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Landscape Character Assessment (LCA) and Landscape and Visual Impact Assessment (LVIA) of Specified Infrastructure Projects - Overarching Technical Document

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PE Planning & Evaluation

Technical

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Foreword

This document provides **guidance** on best practice methodology for undertaking Landscape and Visual Impact Assessment of Specified Linear Infrastructure Projects and for the use of Landscape Character Assessment in the establishment of the landscape baseline.

1. Introduction

This *"Overarching Technical Document"* (OTD) **PE-ENV-01101,** provides guidance on the methodology, scope and processes underlying Landscape and Visual Impact Assessment (LVIA) for Specified Infrastructure Projects.

The document promotes the use of Landscape Character Assessment (LCA) for the description, understanding, and evaluation of the receiving landscape environment. As detailed in the document, the LCA is refined to provide the specific baseline for the LVIA and comparison of selected project options and following selection of a preferred project option, the LCA is further refined to provide for the description of the receiving landscape and for the LVIA of the proposed development. Finally, the LCA provides the context for the development of clearly-defined measures, focused on existing landscape characteristics, to mitigate identified significant adverse landscape and visual effects.

The Landscape Character Assessment process in this document builds on existing city and county-level LCAs, but acknowledges that significant variation in approach, detail, and quality exists in these assessments. Therefore, the proposed process introduces detailed desk studies and field studies to review, verify and augment (but not replace) the LCAs, in order to establish an appropriately detailed and consistent LCA for the overall project study area - one that is also proportional to the nature and scale of the project.

In its own right LCA is an integrated, multi-disciplinary, consultative, and forward planning process that goes beyond the needs of what is required for LVIA for specified infrastructure projects. As such in this document LCA is promoted only insofar as it is required to establish a comprehensive and consistent description and understanding of the physical and visual landscape relevant to the LVIA of specified infrastructure projects. It is acknowledged that in the delivery of specified infrastructure projects, related elements of LCA, *e.g.* biodiversity, the geological landscape, or the cultural landscape, will be addressed by other professionals competent in these areas. Nevertheless, the LCA should have regard to and reference, where appropriate, these further assessments, which when taken together present a more complete and integrated understanding of the overall landscape of the project study area.

It should be noted that the LCA process outlined in this document does not replace the requirement for, or supersede, any national, regional, county, or local-level LCAs.

A separate Standards Document (SD) **PE-ENV-01102**, sets out the methodology for Landscape and Visual Impact Assessment (LVIA) and for the use of Landscape Character Assessment (LCA) in the establishment of the landscape baseline for proposed national roads. This includes national road development and motorways (including motorway service areas and toll schemes).

1.1 Key Definitions

Landscape addresses all landscapes including rural, peri-urban, and urban. Therefore terms such as 'landscape', 'landscape character assessment' and 'landscape and visual impact assessment' also address 'townscape'.

For the purpose of these Guidelines **PE-ENV-01101**, 'specified linear infrastructure projects' include national road developments, motorway service areas and toll schemes, as well as light railway, metro railway, bus rapid transit (BRT) and cycleways.

The following primary landscape definitions apply in these Guidelines:

- **Landscape** *"means an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors"* (Council of Europe, 2000).
- **Townscape,** is a subset of landscape and comprises *"the landscape within the built up area, including the buildings, the relationship between them, the different types of urban open spaces, including green spaces, and the relationship between buildings and open spaces".* (Paragraph 2.7, (LI/IEMA, 2013)).
- **Landscape Character Assessment** (LCA) *"is the process of identifying and describing variation in the character of the landscape. It seeks to identify and explain the unique combination of elements and features (characteristics) that make landscapes distinctive. This process results in the production of a Landscape Character Assessment."* (Natural England, 2014).
- **Landscape Character Types**: "*are distinct types of landscape that are relatively homogeneous in character. They are generic in nature in that they may occur in different areas in different parts of the country, but wherever they occur they share broadly similar combinations of geology, topography, drainage patterns, vegetation, historical land use, and settlement pattern.*" (Natural England, 2014). Example 'Drumlin Agriculture'.
- **Landscape Character Areas**: "*are single unique areas which are the discrete geographical areas of a particular landscape type. Each will have its own individual character and identity, even though it shares the same generic characteristics with other areas of the same type.*" Example 'Donegal Bay Drumlins'.
- **Landscape and Visual Impact Assessment** (LVIA) "*is a tool used to identify and assess the significance of and the effects of change resulting from development on both the landscape as an environmental resource in its own right, and on people's views and visual amenity*" (LI/IEMA, 2013).
- **Landscape effect** vs. **landscape impact**: the terms 'effect' and 'impact' should be clearly defined and used consistently in environmental assessments. 'Impact' is defined as the action been taken, whilst 'effect' is defined as result (change or changes) of that action, *e.g.* the 'impact' of the project on the woodland has a significant 'effect' on the character of the landscape.

A separate *Standards Document* (SD) ***PE-ENV-01102***, sets out the requirements of TII in relation to the application of Landscape Character Assessment (LCA) and Landscape and Visual Impact Assessment (LVIA) for National Road Development Projects. For the purpose of the Standards Document, these include national road development and motorways, including motorway service areas and toll schemes.

1.1 Purpose of these Guidelines

The purpose of this document is to provide a key reference for the methodologies and theory underlying Landscape Character Assessment and Landscape and Visual Impact Assessment.

Together with the Standards Document (SD) **PE-ENV-01102,** the intent is to deliver consistency in approach to the consideration and description of the landscape and to the assessment and mitigation of likely significant landscape and visual effects of Specified Infrastructure Projects. Thus the two documents must be viewed as:

- OTD to provide the theory and methodology
- SD to provide the standard approach to the analysis and production of LCA and LVIA outputs / documents being prepared for use in National Roads and related infrastructure.

In terms of Specified Infrastructure Projects, these Guidelines (and the key references in the bibliography):

- Set out the principles and processes underlying LCA as they apply to specified infrastructure projects.
- Introduce guidance on the methodology for undertaking LCA to ensure consistent and appropriate description and evaluation of the baseline or receiving landscape relevant to specified infrastructure projects.
- Provide guidance on the methodology for LVIA for the planning and for the design and assessment phases of delivering specified infrastructure projects.
- Promote a context-sensitive approach to the design of appropriate mitigation measures for likely significant landscape and visual effects of specified infrastructure projects.

These Guidelines are intended for use by suitably qualified Landscape Professionals, (as defined in Appendix A), carrying out landscape character assessment and landscape and visual impact assessments of specified infrastructure projects.

These Guidelines are also intended as a reference for those with a direct involvement in the planning, design and evaluation of Specified Infrastructure Projects. This includes the project manager, local authorities and other authorities, infrastructure engineers, biodiversity professionals, and cultural heritage professionals, *etc*.

1.2 Organisation of the Guidelines

These Guidelines are organised as follows:

- **Chapter 1: Introduction** presents the context and purpose of the Guidelines and introduces some of the key definitions used throughout the Guidelines.
- **Chapter 2: Landscape Regulatory and Policy Framework** presents an overview of European and national landscape policy and legislation, environmental impact assessment and best practice guidance for LCA and LVIA and how the Guidelines respond to this framework.
- **Chapter 3: Application of the Guidelines to Specified Infrastructure Projects** sets out how these Guidelines are integrated into the Thresholds and Phases of Project delivery for specified infrastructure projects.
- **Chapter 4: Landscape Character Assessment Process** describes the application and use of LCA in establishing, characterising, and describing the landscape baseline.

- **Chapter 5: Landscape and Visual Impact Assessment Process** describes the process for the identification and assessment of the effects of changes, and their significance, on the receiving landscape and visual environment of a proposed project.
- **Chapter 6: LVIA through the project Phases & Stages** describes the process of LVIA through the different Project Phases of options selection, preferred option design, and assessment and delivery through the statutory process.
- **Chapter 7: Presentation of Information** provides guidance on the presentation of reports, maps, and photomontages.
- **Chapter 8: Bibliography**
- **Chapter 9: Other Information and Guidance**
- **Chapter 10: Glossary of Terms**
- **Chapter 11: Abbreviations & Acronyms**
- **Chapter 12: Sample LVIA Chapter Headings**
- **Chapter 13: Example Landscape/Visual Survey Notes**
- **Appendix A: Requirements of Landscape Professional**

1.3 Requirements of Landscape Professional

Directive 2011/92/EU, as amended by Directive 2014/52/EU, stipulates that the EIAR and assessments must be carried out by competent experts. Where required for Specified Infrastructure Projects, the Landscape and Visual Impact Assessment (LVIA) will be carried out for Project Phases 2-4 by a suitably qualified and competent Landscape Professional who has previous experience in this field.

Specified Infrastructure Projects (roads, rail, BRT, cycleways etc.) are an important element of the landscape, so it is essential that their design responds to the landscape through which they pass, making an important contribution to the conservation and enhancement of the natural and cultural environment. Opportunities to incorporate 'green and blue infrastructure' (natural and semi-natural features, planting, water, ecology) within these projects will be considered from early stages, with recognition of the goods and services it can deliver for people and nature over its lifetime.

The involvement of Landscape Professionals early in the design and evaluation process will be seen as having the potential to deliver positive integration and wider place-making benefits.

The specific requirements of the Landscape Professional for the purposes of LCA/LVIA are outlined in **Appendix A** of this document.

2. Landscape Regulatory and Policy Framework

A summary of the regulatory and policy framework related to landscape is provided in Figure 2 below.

