEA objectives (SEOs) have been developed and are included in the ER to ensure that sustainable development and likely significant effects on the environment are addressed during the SEA process in accordance with existing plans and policies incorporated into the LDCP which include those of the SIFP.	No significant cumulative or in combination effects perceived at this Plan level stage.

Southern Region Waste Management Plan 2015-2021	The regional plan provides the framework for waste management for the next six years and sets out a range of policies and actions in order to meet the specified mandatory and performance targets. Most importantly the plan seeks to assist and support the community and local business to develop resource efficiency and waste prevention initiatives.	SEOs have been developed and are included in the ER to ensure that sustainable development and likely significant effects on the environment are addressed during the SEA process in accordance with existing plans and policies incorporated into the LDGP.	No significant cumulative or in combination effects perceived at this Plan level stage.
Local			
Variation No. 6 of Limerick City	<p>Proposed Local Objectives for Regeneration Areas and Location in the Limerick Regeneration Framework Implementation Plan (LRFIP) which has been subject to a separate SEA, AA & SFRA. Of most relevance to the Northern Distributor Road is the Moyross Framework Strategy which includes:</p> <p><i>"To complete the northern distributor road and to support the construction of the Coonagh - Knockalisheen bypass, providing a new western entrance to Moyross."</i></p> <p>The City Development Plan already contains a number of strategic transport objectives for the city including objectives which will impact on the regeneration areas: Policy TR5 Work with the Department of Transport, the National Roads Authority, Clare County Council and Limerick County Council to provide a northern distributor road for Limerick City with facilities for car based, freight, public transport, cycling and pedestrian traffic.</p> <p>Specific objectives for Moyross include seeking the completion of the northern distributor road and to support the construction of the Coonagh - Knockalisheen bypass, providing a new western entrance to Moyross.</p>	SEA objectives (SEOs) have been developed and are included in the ER to ensure that sustainable development and likely significant effects on the environment are addressed during the SEA process in accordance with existing plans and policies. Where impacts occur the ER presents appropriate mitigation measures.	Cumulative impacts arising from interactions are avoided by integration of spatial plan into the respective County and City Development Plans. Therefore, no significant cumulative or in combination effects perceived at this Plan level stage.
Limerick Regeneration Framework Implementation Plan 2013	It is the vision of the Limerick Regeneration Framework Implementation Plan 2013 to achieve safe and sustainable communities of opportunity where people of	SEOs have been developed and are included in the ER to ensure that sustainable development and	No significant cumulative or in combination effects perceived at this Plan level