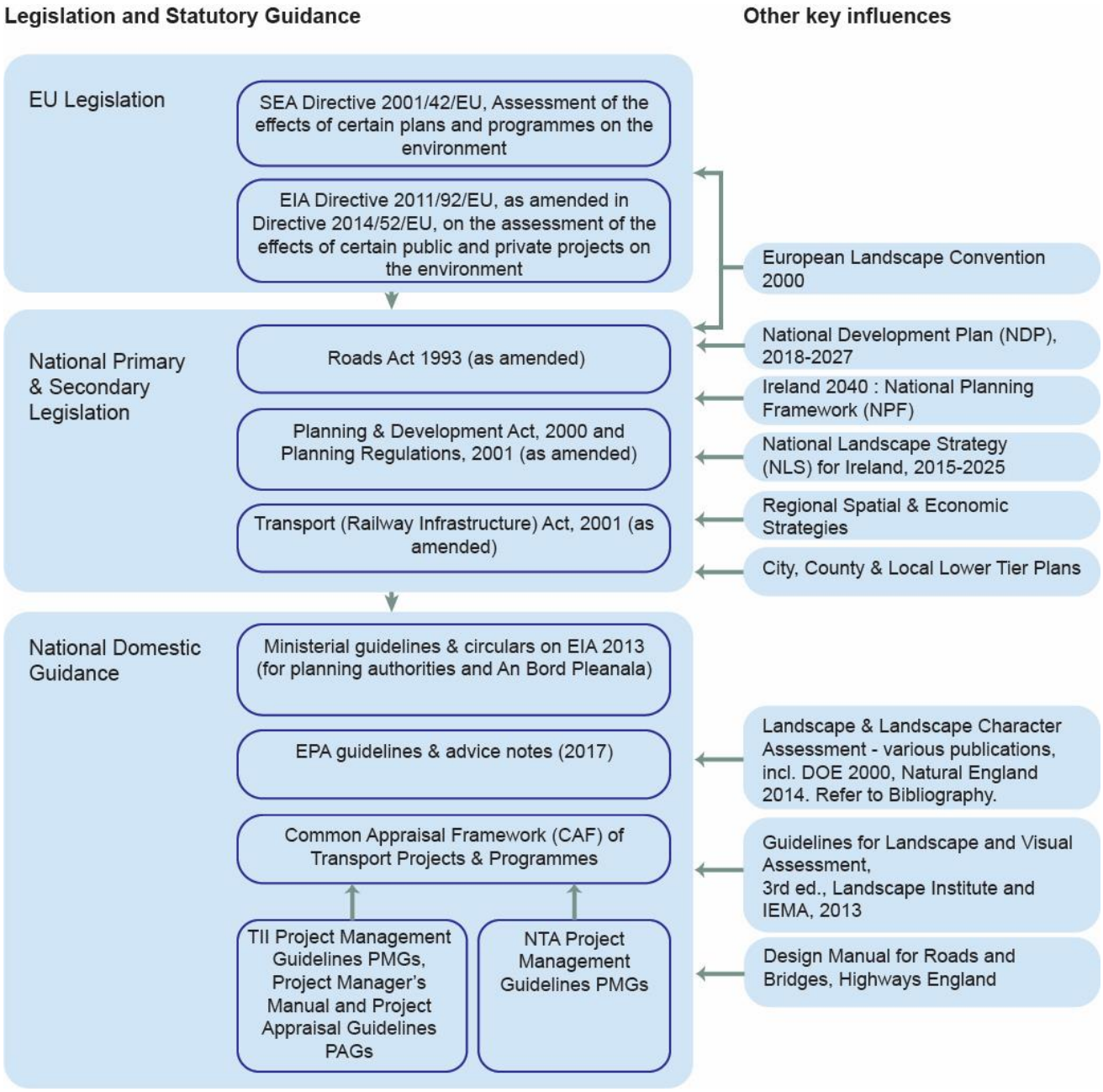

Figure 1 Legislation, statutory guidance and other key influences to LCA/LVIA for specified transport infrastructure

2.1 European Landscape Convention 2000

The European Landscape Convention (ELC) (Florence, 20 October 2000) defines 'landscape' in its broadest sense.

> "*Landscape" means an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors;* (Article 1(a)).

This definition, which is widely accepted and used in the formulation of national legislation, policy, and guidance for landscape, is adopted throughout for use in these Guidelines. Ireland signed and ratified the Convention in March 2002 and it came into effect on 1 March 2004.

The significance of this definition is that it recognises all landscapes, not just those designated or regarded as special. The Convention acknowledges '*that the landscape is an important part of the quality of life for people everywhere: in urban areas and in the countryside, in degraded areas as well as in areas of high quality, in areas recognised as being of outstanding beauty as well as everyday areas'*. The recognition that **all** landscapes are potentially important, irrespective of location or condition and will be considered in any assessment of landscape effects. It also 'promotes strong, forward looking action to enhance, restore, or create landscapes'.

Whilst the ELC has been signed and ratified by Ireland, compliance is still voluntary and not mandatory. As a party to the Convention, Ireland has agreed to promote landscape protection, management and planning, and to define landscape quality objectives, while fully involving the people concerned in the decisions that affect their area.

2.2 National Landscape Strategy for Ireland 2015 - 2025

The National Landscape Strategy for Ireland 2015-2025 (NLS, (DCHG, 2015)) was formulated to ensure compliance with the ELC and to establish principles for protecting and enhancing landscape while positively managing its change. It includes 6 core objectives and 19 associated key actions for implementing its overall vision, including the preparation of a **National Landscape Character Assessment** (National LCA) and a new set of **Landscape Character Assessment Guidelines**.

In line with Article 2 of the ELC, the NLS recognises landscape as covering rural, urban, and peri-urban areas, encompassing inland water, coastal and marine areas, everyday landscapes, outstanding landscapes, and even degraded landscapes. Within the National Landscape Strategy (DCHG, 2015), there is a commitment to implement certain types of policy changes and objectives concerning the management and protection of the 'landscape' including that it be:

- Legally defined, which was given effect through the Planning and Development (Amendment) Act 2010 (Ireland, 2015);
- Included as a mandatory objective in local authority development plans and in regional planning guidelines to develop landscape policies;
- Identified, assessed, protected, and managed; and,
- The planning of landscapes and development have due regard to the ELC.

2.3 Planning and Development Act 2000, as amended

2.3.1 Landscape Designation

The Planning and Development Act 2000, as amended is Ireland's primary planning and development legislation. 'Landscape' has the same meaning as in Article 1 of the ELC (Section 2(1), Interpretation) (Government of Ireland, 2010).

Under the Act, planning authorities have considerable duties and powers in relation to the landscape. They have a duty to include objectives in the development plan for the preservation of the character of the landscape.

They also have powers to designate areas of special amenity, within which development may be prevented or limited, and landscape conservation areas, within which exempted development may be brought within planning control.

Section 10 of the Act sets out the **content of development plans**, stating that they shall include *interalia* objectives for:

> "*the preservation of the character of the landscape where, and to the extent that, in the opinion of the planning authority, the proper planning and sustainable development of the area requires it, including the preservation of views and prospects and the amenities of places and features of natural beauty or interest;*" (Section 10(2)(e))

And,

> "*landscape, in accordance with relevant policies or objectives for the time being of the Government or any Minister of the Government relating to providing a framework for identification, assessment, protection, management and planning of landscapes and developed having regard to the European Landscape Convention done at Florence on 20 October 2000.*" (Section 10(2)(p)).

A requirement for the inclusion of a similar objective for landscape in the content of regional spatial and economic strategies (RSESs) (see below also) is stated at Section 23(2)(c)(vii) of the Act.

Section 202(1) of the Act allows a planning authority to make and order, by resolution, for an ***area of special amenity***, by reason of:

> *(a) its outstanding natural beauty, or*
>
> (b) *its special recreational value*,

Section 204(1) of the Act allows a planning authority to designate any area or place as a ***landscape conservation area*** for the purposes of the preservation of the landscape.

2.3.2 Landscape Related Provisions

Section 205(1) of the Act allows a planning authority to "*make provision for the preservation of any tree, trees, groups of trees or woodlands*" for the purposes of the preservation of the landscape. Provisions such as these, which are known as **Tree Preservation Orders** (TPOs), are relatively rare in Ireland. However, many planning authorities include objectives in their development plans for the preservation of trees or woodlands.

Section 212(1) of the Act allows a planning authority develop or secure or facilitate the development of land and the planning authority may do *interalia* the following:

> *"secure the preservation of any view or prospect, any protected structure or other structure, any architectural conservation area or natural physical feature, any trees or woodlands or any site of archaeological, geological or historical interest"*; (Section 212(1)(f))

Schedule 1 of the Act sets out in detail the purposes for which objectives may be indicated in developments plans (as referred to under Section 10 of the Act above). The following landscape related purposes are included:

> *3. Preserving the quality and character of urban or rural areas*. (Under Part I: Location and Pattern of Development)
>
> *7. Preserving the character of the landscape, including views and prospects, and the amenities of places and features of natural beauty or interest.* (Under Part IV: Environment and Amenities).

2.3.3 Other Landscape Related Policies

Planning Policy Statement 2015 (DCHG, 2015) sets out key principles that should be used as a strategic guide in implementing planning legislation in Ireland. The key principles identified include *interalia* Nos. 7 & 8, which respond directly to 'landscape' and 'landscape character' stating that:

> *7. Planning will enhance a sense of place within and between cities, towns and villages and rural areas by recognising their intrinsic character and individual qualities and implement actions to protect and enhance that character and those qualities.*
>
> *8. Planning will conserve and enhance the rich qualities of natural and cultural heritage of Ireland in a manner appropriate to their significance, from statutorily designated sites to sites of local importance, and including the conservation and management of landscape quality to the maximum extent possible, so that these intrinsic qualities of our country can be enjoyed for their collective contribution to the quality of life of this and future generations.*

Many parts of Ireland are included in statutory and non-statutory landscape specific designations. In particular, landscapes such as National Parks, Natura 2000 sites, World Heritage Sites and their wider setting (e.g. UNESCO World Heritage Site of Brú na Bóinne (DCHG, 2017)) and Areas of Special Amenity are protected by statutory legislation. Other non-statutory landscapes of importance in Ireland include Geoparks (e.g. the Burren and Cliffs of Moher Geopark) (GSI, 2017), Tourism Routes (e.g. Wild Atlantic Way) and Dark Sky Reserves (e.g. Kerry, Mayo).

As additional guidance or regulation is produced, cognisance must be taken of such developments in order to update this methodology. Undertaking an LCA or LVIA must use the latest guidance available.

Local authorities designate landscapes in Development Plans and Local Area Plans and hold information on regional and local landscapes to which policies and objectives apply. This may include landscape character assessments, designated scenic routes and viewpoints, visually sensitive landscapes, protected landscape features, including tree preservation orders (TPOs), amenity routes, historic structures/landscapes, objectives for transport, green infrastructure etc. Therefore, when undertaking a LCA / LVIA, the local authority should be consulted at an early stage to gain any relevant information about the landscape.

2.4 Regional Guidelines

The Regional Planning Guidelines 2010-2022 (RPGs) include landscape policies to protect, conserve and manage the quality, character and distinctiveness of the landscape and to encourage collaboration between local authorities so that such policies are consistent from one authority to another.

The existing RPGs will shortly be replaced by new **Regional Spatial and Economic Strategies** (RSES) for the Eastern & Midland Region, the Southern Region, and the Northern and Western Region. The new RSESs are currently at draft stage, however, the published Issues Paper (EMRA, 2017) reflects the importance of 'landscape' and 'landscape assessment', stating that:

> "*Ireland's landscapes and seascapes are key to our varied tourism and recreation offering and are recognised in the National Landscape Strategy for Ireland, which supports greater consistency in the approach to landscape classification and assessment to ensure the conservation of special landscape areas, which by their nature often extend across administrative boundaries.*" (EMRA, 2017)

The Draft Regional Spatial and Economic Strategy for the Eastern and Midland Region, recognises the importance of landscape and of landscape character assessment and includes Regional Policy Objective RPO 7.25:

> "*Following the adoption of a national landscape character assessment, the Assembly will prepare a Regional Landscape Character Assessment to promote better landscape management and planning in the Region.*"[1]

Similarly, RPO 123 of the Draft Regional Spatial and Economic Strategy for the Southern Region states:

> *"It is an objective to develop a Regional Landscape Strategy to facilitate landscape protection, management and change through undertaking a Regional Landscape Assessment and Landscape Character Map and development of guidance on local landscape character assessments, (including urban and historic landscape characterisation) to ensure a consistent approach to landscape character assessment, particularly across planning and administrative boundaries. The Regional Landscape Character Assessment should also address the characterisation of our Seascapes and Coastal Areas."*[2]

2.5 Landscape Character Assessment in Ireland – Current Status

In June 2000, in responding to greater awareness of landscape issues and in anticipation the European Convention on Landscape, the then Department of Environment and Local Government published ***Consultation Draft Guidelines for Planning Authorities on Landscape and Landscape Assessment*** (DOELG, 2000). The draft Guidelines sought to heighten awareness of landscape issues and to introduce consistency in decision-making around landscape issues in planning authorities and between planning authorities. It was also envisaged that such a consistency in approach would deliver a national map of landscape areas or landscape character areas. No national map emerged and the Guidelines were never revised, updated, or issued in a final form and their application has been sporadic.

Nevertheless, largely because of the requirements of the Planning and Development Act, 2000 and because of organisations such as the Heritage Council, local authorities began implementing landscape character assessments for their respective counties from 2000 onwards.

By 2005 nineteen of the twenty-nine city and county local authorities in the Republic of Ireland had prepared landscape character assessments. In 2005 the Heritage Council commissioned Julie Martin Associates to prepare a **Baseline Audit and Evaluation of Landscape Character Assessment (LCA) in Ireland** (The Heritage Council, 2006). The audit found a high degree of variability and poor consistency between county level landscape character assessments and noted that "*there is a perceived need for a national landscape character classification within which the local authority LCAs can sit*."

Today all city and county local authorities in Ireland (with the exception of Dublin City Council and Galway City Council) include some form of county-level landscape character assessment in their respective Development Plans. The current development plan for Dublin City also includes an objective to prepare a landscape character assessment for the city within the lifetime of the plan (objective GI06, p.168).

However, a national landscape classification or landscape character map is still awaited and while continued progress is being made at county level, a high degree of variability and poor consistency remains, particularly across county boundaries.

[1] http://emra.ie/dubh/wp-content/uploads/2018/11/EMRA-DRAFT-RSES.pdf (page 129)
[2] http://www.southernassembly.ie/uploads/general-files/Draft_RSES_2018_-_WEB.pdf (page 131)

Therefore, it is important when reviewing landscape character assessments for a proposed project that a critical analysis is provided of the level of consistency and level of detail available, highlighting any potential gaps.

Detailed landscape character assessments have been prepared for Northern Ireland both at a regional and sub-regional level. The **Northern Ireland Regional Landscape Character Assessment** [3] provides a strategic overview of the landscape under 26 Regional Landscape Character Areas and was carried out in order to provide a regional scale of LCA. The **Northern Ireland Landscape Character Assessment 2000** subdivided the countryside into 130 Landscape Character Areas, which are still valid with the regional scale as the 'structure' of the LCA (DAERA, 2000).

2.6 Environmental Impact Assessment

Requirements for **Environmental Impact Assessment** (EIA) derive from European Communities Directive 85/337/EEC on the assessment of the effects of certain public and private projects on the environment. Amendments to this initial directive from 1997, 2003, and 2009 were subsequently codified by EIA Directive 2011/92/EU which in turn has been amended by EIA Directive 2014/52/EU (EU, 2014).

Under EIA 'landscape' is identified as one of the environmental factors for which the:

> "…*environmental impact assessment shall identify, describe, and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a project*." (Article 3(1) Amending EIA Directive 2014/52/EU).

Amending EIA Directive 2014/52/EU references the ELC definition for landscape and goes on to note that:

> "…*it is important to address the visual impacts of projects, namely the change in the appearance or view of the built or natural landscape and urban areas, in environmental impact assessments*" (Recital 16 of Preamble).

Proposed road and railway infrastructure development is defined under the Roads Act 1993 (as amended), and under the Transport (Railway Infrastructure) Act 2001 (as amended) and EIA is a mandatory requirement in respect of certain projects, (*e.g.* a new motorway, or a new bridge over 100m in length).

Where EIA is not a mandatory requirement, Specified Linear Infrastructure projects are subject to 'Screening for the requirement for EIA' to determine if the project is, or is not likely to have significant effects on the environment. Where likely significant effects are identified the project is subject to a 'Sub-threshold Development EIA'.[4]

Where EIA is a mandatory requirement, or is 'screened in for EIA', the project may seek optional EIA 'scoping': a process of determining the content and extent of the matters which should be covered in the environmental information to be submitted in an EIA Report. The scoping opinion may be requested from the planning authority or An Bord Pleanála, as appropriate.

2.6.1 LVIA for Projects not requiring EIA

Some projects may not be of a class or scale as to require EIA (*e.g.* road improvement or cycleway project).

[3] https://www.daera-ni.gov.uk/services/regional-landscape-character-areas-map-viewer

[4] https://www.housing.gov.ie/sites/default/files/migrated-files/en/Publications/Environment/Miscellaneous/FileDownLoad%2C1804%2Cen.pdf

Nevertheless, even where EIA is not required, individual standalone assessments, *e.g.* landscape and visual impact assessment, or cultural heritage assessment, may still be required to address particular environmental aspects.

Where a standalone landscape and visual impact assessment is carried out for projects not requiring EIA, it should continue to follow the broad approach and structure outlined in these guidelines. As such, the LCA/LVIA assessment report should be divided between landscape and visual effects with distinct sections covering baseline, magnitude of impact and significance of effect. The report should be illustrated with figure maps to show any designated areas, landscape constraints and principal features. Key viewpoints and villages or larger centres of population which may experience potential visual effects should also be shown. The proposed project should be illustrated highlighting those elements (where known) which would result in changes to the landscape, such as construction impacts, removal of vegetation, cuttings, embankments, junctions and the alignment of any new linear infrastructure and lighting, gantries, signs and other associated infrastructure.

2.6.2 LVIA as Part of the EIA Process

LVIA may be carried out either formally or informally as follows:

- Formally, as part of the preparation of an Environmental Impact Assessment Report (EIAR) for developments above a certain threshold, or sub-threshold developments, where the competent/consenting authority considers that a development would be likely to have significant effects on the environment.
- Informally, as a contribution to the 'appraisal' of development proposals and consent applications (e.g. Part 8 project or development of a concept alignment). LVIA is a primary tool in landscape assessment and design and should be carried out on sub-threshold/minor projects where there is a possibility of landscape and visual effects at any scale.

2.7 Related Landscape and other Assessment Processes

These Guidelines are focused on the physical and visual appearance and character of the landscape as it is experienced today, for informing the assessment of likely significant effects of Specified Infrastructure Projects on the landscape/townscape resource.

Landscape is also a consideration under **other environmental aspects and assessments**, *e.g.* the natural landscape (biodiversity), the geological landscape (geology and soils), the cultural landscape (archaeology and architecture), the human landscape (community, social, *etc*.).

Assessments under these areas are generally addressed by other competent specialists for specified infrastructure projects, especially where EIA is required. Nevertheless, while not specifically addressed in these Guidelines, an obvious relationship exists between the landscape and visual environment and these other related landscape environments – not least in in terms of potential for interactions of effects.

In addition, landscape is a consideration in **other separate (but related) assessment processes**, *e.g.* Strategic Environmental Assessment (SEA), Historic Landscape Characterisation (HLC), and Seascape Character Assessment (SCA).

Strategic Environmental Assessment is a higher tier form of environmental assessment that examines 'plans and programmes' (as opposed to 'projects') at the decision-making level.

The extent to which higher level landscape considerations have already been assessed in plans and programmes can inform and be referred to under landscape in the landscape and visual baseline and/or scoping process (EU, 2001).

Seascape, "*is an area of sea, coastline, and land, as perceived by people, whose character results from the actions and interactions of land and sea, by natural and/or human factors*." (Council of Europe, 2000).