<p>Review of the Limerick Regeneration Framework Implementation Plan (2016)</p>	<p>all ages enjoy a good quality of life, a decent home and a sense of pride about their place. Well-served and attractive neighbourhoods will be physically connected and fully integrated with the social, economic and cultural life of Limerick.</p> <p>A review of the Limerick Regeneration Framework Implementation Plan was undertaken in November 2016. Recommendations from this Review supports the development of the LNDR and include:</p> <p>Recommendation 7: <i>It is recommended to continue the implementation of the Coonagh-Knockalisheen Northern Distributor Road Phase 1 to open up connectivity to the western end of Moyross and lands for private investment.</i></p> <p>Recommendation 12: <i>"....It is recommended to continue the implementation of the Coonagh-Knockalisheen Northern Distributor Road Phase 1 to open up connectivity to the western end of Moyross."</i></p> <p><i>The development of key infrastructural projects such as the Northern Distributor Road, Southern Link Road from the M7 and access to Galvone Industrial Estate from Childer's Road will be instrumental in opening up new economic development areas that will have an immediate impact on the surrounding regeneration areas. It states Requirements To Progress include: "Target inward investment for key enterprise sites for Moyross accounting for the development of the Northern Distributer road."</i></p>	<p>likely significant effects on the environment are addressed during the SEA process in accordance with existing plans and policies incorporated into the LDCP.</p>	<p>stage.</p>
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<p>South Clare Local Area Plan 2012-2018</p>	<p>The South Clare Local Area Plan 2012-2018 sets out the land use plan for the proper planning and sustainable development of each settlement in the area of the Plan. The South Clare Plan area comprises a total land area of approximately 21,500* hectares of south east Clare (*this figure excludes the area which is subject to a separate Local Area Plan for Shannon and its environs), extending from the County boundary with Limerick, west to the estuary and the River Fergus and east to O' Briensbridge. This South Clare Local Area Plan will seek to comply with the requirements of the Strategic Environmental Assessment, Habitats, Water Framework and Floods Directives as and where appropriate. All development proposals must be consistent with the objectives of these higher level plans, programmes, strategic plans and guidelines.</p> <p>The South Clare Local Area Plan (SCLAP) 2012-2018 incorporates the route of the LNDR and objectives into the SCLAP which was subject to SEA.</p>	<p>SEOs have been developed and are included in the ER to ensure that sustainable development and likely significant effects on the environment are addressed during the SEA process in accordance with existing and adjoining plans and policies.</p>	<p>A separate SEA has been completed for the Proposed Amendment to the South Clare Local Area Plan 2012-2018. The results of which show that there will be no significant cumulative or in combination effects perceived as a result of this Variation. Project level appropriate assessments shall address any in-combination effects at project level stage i.e. EIA, Habitats Directive Assessment and Floods Directive Assessment. Therefore, no significant cumulative or in combination effects perceived at this Plan level stage.</p>
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<p>Castletroy Local Area Plan 2009-2015 (Extended until 2019)</p>	<p>The aim of this plan is to establish a framework for the planned, coordinated and sustainable development of Castletroy and for the conservation and enhancement of its natural and built environment over the next six years and beyond. The Plan provides guidance as to how this development can be achieved, what new developments are needed, where public and private resource inputs are required, and guidance for development proposed in the plan area. Castletroy is located within the eastern environs of Limerick City, approximately 3 kilometres from Limerick City Centre. It is bisected by the R445 Dublin road through the centre of the plan area and the N24 Tipperary road to the south of the plan area. Castletroy contains a number of distinct components i.e. Castletroy North containing the University and Plassey business park, Castletroy South which largely contains residential areas and the Dublin road. The area is bounded to the north by the River Shannon, to the east by the Mulkear, while the Groody River Valley forms the west ward boundary. The Southern ring road forms the southern boundary.</p>	<p>The preferred route corridor for the Limerick North Distributor Road is located outside the LAP boundary. However, the “indicative area for link road” is located within the Castletroy LAP boundary area. Objectives contained within the LAP have been considered as part of the policy making process for the proposed Variation namely the protection of riverside walk along the Mulkear River.</p> <p>SEOs have been developed and are included in the ER to ensure that sustainable development and likely significant effects on the environment are addressed during the SEA process in accordance with existing plans and policies.</p>	<p>No significant cumulative or in combination effects perceived at this Plan level stage. Project level appropriate assessments shall address any in-combination effects at project level stage i.e. EIA, Habitats Directive Assessment and Floods Directive Assessment.</p>
<p>Limerick County Development Plan 2010-2016 (Extended)</p>	<p>The County Development Plan 2010-2016 sets out overall policies and strategies for the proper planning and sustainable development of Limerick.</p>	<p>An SEA ER was previously carried out for the Limerick County Development Plan 2010-2016 and used to inform the baseline environment and to develop the ER for the SEA of the Proposed Variation to the Limerick CDP to ensure mitigation and monitoring continues as part of the statutory plan making process.</p>	<p>No significant cumulative or in combination effects perceived at this Plan level stage.</p>

The Limerick City Development Plan 2010-2016 (extended)	The Limerick City Development Plan 2010-2016 sets out overall policies and strategies for the proper planning and sustainable development of Limerick.	An SEA was previously carried out for the Limerick City Development Plan 2010-2016 and was used to inform the ER for the SEA of the proposed Variation to the Limerick CDP.	No significant cumulative or in combination effects perceived at this Plan level stage.
Clare County Development Plan 2017-2023 (Effective from 25 th Jan 2017)	The Clare County Development Plan 2017-2023 outlines policies and strategies for the proper planning and sustainable development of Clare. The Plan identifies the Limerick Northern Distributor Road as a proposed project identified for future development and supports the development through objectives.	An SEA has been undertaken during the development of the CDP and was used to inform the ER for the SEA of the proposed Variation. SEOs have been developed and are included in the ER to ensure that sustainable development and likely significant effects on the environment are addressed during the SEA process in accordance with existing and adjoining plans and policies.	No significant cumulative or in combination effects perceived at this Plan level stage. Project level appropriate assessments shall address any in-combination effects at project level stage i.e. EIA, Habitats Directive Assessment and Floods Directive Assessment.
County Development Board Strategy	The Limerick County Development Board Strategy aims to combat discrimination and to promote equality of opportunity under the Employment Equality Act, 1998 and the Equal Status Act, 2000. The strategy reflects a proactive commitment to achieving equality outcomes.	SEOs have been developed and are included in the ER to ensure that sustainable development and likely significant effects on the environment are addressed during the SEA process in accordance with existing and adjoining plans and policies.	No significant cumulative or in combination effects perceived at this Plan level stage.