Seascape Character Assessment is a separate assessment process usually carried out in parallel to landscape character assessment that includes for:

- Views from land to sea
- Views from sea to land
- Views along the coastline
- The effect on landscape of the conjunction of sea and land (Marine Institute, 2001).

The methodology of Seascape and further information can be sourced from the references and bibliography.

Landscape is referenced in the **Heritage Act 1995**, as amended, where "*landscapes"* is a consideration under the term *"archaeology"* (section 2(1) (d)). The Heritage Act defines landscape as:

> *""landscape" includes areas, sites, vistas and features of significant scenic, archaeological, geological, historical, ecological or other scientific interest";* (section 2(1) Heritage Act 1995, as amended).

Historic Landscape Characterisation (HLC) is a separate assessment process, usually carried out in parallel to landscape character assessment, that:

> "…*identifies the contribution of the past to the landscape. All areas have some element of historic character, which needs to be identified. HLC is not concerned exclusively with particular sites or monuments, although these do of course contribute to character, but considers the whole of the area.*" (The Heritage Council, 2013).

The methodology for HLC is provided in the Heritage Council Publications listed in the references and bibliography.

Heritage (Cultural) Landscape Assessment is different to historic landscape characterisation with the analysis of impacts prepared under a different but related methodology and termed Heritage Impact Assessment.

The term cultural landscape '*embraces a diversity of manifestations of the interaction between humankind and its natural environment. Cultural landscapes often reflect specific techniques of sustainable land-use, considering the characteristics and limits of the natural environment they are established in, and a specific spiritual relation to nature'* (UNESCO, 2018).

For further information on cultural landscapes and assessment, refer to the UNESCO World Heritage Sites[5] and ICOMOS[6]. For further detail on assessments related to cultural landscapes refer to '*Guidelines on Heritage Impact Assessment for Cultural World Heritage Properties'* (ICOMOS, 2011).

While these Guidelines do not specifically address the assessments outlined above, these separate assessments can also inform particular aspects of the baseline landscape and the assessment of landscape and visual impacts.

[5] http://whc.unesco.org/en/culturallandscape/
[6] http://landscapes.icomos.org/index.php/en/

2.8 Other Guidance

These Guidelines acknowledge(s) and (has had) have regard to other guidelines on landscape character assessment, landscape and visual assessment, and on environmental assessment generally. The key guidance documents with particular note and relevance to these Guidelines include:

- *An Approach to Landscape Character Assessment* (Natural England, 2014)
- *Guidelines for Landscape and Visual Impact Assessment, Third Edition* (LI/IEMA, 2013)
- *Draft Guidelines on the information to be contained in Environmental Impact Assessment Reports* (EPA, 2017).
- *Draft Advice Notes for preparing Environmental Impact Statements* (EPA, 2015)

These Guidelines do not purport to supersede or replace the requirement for national and regional Landscape Character Assessments (LCA) or for greater consistency in and between existing county LCAs, but rather outlines the process by which existing county-level LCAs can be utilised and adapted or updated where necessary, to provide a consistent and detailed description and evaluation of the physical and visual landscape of the study area relevant to a particular specified infrastructure project.

An Approach to Landscape Character Assessment (Natural England, 2014) sets out in detail, the integrated multi-disciplinary and consultative processes required to undertake LCA. The document focuses on LCA as a standalone process from which outputs may be used at national, regional, or local levels to provide for a better understanding of the landscape resource, and its challenges and opportunities; as well as for the formulation of forward planning and management objectives and policies for the landscape resource. These are wide-ranging objectives and roles, which may encompass but are not specifically limited to, or focused on, the delivery of specified infrastructure projects.

In these Guidelines, reference is made to *An Approach to Landscape Character Assessment* (Natural England, 2014) as a key reference, insofar as it provides a comprehensive background to and informs the process proposed in these Guidelines. The LCA process herein is focused on an appropriate and proportional consideration of the landscape and visual environment in the delivery of specified infrastructure projects.

Likewise, the **Guidelines for Landscape and Visual Impact Assessment** (GLVIA3) (LI/IEMA, 2013) present detailed guidance on the process for LVIA and is acknowledged as a leading reference for LVIA in Ireland, United Kingdom and further afield.

The methodology proposed for LVIA in these Guidelines has regard to and references *GLVIA3* (LI/IEMA, 2013) insofar as they are appropriate, proportional, and relevant to the delivery of Specified Infrastructure Projects in Ireland.

The updated **EPA Guidelines** present a detailed overview of the application of environmental impact assessment (including Directive 2014/52/EU in the case of the Guidelines) in Ireland. The EPA Guidelines in particular, include a comprehensive discussion on impact assessment (refer to Section 3.7 of Chapter 3 (EPA, 2017)) and on the determination, definition and application of significance criteria; the quality (positive, neutral, negative) and type of impacts to be considered, *e.g.* direct, indirect, cumulative, residual, *etc*.; as well as on the consideration of interaction of impacts between environmental factors (*e.g.* between landscape and cultural heritage).

3. Application of the Guidelines to Specified Infrastructure Projects

TII's Project Management Guidelines (PMG) provide a framework for a phased approach to the management of the development and delivery of National Road and Public Transport Capital Projects.

This Overarching Technical Document **PE-ENV-01101** sets out the approach of LCA/LVIA to all TII projects, whilst the Standards Document **PE-ENV-01102** sets out the required standards for proposed national road development, motorway service areas, and toll schemes. They are applicable to Projects which are funded through TII and/or TII is the Sanctioning Authority, unless otherwise instructed by TII. The Technical and Standards Documents shall be used by Project Managers and those responsible for the delivery of such Projects.

The National Transport Authority (NTA) is generally the Sanctioning Authority for Public Transport Projects, in such cases the Project Management Guidelines for Projects Funded by the NTA shall apply.

TII and the NTA recognise Projects of different value thresholds and identify different Phases within the delivery of Projects. The different Project Thresholds and Phases are outlined in this Section together with how these Guidelines apply to the different Project Thresholds and Phases and the LCA and LVIA outputs **required for TII Projects.**

3.1 Project Thresholds

TII recognises Projects of different value thresholds, which TII classify in Project Appraisal Guidelines (*PE-PAG-02009*) as either Minor or Major Projects (Refer to Table 1).

In general the full extent of these Guidelines do not apply to TII Projects of less than €5 million, unless EIA is required. TII may decide to apply certain sections of the Guidelines to a specific Project below these thresholds.

The complexity of Projects between €5 and €20 million can vary considerably. The upgrading of a section of a National Road or light railway may not require the same level of landscape character assessment or of landscape and visual assessment as a new bypass of a town or a new urban bus network. Therefore, the level of landscape character assessment and of landscape and visual impact assessment should be proportionate to the sensitivity of the baseline landscape and visual environment and to the nature and scale of the Project. Again, how this is carried out should be recorded in TII's Project Execution Plan (PEP) for that particular Project.

It is considered that the Guidelines will generally apply in full to TII major projects.

Table 1 TII Project Thresholds

Project Threshold	TII – See Standards Document PE-ENV-01102
Up to €0.5 million	**Generally not applicable, unless otherwise instructed by TII**
€0.5 to €5 million	**Minor Projects**
€5 to €20 million	
Greater than €20 million	**Major Projects**

3.2 Project Phases

These Guidelines specifically apply to Project Phases 1 to 4 of the TII *Project Management Guidelines* (PMG) **PE-PMG-02041** (TII). These Phases address option selection, design, environmental evaluation, and statutory processes.

These Guidelines do not apply to TII Project Phases 0, which address project (or pre-project) objectives, establishment, management, and administration, or to TII Project Phases 5 to 7, which relate to procurement, construction & implementation and closeout & review.

While each use slightly different terminology, TII and the NTA both have a multi-phase sequential approach to the delivery of Projects (Refer to Table 2 below for reference). Some of these Phases may be amalgamated for lower threshold Projects.

Table 2 TII and NTA Project Phases

TII PMG Project Phases			NTA PMG Project Phases		
Planning & Design	Phase 0	Scope and Pre-Appraisal	Planning & Design	Phase 0	Scope and Application
	Phase 1	Concept and Feasibility		Phase 1	Scheme Concept & Option Selection
	Phase 2	Option Selection		Phase 2	Preliminary Design
	Phase 3	Design and Environmental Evaluation		Phase 3	Statutory Processes
	Phase 4	Statutory Processes			
Const./Implem	Phase 5	Enabling and Procurement	Const./Implement	Phase 4	Detailed Design & Tender Process
	Phase 6	Construction and Implementation		Phase 5	Construction & Implementation
	Phase 7	Closeout and Review		Phase 6	Closeout & Review

3.3 Application of the Guidelines to Project Thresholds and Phases

Table 3 and TII's Project Management Guidelines (PMG) provide a framework for a phased approach to the management of the development and delivery of National Road and Public Transport Capital Projects. They are applicable to Projects which are funded through TII and/or TII is the Sanctioning Authority, unless otherwise instructed by TII. The National Transport Authority (NTA) is generally the Sanctioning Authority for Public Transport Projects, in such cases the Project Management Guidelines for Projects Funded by the NTA shall apply.

Table 4 illustrate where these LCA and LVIA Guidelines apply across the Project Thresholds and the Project Phases. They also outline the outputs from the application of the Guidelines and which informs the Project Appraisal Deliverables (with accompanying reference code).

Project Management Guidelines (PMGs) and **Project Manager's Manual for Major National Road Projects** provide a framework for, and a phased approach to, the development, management, and delivery of transport projects (TII).

TII's associated **Project Appraisal Guidelines** (PAGs) (TII) provide specific guidance on the appraisal of certain aspects of appraisal national roads projects.

Multi-Criteria Assessments (MCA) are generally used in the ranking of options at options assessment stage. MCAs comprise three criteria: Engineering, Environment, and Economy with landscape and visual analysis and assessment outputs recorded under 'Environment'.

The LVIA process is discussed in further detail on a Project Phase by Phase basis in Section 5 of these Guidelines.

Table 3 TII Project Thresholds, Phases, and Interaction with LCA & LVIA

TII Project Threshold Major Projects Greater than €20 million: PE-PMG-02041			
PMG Project Phase	**Project Phase Stages & Process**	**Ref.**	**LCA / LVIA Output (See PE-ENV-01102 for national roads projects) by Landscape Professional**
Phase 2: Option Selection (Selection of Preferred Option through a narrowing of options)	**Stage 1 – Preliminary Options Assessment** (For all feasible options)	2.1a 2.1b	Baseline LCA Mapping and Report. LVIA reporting (using baseline LCA) as part of Stage 1 of Options Assessment Report. LVIA input under Environment to MCA / Project Appraisal Deliverables.
	Stage 2 – Project Appraisal Matrix (Assessment of a reduced number of options)	2.2a 2.2b	LVIA reporting (using LCA) as part of Stage 2 of Options Assessment Report. LVIA input under Environment to MCA / Project Appraisal Deliverables.
	Stage 3 – Preferred Option (Select preferred option for scheme)	2.3a 2.3b	Summarise LVIA of Preferred Option for Stage 3 of Options Assessment Report. LVIA input to Project Appraisal Deliverables.
Phase 3: Design and Environmental Evaluation	**Project design development** (taking account of technical and environmental inputs) Progress Project towards publication for Statutory Process Phase.	3.4a 3.5a 3.5b	Detailed LVIA for Preferred Option (based on LCA); including description of baseline; assessment of landscape and visual effects, interactions, cumulative effects; detailing of mitigation measures, *etc*. either as standalone LVIA Report, or where required, as Chapter of EIA Report (EIAR). Landscape Mitigation Strategy document/input to Schedule of Commitments. LVIA input to Project Appraisal Deliverables, where required.
Phase 4: Statutory Process	**Approval Process** (respond to any requests from consenting authority; prepare for and participate in oral hearing, if required; review approval and conditions)	4.6a 4.6b 4.6c 4.6d 4.6e	Respond to LCA/LVIA queries and submissions, where required. Draft Statement of Evidence for LVIA. Finalise Statement of Evidence for LVIA. Present Statement and respond to questions at Oral Hearing, where required. Review LVIA aspects of approval, where required.

TIII Minor Projects €5 to €20 million: PAG Unit 12 (PE-PAG-02035)			
PMG Project Phase	**Project Phase Stages & Process**	**Ref.**	**LCA / LVIA Output (See PE-ENV-01102 for national roads projects) by Landscape Professional**
Phase 2: Option Selection (Selection of Preferred Option through a narrowing of options) Depending on Project Characteristics options selection may be amalgamated.	**Stage 1 – Preliminary Options Assessment** (for a number of feasible options)	2.1a 2.1b	Baseline LCA Mapping and Report. LVIA reporting (using baseline LCA) as part of Stage 1 of Options Assessment Report. LVIA input under Environment to MCA / Project Appraisal Deliverables.
	Stage 2 – Project Appraisal Matrix (Assessment of a reduced number of options)	2.2a 2.2b	LVIA reporting (using LCA) as part of Stage 2 of Options Assessment Report. LVIA input under Environment to MCA / Project Appraisal Deliverables.
	Stage 3 – Preferred Option (Select preferred option for scheme)	2.3a 2.3b	Summarise LVIA of Preferred Option for Stage 3 of Options Assessment Report. LVIA input to Project Appraisal Deliverables.
Phase 3: Design and Environmental Evaluation	**Project Design Development** (taking account of technical and environmental inputs) Progress Project towards publication for Statutory Process Phase.	3.4a 3.5a 3.5b	Detailed LVIA for Preferred Option (based on LCA); including description of baseline; assessment of landscape and visual effects, interactions, cumulative effects; detailing of mitigation measures, etc. either as standalone LVIA Report, or where required as Chapter of EIA Report (EIAR). Landscape Mitigation Strategy document/input to Schedule of Commitments. LVIA input to Project Appraisal Deliverables, where required.
Phase 4: Statutory Process	**Approval Process** (If required: respond to any requests from consenting authority; prepare for and participate in oral hearing; review approval and conditions)	4.6a 4.6b 4.6c 4.6d 4.6e	Detailed response to LCA/LVIA queries and submissions, where appropriate. Draft Statement of Evidence for LVIA Present and respond to questions at Oral Hearing, where required. Finalise Statement of Evidence for LVIA, where required. Review LVIA aspects of approval, where required.

TII Minor Projects €0.5 to €5 million: PAG Unit 12 (PE-PAG-02037)			
PMG Project Phase	**Project Phase Stages & Process**	**Ref.**	**LCA / LVIA Output (See PE-ENV-01102 for national roads projects) by Landscape Professional**
Phase 2: Option Selection (Selection of Preferred Option) Depending on Project Characteristics it is likely that options selection will be amalgamated.	**Option Selection** (Select preferred option for scheme). Refer to Table 14.1 of PE-PAG-02037.	2.1c	Map Key baseline Landscape and Visual Elements/Features and prepare short Landscape Report. LVIA input to Project Appraisal Deliverables, where required For each option, outline: - Objective for Key Landscape and Visual Element/Feature. - Qualitative Statement and Indicators for impact, if any. - Description of Performance (effect on landscape element). LVIA input into Project Appraisal Deliverables, where required.
Phase 3: Design and Environmental Evaluation	**Project Design Development** Progress Project towards publication for Statutory Process Phase.	3.4b 3.4c	LVIA input to Project Appraisal Deliverables, where required. Landscape Mitigation Strategy document/input to Schedule of Commitments.
Phase 4: Statutory Process	**Approval Process**	4.6f 4.6g	Respond to LCA / LVIA queries and submissions, where required. LVIA input to an Oral Hearing may or may not apply

TII's Project Management Guidelines (PMG) provide a framework for a phased approach to the management of the development and delivery of National Road and Public Transport Capital Projects. They are applicable to Projects which are funded through TII and/or TII is the Sanctioning Authority, unless otherwise instructed by TII. The National Transport Authority (NTA) is generally the Sanctioning Authority for Public Transport Projects, in such cases the Project Management Guidelines for Projects Funded by the NTA shall apply.

Table 4 NTA Project Scale Project Thresholds, Phases, and Interaction with LCA & LVIA

NTA Projects €5 to €20 million			
Project Phase	**Project Phase Stages & Process**	**Ref.**	**LCA / LVIA Output by Landscape Professional**
Phase 1: Project Concept and Option Selection (Selection of Preferred Option from a number of feasible options)	**Options Assessment** (For all feasible options)	1.1a	LCA Mapping and Report. LVIA Report (using baseline LCA) as part of Options Assessment Report.
	Preferred Option (Select preferred option for scheme)	1.2a	Summarise LVIA of Preferred Option.

Phase 2: Preliminary Design	**Develop Design of Project** (to define land take requirement and to enable Project to proceed to Phase 3).	2.1a	Outline broad LVIA and potential mitigation measures for inclusion in Preliminary Design Report, and where required, in Project Appraisal Deliverables.
Phase 3: Statutory Process	**Planning and Statutory Processes** (fulfil any planning and environmental legislative requirements)	3.1a 3.1b 3.1c 3.1d	LVIA (using baseline LCA) prepared either as standalone Report, or where required, as Chapter of EIA Report (EIAR). Landscape Mitigation Strategy document/input to Schedule of Commitments. Preparation of inputs, where required, to planning process, public oral hearings, etc. Review LVIA aspects of approval, where required.
NTA Projects €0.5 to €5 million (Guidelines may not apply – or may only apply in part)			
Project Phase	**Project Phase Stages & Process**	**Ref.**	**LCA / LVIA Output by Landscape Professional**
Phase 1: Project Concept and Option Selection (Selection of Preferred Option from a number of feasible options – where applicable)	**Options Assessment** (only where applicable)	1.1a	LCA Mapping, where applicable, and Report. LVIA Report (using baseline LCA) as part of Options Assessment Report, where applicable
	Preferred Option (Select preferred option for scheme)	1.2a	Summarise LVIA of Preferred Option.
Phase 2: Preliminary Design	**Develop Design of Project** (to define land take requirement and to enable Project to proceed to Phase 3).	2.1a	Outline broad LVIA and potential mitigation measures for inclusion in Preliminary Design Report, and where required, in Project Appraisal Deliverables.
Phase 3: Statutory Process	**Planning and Statutory Processes** (fulfil any planning and environmental legislative requirements)	3.1a 3.1b 3.1c 3.1d	LVIA (using baseline LCA) prepared either as standalone Report, or where required, as a Chapter of an EIA Report (EIAR). Landscape mitigation strategy document/input to schedule of commitments. Preparation of inputs, where required to planning process, public oral hearings, *etc*. Review LVIA aspects of approval, where required.

NTA Projects €0 to €0.5 million (Guidelines generally do not apply, unless EIA required)			
Project Phase	**Project Phase Stages & Process**	**Ref.**	**LCA / LVIA Output by Landscape Professional**
Phase 1: Project Concept and Option Selection (Selection of Preferred Option)	**Preferred Option** (Select preferred option for scheme).	1.2a	Map of Key Landscape and Visual Elements/Features and short Landscape and Visual Report. Summarise LVIA of Preferred Option.
Phase 2: Preliminary Design	**Develop Design of Project** (to define land take requirement and to enable Project to proceed to Phase 3).	2.1a	Outline landscape and visual impacts and potential mitigation measures for inclusion in Preliminary Design Report.
Phase 3: Statutory Process	**Planning and Statutory Processes** (fulfil any planning and environmental legislative requirements)	 3.1a 3.1b 3.1c 3.1d	EIA Report unlikely. Prepare short LVIA Report, where required. Landscape Mitigation Strategy document/input to Schedule of Commitments, where required. Preparation of inputs to planning process, public oral hearings, *etc*. where required. Review LVIA aspects of approval, where required.