Limerick and Clare Sports and Physical Recreation Strategy - June 2013	The Limerick and Clare Sports and Physical Recreation Strategy aims to develop a framework to coordinate the objectives and targets of key stakeholders in a cohesive and integrated plan for the area and to work together in ensuring the provision, management and use of quality facilities and services for everyone, including future generations. Through the strategy, county and city councils and other key stakeholders can work together to determine key recreational priorities for the region and to demonstrate commitment, cooperation and shared vision in developing sport and physical recreational opportunities for all, with an improvement in the health and overall quality of life of those who live and work in the area as well as those who visit it as the ultimate aim.	SEOs have been developed and are included in the ER to ensure that sustainable development and likely significant effects on the environment are addressed during the SEA process in accordance with existing and adjoining plans and policies.	No significant cumulative or in combination effects perceived at this Plan level stage.
Limerick Clare Joint Housing Strategy 2010-2017	Limerick City Council with Limerick and Clare County Councils have carried out review of the Housing Strategy in 2010. It has examined the need for coordinated housing policies between the local authorities to support the regeneration project and the populations targets set out the RPGs.	SEOs have been developed and are included in the ER to ensure that sustainable development and likely significant effects on the environment are addressed during the SEA process in accordance with existing and adjoining plans and policies.	No significant cumulative or in combination effects perceived at this Plan level stage.
Limerick City Council Biodiversity Action Plan - 2011	The main aim is to conserve the biodiversity of Limerick City. This will be achieved by prioritising, co-ordinating and initiating action to ensure the effective conservation and enhancement of biodiversity in Limerick City and by raising awareness and appreciation of local biodiversity, through involving local communities in its conservation and by informing policy. A key objective is to: Promote the conservation of biodiversity in plans and programmes affecting the city and to monitor and review progress of the Local Biodiversity Action Plan.	SEOs have been developed and are included in the ER to ensure that sustainable development and likely significant effects on the environment are addressed during the SEA process in accordance with existing and adjoining plans and policies.	No significant cumulative or in combination effects perceived at this Plan level stage.

Limerick Landscape Character Areas (as set out in LCDP 2010-2016)	The Limerick Landscape Character Areas set out in LCDP analyses the character, value, and sensitivity of landscapes identified within Limerick. The landscape character assessment seeks the views of communities living within particular areas. The process encourages debate and assists in gaining consensus on what is distinctive about each landscape.	The Limerick Landscape Character Areas have been included in the baseline information in the ER. The Proposed Variation is assessed against specific landscape SEO to ensure protection of historic and natural features of note in the landscape are protected. And landscape changes are managed sensitively.	No significant cumulative or in combination effects perceived at this Plan level stage.
County Limerick Local Anti-Poverty and Social Inclusion Strategy 2010-2016	The County Limerick Local Anti-Poverty and Social Inclusion Strategy 2010-2016 aims to bring about more co-ordinated and more cohesive delivery and integration of services at a local level which will impact on target groups and target areas in the County. The Social Inclusion Measures (SIM) Group comprises of the local government sector, the statutory sector, the community and voluntary sector including local development and social partners.	No specific SEA Objective has been included to address this strategy. However, the SEA objectives (SEOs) have been developed and are included in the ER to ensure that sustainable development and likely significant effects on the environment are addressed during the SEA process.	No significant cumulative or in combination effects perceived at this Plan level stage.