4. Landscape Character Assessment (LCA) Process

4.1 LCA as Part of the Overall Assessment Process

In assessing the likely effects of specified linear infrastructure, LCA is to be used to establish the landscape 'condition' in order to provide the baseline for the assessment of effects and impact of the proposed development.

The requirement for a LCA, will be dependent on the availability of existing LCAs at regional or local level, and the appropriateness and suitability of the LCA(s) for use in the assessment process for specified linear infrastructure projects.

Existing LCAs will be reviewed and consistency and level of detail provided as well as for any requirements for supplementary LCA works within the study area. The resulting LCA review and outputs will be used as the basis for further analysis.

4.2 Purpose

In these Guidelines, LCA is presented as a step by step process for the establishment and description of the baseline or receiving landscape (townscape or seascape as appropriate) of the study area of the proposed infrastructure project. In so doing LCA identifies and reports on the unique combination of elements and features that make landscapes distinctive by mapping and describing Landscape Character Types and Landscape Character Areas within the project study area.

For the purposes of these Guidelines the LCA process is focused primarily on the physical and visual landscape resource as it exists today. In the delivery of Specified Infrastructure Projects other competent professionals are generally responsible for establishment of further baseline 'landscapes', *e.g.* biodiversity, cultural heritage, geological, *etc*. Therefore, in order to be a complete assessment, LCA must also have regard to, and cross-reference as appropriate (but not seek to replicate or supersede), any of these additional assessments of 'landscape' that are relevant to understanding the overall baseline or receiving landscape of the project study area.

When complete, the LCA for the project study area sets the baseline against which the selected project options are assessed and assessed for potential landscape and visual impacts. This 'landscape' baseline is the basis against which all options are assessed and the preferred option is designed (to minimise impact or exploit opportunities) and assessed. As part of the process of finalising the preferred option, the design is amended where required, and measures for the mitigation of adverse landscape and visual impacts are developed and proposed. This iterative process continues until the preferred option is selected, noting that other considerations are part of the decision process. These assessment processes are detailed in these Guidelines in Section 5.

Critically the LCA must be proportional to and sufficient for the purposes of delivery of Specified Infrastructure Projects as set out in these Guidelines. The process set out in these Guidelines will neither negate nor replace the requirement for a National Landscape Character Assessment. However, it is hoped that the findings of LCAs carried out for Specified Infrastructure Projects will assist in the improving the description of the landscape resource and, if used generally, may encourage greater consistency in the use of LCA generally.

4.3 Existing Landscape Character Assessments

In Ireland Landscape Character Assessments (LCA) are available, for the most part, at an individual city and county level.

These LCAs have statutory standing in that they are incorporated into the county and city development plan-making process for each particular local authority. However, in the absence of a national or regional landscape character assessment, there is an acknowledged lack of consistency in the approach, detail and quality of what is currently available, particularly across local authority boundaries (The Heritage Council, 2006) and (The Heritage Council, 2009).

Note: it is not proposed to commence a new LCA for a project study area, but rather, to make use of the existing LCAs, and to review these for adequacy of detail, completeness, and consistency.

Where lack of detail or consistency is noted and where there is deficiency in the scale or detail of landscape description or mapping, additional analysis, including field studies, mapping, and evaluation is proposed to allow completion of the LCA to the standard required to facilitate landscape and visual impact assessment of selected options and/or the preferred option in later Project Phases.

Therefore, for the purposes of these Guidelines,

- Existing LCAs are to be used where available, and,
- Existing LCAs are to be checked for,
  - consistency between boundaries
  - their fitness for use in the assessment process.

Should an LCA be required, the methodology provided in the key references and bibliography shall be used. Section 4.4 below outlines the methodology which shall be employed as a minimum.

4.4 The Process

A four-step process, broadly based on Natural England's 2014 detailed guidance: '*An Approach to Landscape Character Assessment*', is proposed for the LCA of the project study area.

Step 1:	Define the purpose and scope of the assessment.
Step 2:	Desk Study (including Draft mapping of landscape character types and landscape character areas).
Step 3:	Field Study (recording detail, including photographic, on the characteristics of the landscape).
Step 4:	Classification and description of landscape character types and landscape character areas.

4.4.1 Step 1: Define the Purpose and Scope of the Assessment

At the outset of the process the Landscape Professional should undertake an initial review of the purpose and scope of the LCA relative to the requirement for a LVIA for the proposed project.

The requirement for, and the extent of, the LCA must be proportional to the nature (*e.g.* motorway, metro route, service station, *etc*.) and the likely landscape and visual impact of the project (*e.g.* an upgrade project versus a new project). This scoping of the LCA should have regard to the information provided in Section 3 Application of the Guidelines to Projects. The basis for any decisions made in relation to the purpose and scope of the assessment should be recorded and agreed with the Project Manager (as defined in Section 2.3 of TII *PE-PMG-02041* (TII)).

The extent of the proposed project study area[7] should be considered, at a high level, using key statutory documentation (*e.g.* City or County Development Plan) to ensure that it takes adequate account of the landscape and visual environment. This may result in proposals to either remove an area from the study area at the outset, for example, because of significant designation and sensitivity (*e.g.* portion of National Park), or alternatively to include an additional area, for example, an adjoining area capable of meeting the overall project objectives and likely to be of low landscape sensitivity.

Review proposed Project programme, identify key stages and key outputs. Highlight, review, and agree with Project Manager any likely programme implications for the LCA (*e.g*. seasonality, weather, *etc*.).

4.4.1.1 Output from Step 1: Purpose and Scope of Assessment

Key outputs are:

- A defined Study Area;
- Record reasoning for extent and scope of LCA proposed;
- Record any proposals and reasoning to amend the boundary of the project study area;
- Record project programme, key timelines, and key outputs; and
- Record that receipt of the key outputs has been acknowledged by the Project Manager

4.4.2 Step 2: Desktop Study

The purpose of the desktop study is to gather background information on the landscape of the project study area. It should be focused and tailored in scope and scale to meet the requirements of the project. The information gathered will be used to prepare draft landscape character type and draft landscape character area mapping. The draft mapping will be reviewed and finalised following the field survey (Step 3 below).

4.4.2.1 Review of Existing Landscape Character Assessment(s)

The starting point for the desk study is to review the existing LCA(s) for the project study area and record:

- Any existing LCA for the project study area. Depending on the scope of the project study area, which may cross county boundaries or the boundary with Northern Ireland, this may involve one or more existing LCAs.
- The scale, extent, scope, and detail of the LCA(s) should be noted, including any available mapping of landscape character types and areas, and whether it is provides adequate and consistent detail to establish the landscape baseline of the project study area. Any likely inconsistency between LCAs should be highlighted, as should any apparent weaknesses or lack of detail on the landscape of the project study area.
- Are landscape character types and landscape character areas adequately identified, mapped, and described?
- Is there sufficient consistency between LCAs, where more than one is required to establish the landscape baseline for the project study area?

[7] https://www.tiipublications.ie/library/PE-PMG-02041-02.pdf (page 23)

- The date the assessment was carried out and the likely extent of landscape change since the original was prepared.

Where the project study area crosses county boundaries, or interfaces with Northern Ireland, it is likely that the description of the landscape and the mapping of landscape character types and areas across the boundary of the LCAs will require further analysis to ascertain the key landscape characteristics which determine the landscape character types/areas in each area.

The findings of the review of the existing LCA(s) should be recorded and in particular, any likely changes, deficiencies, or lack of required information should be highlighted for later resolution.

4.4.2.2 Review of Other Landscape and Visual Information

A general desk study of available data, including online data, statutory plans and programmes, reports, mapping, (including GIS mapping) will allow a more comprehensive and detailed impression of the character of the landscape and visual environment to be formed and recorded.

The review of statutory and non-statutory plans and programmes should as a minimum have regard to landscape and visual considerations in National and Regional Landscape and Planning Frameworks and Strategies; National and Regional Planning Guidance; County and City Development Plans; Town Plans; Local Area Plans; Frameworks and Masterplans; as well as Settlement Plans and Urban, Town and Village Design Statements, *etc*.

The following is a non-exhaustive checklist of the landscape and visual information that may be reviewed and complied for the project study area:

- Statutory landscape designations (*e.g*. National Parks, Special Amenity Areas; Architectural or Landscape Conservation Areas, Parks, Tree Preservation Orders (TPOs) *etc*.);
- Non-statutory landscape designations (*e.g*. local amenity or recreational areas, amenity woodlands, public open spaces, residential open space, *etc*.);
- Statutory visual designations (*e.g*. listed Views and Prospects, Viewpoints, Vistas, View Corridors, *etc*.);
- Non-statutory visual designations (*e.g*. local viewing points, scenic viewpoints, notable vistas, *etc*.);
- Statutory landscape objectives and policies (*e.g.* protect and retain trees and woodlands, field boundaries (including walls), streetscape character, amenity, and recreation facilities, *etc*.);
- Statutory visual objectives and policies (*e.g.* protect and enhance visual quality of the landscape or of the streetscape, *etc*.);
- Non-statutory landscape and visual features (*e.g*. reference to local trees or woodlands of identified significance, to landscape features identified local importance (*e.g.* caves, lakes, open spaces, *etc*.), to buildings or streets of local prominence, to local views, *etc*.);
- International, national, regional or local promoted, or otherwise recognised, landscapes or views (*e.g*. Tourism initiatives, tour routes, scenic drives, greenways, walks, views, *etc*.);

Other Assessments

- With reference to the section on **Population and Human Health**: Landscapes or features of particular community or social interest value. (*E.g.* local landscape development or enhancement projects, community walks, valued landscapes or views, *etc*.);
- With reference to the section on **Biodiversity**: Landscapes or features of biodiversity (particularly flora) value. (*E.g.* European Sites, Ramsar Sites, important biodiversity sites, *etc*.);
- With reference to the section on **Soils and Geology**: Geomorphological composition of the landscape, soil structure, and related features. (*E.g.* sites of geological interest, geological landscape features, (*e.g.* drumlins, ribbed moraines, karst, caves, turloughs, *etc*.), *etc*.).
- With reference to the section on **Cultural Heritage**: Landscapes, sites, or features of historical or cultural heritage significance. (*e.g.* World Heritage Sites (WHS), architectural and/or archaeological conservation areas, protected structures, national and recorded monuments, NIAH (National Inventory of Architectural Heritage), historic garden or designed landscape, heritage town or village, pilgrim paths, revered places, summits, townlands, *etc*.);
- Particular regard should be had to the section on **Historic Landscape Characterisation** (HLC) prepared as a complimentary aspect of the cultural heritage assessment of the project study area. Where applicable to a project, this shall be undertaken by a Cultural Heritage Professional, with input from the Landscape Professional.