<p>Limerick Smarter Travel</p>	<p>Limerick Smarter Travel is a sustainable transport policy which meets the Government objectives. The programme aims to reduce car travel by encouraging people to walk and cycle, car-share and to avoid unnecessary car trips. Limerick Smarter Travel is delivered by Limerick City and County Council, working in partnership with the Department of Transport, Tourism and Sport (DTT&S), local businesses, schools and communities. At the core of the Smarter Travel Areas concept is sustainability.</p> <p>The Proposed Variation will seek to improve connectivity within Limerick City. The proposed route, if developed, will incorporate walking and cycling infrastructure with the anticipation that there will be a modal shift to more sustainable modes of transport in the future.</p> <p>The Limerick Smarter Travel programme is included in the baseline information in the ER in the interest of population and human health within the Plan area.</p>	<p>The SEOs have been developed and are included in the ER to ensure that sustainable development and likely significant effects on the environment are addressed during the SEA process in accordance with current plans and policies.</p>	<p>No significant cumulative or in combination effects perceived at this Plan level stage.</p>
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<p>Draft Joint Noise Action Plan 2013</p>	<p>Measures to deal with noise pollution associated with major noise sources such as transportation and infrastructure in Limerick have been taken into consideration by the Limerick City and County Council by adopting a draft Noise Action Plan. The Draft Noise Action Plan was prepared in accordance with the Environmental Noise Directive (2002/49/EC) and is aimed at strategic long term management of environmental noise from transport systems in both Limerick City and County. The Noise Action Plan identifies noise 'hot spots' and population exposure to various noise bands. A five year programme for implementation of noise mitigation measures is also included in the Plan.</p> <p>Noise pollution has been considered under Population and Human health within the SEA ER. Site specific mitigation measures may be required if LNDR is likely to have an impact on residents along the route corridor, however as the exact location of the route within the corridor is not known no specific mitigation can be provided. These issues will be examined at project level through the EIA process.</p>	<p>The SEOs have been developed and are included in the ER to ensure that sustainable development and likely significant effects on the environment are addressed during the SEA process in accordance with current plans and policies.</p>	<p>No significant cumulative or in combination effects perceived at this Plan level stage.</p>
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Limerick Hinterland Report 2015	<p>The Hinterland Report examines the socio-economic profile of the settlements within the hinterland of Limerick City and explores the relationship between these settlements and the city. The report aims to provide a greater understanding of the settlements around Limerick and their functional relationship with Limerick City. The report outlined objectives for a number of identified hinterland areas.</p> <p>The Proposed Variation will seek to improve connectivity between the hinterlands of the Variation area and Limerick City.</p>	SEOs have been developed and are included in the ER to ensure that sustainable development and likely significant effects on the environment are addressed during the SEA process in accordance with existing and adjoining plans and policies.	No significant cumulative or in combination effects perceived at this Plan level stage.
Draft Local Economic and Community Plan (LECP) for Limerick City and County 2016-2021	<p>The objectives and actions of the LECP aim to promote and support economic development and local and community development of the local authority area. The overarching aim of the LECP is “to promote the well-being and quality of life of citizens and communities”.</p> <p>The Proposed Variation will seek to improve connectivity between the hinterlands of the Variation area and Limerick City.</p>	SEOs have been developed and are included in the ER to ensure that sustainable development and likely significant effects on the environment are addressed during the SEA process in accordance with existing and adjoining plans and policies.	No significant cumulative or in combination effects perceived at this Plan level stage.
Action Plan for Jobs Mid-West Region 2015-2017	The Action Plan aims to deepen linkages across the public and private sector bodies in the region and support a cohesive effort to build on these strengths and drive the enterprise and jobs agenda within the region. The proposed Variation is considered to improve sustainable transport links into Limerick.	SEOs have been developed and are included in the ER to ensure that sustainable development and likely significant effects on the environment are addressed during the SEA process in accordance with existing and adjoining plans and policies.	No significant cumulative or in combination effects perceived at this Plan level stage.

Limerick 2030 – An Economic and Spatial Plan for Limerick (2013)	The Plan sets out an Economic Strategy which identifies how Limerick needs to be positioned in order to best take advantage of economic opportunities in order to build a stronger local economy through the creation of employment and the attraction of investment. The second element is a Spatial Plan focussed on revitalising and redeveloping Limerick City Centre and the final element is a Marketing Plan which aims to use Limerick's unique and positive attributes to change perceptions of how Limerick is viewed.	SEOs have been developed and are included in the ER to ensure that sustainable development and likely significant effects on the environment are addressed during the SEA process in accordance with existing and adjoining plans and policies..	No significant cumulative or in combination effects perceived at this Plan level stage.
Limerick Planning, Land Use and Transportation Study (PLUTS) 2003	The study identified many strategic issues that required consideration in the future planning of the region including the need for the provision of a northern distributor road around Limerick City and a new bridge crossing over the Shannon to the north of Limerick City.	SEOs have been developed and are included in the ER to ensure that sustainable development and likely significant effects on the environment are addressed during the SEA process in accordance with existing and adjoining plans and policies.	No significant cumulative or in combination effects perceived at this Plan level stage.
Proposed Limerick City and County Heritage Plan 2017-2030	"The goal or purpose of the proposed plan is to ensure that the Council and the wider community focus on the need to ensure that Limerick's heritage continues to be unique and diverse while being accessible to all. Heritage should remain a strong contributory factor to Limerick being a special place to live, work, locate to, and is a worthwhile location to invest in."	This Plan has been prepared in accordance with the policies and Objectives of the Limerick County Development Plan 2010 and the Limerick City County Development Plan 2010 in terms of the built and natural environment. Cultural Heritage is included as part of the SEOs and the proposed Variation is required to be consistent with the current policies of the LCDP.	No significant cumulative or in combination effects perceived at this Plan level stage.

Appendix B

Responses Received from Environmental Authorities Following SEA Scoping Consultation

Appendix B/2

EPA	Guidance on Integration of Environmental Considerations	<p>This submission gives a generic overview of key significant environmental aspects to be considered under each of the SEA environmental topics. It includes some of the latest sources of information which can be consulted as appropriate. The EPA has summarised the key environmental aspects which should be incorporated, as appropriate, in the preparation of the SEA and Draft Plan.</p> <p>An indicative list of plans Plans/Programmes/Strategies which may be considered during SEA process is listed in the submission.</p>	<p>Noted and included as part of the development of the ER.</p> <p>Noted and included in ER Appendix A as appropriate.</p>
Departments of Arts Heritage, Regional and Rural Affairs and Gaeltacht Affaris (DAHRRGA) received 14th February 2017			
DAHRRGA	Archaeological Heritage	<p>Requires a broader view of the diversity of cultural heritage to be found in the Limerick area and in particular to the areas to be affected by any future developments for the roadway.</p> <p>It is recommended that the Cultural Heritage section of the proposed SEA be updated to address the potential for previously unknown terrestrial and underwater cultural heritage to be present and potentially negatively impacted by any proposed future works. It should include addressing the potential that such watercourses have to retain underwater cultural heritage and that such potential will be taken into account in any future appropriate assessments. Particularly include potential for cultural heritage of the River Shannon and River Mulkear, which may be impacted by future works.</p>	Noted and included in Section 8 of the ER.

	Terrestrial and Underwater Archaeology	The RMP is not an exhaustive list of all archaeology in existence, and in this regard the DAHRRGA would like to draw the applicant's attention to the Department's published policy in relation to the archaeological assessment of large-scale developments on sites where there are no previously recorded monuments (Framework and Principles for the Protection of the Archaeological Heritage – Published by Dúchas The Heritage Service).	Noted and Included in the Baseline Description and Section 8 in the ER. Existing policies and objectives are contained within the current Limerick County Development Plan which addresses known or unknown archaeological resources.
	Nature Conservation	It is the opinion of the Department that until the Natura Impact Statement and Appropriate Assessment for the Northern Distributor Road project is complete, it is not possible to rule out adverse effects on the Lower River Shannon cSAC (2165). Therefore, the proposed wording in the Scoping Report may be premature.	Noted. The wording of the proposed Variation has been altered since issuing the Scoping report to the environmental authorities. The changes to the wording are as a result of the assessments carried out for both the AA NIR, SFRA and the SEA ER.
	Vacant Site	Variation to incorporate the vacant site levy. The Department is not aware of any reason to disagree with the conclusion of the Strategic Environmental Assessment Screening and Habitats Directive Assessment Screening Report, assuming that "appropriate" in the text of the policy includes compliance with proper planning and sustainable development.	Noted. The proposed Variation refers to the LNDR which will be required to be compliant with the proper planning and sustainable development of the area. It is not considered the legislative requirements of the vacant site levy are applicable to the proposed Variation at the Plan level stage.