4.4.2.3 Output from Step 2: Desk Study

Key outputs are:

- Draft mapping for landscape character types and landscape character areas for the project study area;
- Baseline landscape characterisation and baseline rating;
- Draft mapping for landscape and visual designations in the project study area;
- An outline description for each landscape character type and landscape character area;
- A description of the key landscape features and elements;
- A record of any likely landscape or visual changes, deficiencies or lack information to be resolved; and
- Record that receipt of the key outputs has been acknowledged by the Project Manager.

4.4.3 Step 3: Field Study

The purpose of the field survey is to review and verify, or amend where required, the draft landscape character types and areas and landscape descriptions identified from the Desk Study (Step 2). The survey applies to the project study area and is to be focused on recording and describing the key characteristics of the landscape as a whole and as relevant to the different landscape character areas. The survey is to be proportional to the scale and nature of the project, avoiding excessive detail not required at the particular Project Phase. Further LCA detail may be collated, as appropriate, through project Phases 2 and 3.

A standardised field survey sheet should be prepared prior to undertaking the field study (e.g. see Section 13. Other aspects of landscape/townscape/seascape are summarised in Figure 4, Figure 5 and Figure 6). The purpose of the field survey sheet is to record in a systematic manner, the physical and visual characteristics of the landscape of the project study area. The process should be supported by a representative photographic record (recording the viewpoint location and date of photography) and annotated mapping, completed during the field survey. As with the desk study, the field survey should be tailored to meet the requirements of the particular project objectives and should be proportionate level of assessment and reporting required (*e.g*. standalone LVIA report or detailed LVIA assessment for EIA purposes). The extent to which the following landscape and visual elements contribute towards the character of the overall landscape and to the different landscape areas within the project study area should be noted and recorded:

- **Landform** *e.g.* mountains, hills, drumlins, valleys, ridge-lines *etc*.;
- **Landcover** *e.g*. trees, tree-lines, hedgerows, copses, woodlands, plantations, parklands, grasslands; lakes, rivers, *etc*.;
- **Landuse** *e.g.* arable, pasture, commercial forestry, industry, residential, open space, *etc*.;
- **Settlement** *e.g.* settlement pattern, density, type (e.g. urban, clustered, ribbon, dispersed, farmhouses, *etc*.) and character (open, integrated, screened, *etc*.);
- **Boundary** *e.g.* type and pattern, field boundaries, hedgerows, stone walls, ditches, enclosed, open, regular, irregular, fragmented, *etc*.;
- **Aesthetic** *e.g.* how the overall landscape is viewed; the sense of enclosure or openness; views are panoramic or framed; key viewpoints, scenic routes, ridges and summits, lakeshores, river edges, *etc*.
- **Appearance and Scale** *e.g.* the extent and balance of the landscape (particularly arising from landform & landcover); relationship between land and sky (and skylines); landscape diversity; relationship of buildings and structures in relation to their surroundings building heights, *etc*.;
- **Seasonality** *e.g*. how likely is the landscape to appear different or be viewed differently in summer (full leaf cover) as opposed to winter (no leaves).
- **Tranquillity** *e.g.* sense of remoteness and isolation, or lack of it, within the landscape. This is often determined by the presence or absence of built development, human activity, infrastructure, and traffic. Background traffic noise can be a contributing factor to loss of tranquillity; and
- **Other Features** *e.g.* visual prominence of heritage features (*e.g.* ringforts, burial mounds, church & graveyard sites, castles, period houses, demesne features, bridges, *etc*.); amenity, recreation and tourism (sports facilities, hotels, golf courses, etc.); infrastructure (carparks, roads, high voltage powerlines & pylons, rail corridors, *etc*.).

An important consideration for the field survey is to note and record any landscape and/or visual aspects that may lie outside of the study area boundary, but may still be of relevance. For example, views into the project study area boundary from outside. The basis for protecting a view or prospect located outside of the project study area boundary may actually be a landscape or other feature located within the project study area.

4.3.3.1 Output from Step 3: Field Study

Key outputs are:

- Completed field survey sheets for each landscape character type;
- Completed field survey sheets for each landscape character area;
- A photographic record for each landscape character area; and
- Record that receipt of the key outputs has been acknowledged by the Project Manager.

4.4.4 Step 4: Classification and Description

Using the information gathered at the Desk Study and the records from the Field Study, refine and finalise the classification the landscape character types and landscape character areas within the project study area. Describe characteristics of overall landscape and each character area in detail.

Note and describe the general and distinctive features and characteristics of the landscape, and assess landscape sensitivity with baseline rating (qualitative measure) based on Table 5 in Section 5.2 below.

Describe the baseline visual environment and assess the visual sensitivity based on Table 6 in Section 5.2 below.

Describe characteristics of overlap between landscape character areas and landscape and visual designations.

4.4.4.1 Output from Step 4: Classification and Description

Key outputs are:

- Classification of landscape character areas in the project study area;
- Description of each landscape character type;
- Description of each landscape character area;
- Mapping of each landscape character area and associated extent of landscape character types;
- Mapping of landscape and visual designations in the project study area;
- Detailed description of the key landscape features, elements and characteristics;
- Reporting and mapping of baseline landscape designations and sensitivity;
- Reporting and mapping of baseline visual designations and sensitivity; and
- Record that receipt of the key outputs has been acknowledged by the Project Manager.

4.5 Summary of LCA Process for Specified Linear Infrastructure Projects

The following is a summary of the key tasks required to prepare a LCA that will subsequently be used to inform the assessment of likely significant landscape and visual effects of specified infrastructure projects.

- Review and record extent, scope and purpose for LCA to ensure that it meets the requirements of, and is proportional to, the Project and the requirements for the LVIA.
- Undertake desktop study to review existing LCAs and landscape and visual designations. Where available, identify landscape character types, landscape character areas and landscape descriptions relevant to the project study area.
- Draft mapping to indicate generic landscape character types, unique landscape character areas, and any landscape and visual designations pertaining to the project study area.
- Consult with other relevant project professionals, (e.g. ecologist, engineers, the TII-assigned Project Archaeologist, heritage consultant, etc.) to gain a wider understanding of the landscape context and ensure quality control.
- Undertake field survey to record, using field record sheets and photographs, the key landscape and visual characteristics, elements, features and types that give each area its unique landscape character. Include where appropriate any landscape aspects external to the project study area which may be of relevance to the project study area.
- Finalise classification and mapping of landscape character types and landscape character areas within project study area. Include mapping of landscape and visual designations, baseline significance/sensitivity rating (outlined in Section 5.2 below) including any of relevance from outside of the study area.
- Describe the key landscape character types, the principal characteristics, elements, and features of the landscape character areas within the project study area.
- Any feedback from public consultation/engagement needs to be incorporated into the LCA output, as appropriate, together with a record of its integration.

5. Landscape & Visual Impact Assessment Process

5.1 Introduction

Landscape and Visual Impact Assessment (LVIA) provides for the identification and assessment of the effects of changes, and their significance, on the receiving landscape and visual environment of a proposed project. LVIA may be carried out formally as one of a range of assessments under EIA, or alternatively, where required, may be a standalone assessment for project not requiring EIA.

The process set out in these Guidelines for LVIA for Specified Infrastructure Projects is broadly based on a combination of the approach and methodology set out in the *EPA Guidelines for preparing Environmental Impact Assessment Reports* (EPA, 2017) and in the *Guidelines for Landscape and Visual Impact Assessment* (GLVIA3) (LI/IEMA, 2013). However, the approach and methodology has been specifically adapted to the delivery of specified infrastructure projects, in particular, to incorporate the process of landscape character assessment (LCA) (refer to Section 4 of these Guidelines) and Project Phases (refer to Section 3 of these Guidelines).

While addressed under a heading of 'The Landscape', LVIA actually involves two related but separate assessments: assessment of effects on landscape (changes to landscape character and landscape resource) and assessment of visual effects (changes in views, visual amenity, and effect on viewers). The former concerned with the physical landscape and its characteristics, the latter is usually concerned with viewers, viewpoints, or visual receptors.

The landscape and visual assessment process can be summarised as follows:

1. Agree and implement measures for liaison and quality control.
2. Review, update, and establish scope.
3. Describe the proposed development and consider alternatives.
4. Refine and update the baseline studies, i.e. receiving environment for landscape (landscape character areas, landscape features/elements, designations/development plans) and visual aspects (viewers and viewpoints), condition, value, sensitivity/capacity for change.
5. Identify and describe the effects.
6. Assess the significance of effects.
7. Identify suitable mitigation measures.
8. Identify and describe residual effects.

A summary of the overall process is illustrated in Figure 2 below. Further detail on the LVIA process is provided in Section 3.5 of the Standards Document ***PE-ENV-01102***.

Consideration of likely significant landscape and visual effects is not always a measurable objective science. A part will always remain qualitative and therefore subjective, for example, the effect of a new structure or building in views of the landscape. Therefore, professional experience and judgement is very important, especially when it comes to the significance if change in the character of a landscape and whether it is positive or negative - a consideration which is often influenced by the subjective experiences, expectations and perceptions of the viewer.

Therefore, consistency in the application of methodologies and guidelines is important and the use of terminology is critical. The EIA Directive requires the focus to be on the identification of "*likely significant effects*" (Article 5(1), 2014/52/EU, (EU, 2014)), not every effect.

Therefore the LVIA must be proportional to the scope, extent, and likely impact of the proposed development and to the significance and sensitivity of the receiving landscape and visual environment. However, all likely significant landscape effects should be considered, including construction/operation/ decommissioning (where appropriate); positive/negative; short-term/long-term; direct/indirect; do-nothing; residual; worse-case; cumulative; and the potential for likely significant effects arising from interaction between environmental factors (*e.g.* landscape and cultural heritage). These, and other related terms, are comprehensively defined in the EPA Guidelines (Section 3.7, (EPA, 2017)) and these definitions are adopted for the LVIA process in these Guidelines.

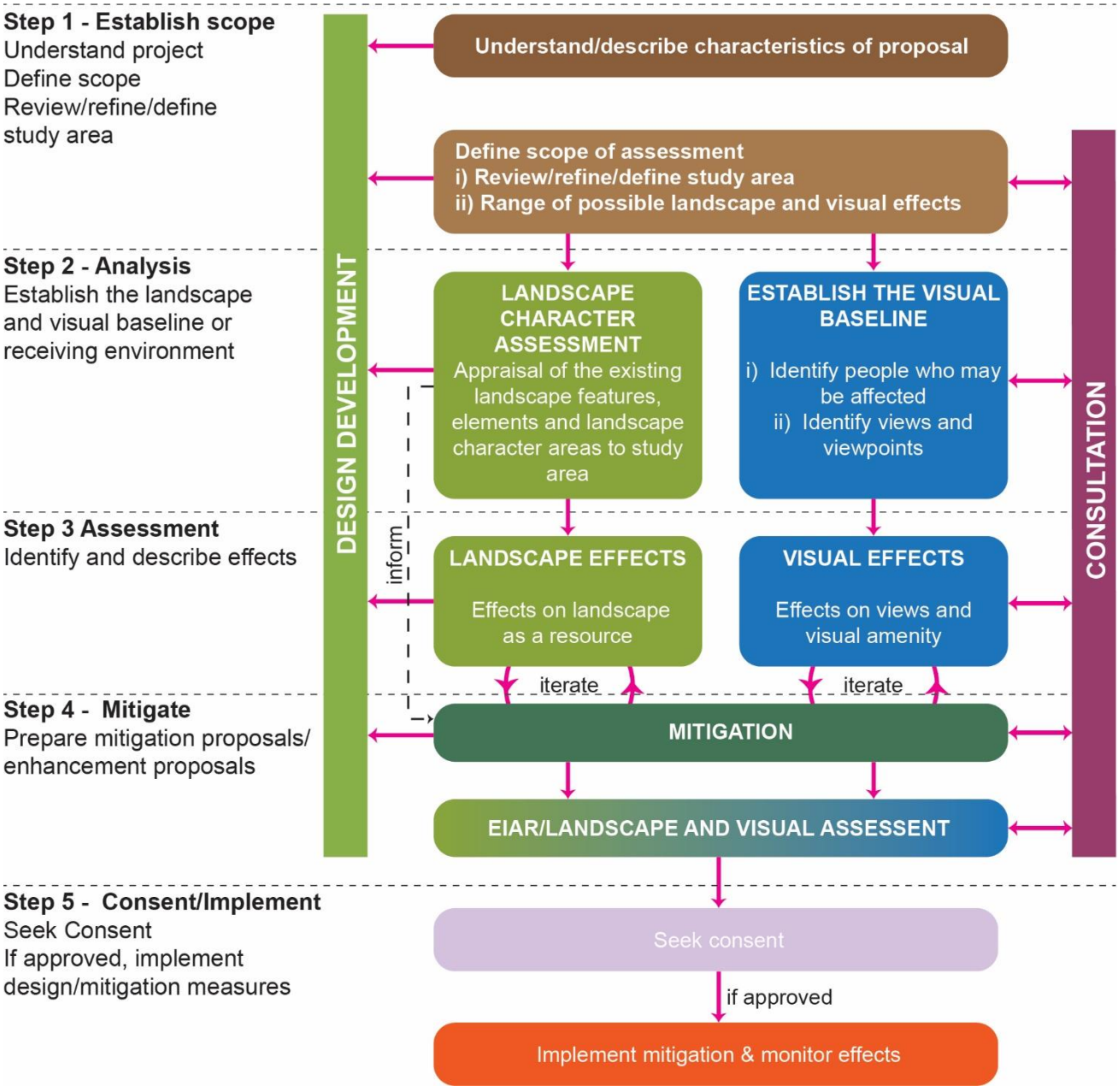

Figure 2 Summary of LVIA process

Consistency of interpretation and use must also extend to **effect** versus **impact**. 'Impact' is defined as the action been taken, whilst 'effect' is defined as the result (*i.e*. the change or changes) of that action, *e.g.* the 'impact' of the project on the woodland has a significant 'effect' on the character of the landscape.

In terms of the LVIA process, the following sections discuss:

- Landscape and Visual Significance and Sensitivity;
- Description of Landscape and Visual Effects;
- Significance of Landscape and Visual Effects; and,
- Mitigation of Landscape and Visual Effects.

5.2 Landscape and Visual Significance and Sensitivity

Landscape is not static but rather changes over time in response to various pressures (*e.g*. changes in agriculture, forestry, infill development, re-development *etc*.). Many of these changes are gradual and progressive and often accepted without any associated significant landscape or visual effects. By contrast, Specified Infrastructure Projects may bring about accelerated or fast change, which can result in likely significant direct and indirect landscape or visual effects. The significance of these changes or effects is directly related to the significance and sensitivity of the receiving landscape and visual environments.

The significance and sensitivity of the landscape and visual environment is evaluated having regard to the information collated at the LCA stage (refer to Section 4 above of these Guidelines). The significance and sensitivity need only be considered where it is relevant to the LVIA for the options selection, preferred route, and other relevant Stages/Phases of the Project. Therefore, there is no need to apply such criteria to the whole of the project study area.

In general, significance and sensitivity is applied to landscapes and aspects of the landscape that are important to defining and maintaining the character of landscape areas identified in the LCA, as well as to designated and notable features of the landscape.

Visual significance and sensitivity addresses the views available to people (*i.e.* visual receptors), living, working and visiting a landscape and their visual amenity.

A five level rating categorisation ranging from very high - high - medium - low – very low/negligible is proposed for both landscape and visual significance and sensitivity (refer to Table 5 and Table 6).

Typical criteria for applying significance and sensitivity to landscapes and visual receptors are also provided, however, this may not be exhaustive and should be adapted on a project by project basis to ensure relevance with the receiving landscape and visual environment. The Landscape Professional should use their professional judgement and experience to review and adapt if/as necessary, providing a rationale for the basis of this.

Table 5 Rating of Landscape Significance/Sensitivity - example evaluation criteria for baseline categorisation of landscape/townscape/seascape significance and sensitivity

Rating of Landscape Significance & Sensitivity	Criteria with examples of landscape receptors
Very High	A landscape or townscape protected by an international or national designation (Special Area Amenity Order (SAAO), designated ecological landscapes (cSAC, SAC, SPA, NHA, pNHA, etc.)), Landscape Conservation Areas, UNESCO/ICOMOS Landscape Sites (World Heritage Sites/Tentative sites & Geoparks). A landscape widely acknowledged for its distinctive features and the quality and value of its elements and edge condition. A landscape with distinctive character and very susceptible to change. Distinctive/unique land uses of widely acknowledged landscape quality. Very careful and considered design and mitigation required. Landscape types may include, but are not limited to: • Historical townscapes and urban set pieces; • Nationally important tourism, cultural, recreational & amenity landscapes, open spaces and parklands; • Protected coastal landscapes/seascapes; • Dark sky reserve landscapes Tranquil or remote landscapes. Absence of negative elements (e.g. volumes of traffic, noise, dereliction, unmanaged areas).
High	A landscape widely acknowledged as containing elements of national importance. National designation may apply. A landscape containing nationally important (and in some cases regionally important) historical, ecological and socio-cultural features. A landscape acknowledged for its high quality and value. A landscape having the capacity to accommodate change to a certain degree. Elements critical to maintaining the landscape/townscape character of said high-rated areas (e.g. primary or characteristic landforms, landcover, landscape types; important buildings or streetscapes; distinctive but characteristic boundaries; mature tree-lined avenues; etc.). Community, sports, and recreational landscapes which cannot be replaced locally. Notable high value landscape features that could not be replaced (e.g. distinctive wooded copse, historic boundaries). Landscape setting to high value cultural heritage features (archaeological and/or architectural). May have some negative elements, but otherwise contains highly rated landscape elements.

Rating of Landscape Significance & Sensitivity	Criteria with examples of landscape receptors
Medium	A landscape that exhibits positive character. A landscape that is locally important, but that might contain some regionally important elements. A landscape of some quality and value but with some adverse conditions. A landscape whose character, landuse pattern, and scale would have the capacity to accommodate change. Some negative elements/detracting features present. Elements important to but critical for maintaining the landscape/ townscape character of an area (e.g. secondary landform, landcover, landscape types; general development; strong but not dominate boundaries; etc.). Commonplace but not characteristic elements with recognisable structure and characteristic patterns with some sense of place. Distinctive / unique land uses of some acknowledged landscape quality. Landscapes with some detracting features present. Sporting and recreational landscapes which could be replaced locally - but not readily without further effects. Ecological or cultural landscapes or interest - but not designated nor meriting designation. Notable landscape elements that could be replaced.
Low	A landscape of local importance but with some degraded elements or conditions. A landscape where lack of management/intervention is evident. A landscape where change is unlikely to be detrimental. Elements not important to maintaining the landscape/ townscape character of an area (e.g. low value general vegetation, trees and hedgerows; contradictory landscape types; poor or discordant development; etc.). Land uses without acknowledged landscape quality. Industrial/post-industrial landscapes with little cultural heritage antiquity Marginal land on urban fringe / some peri-urban landscapes/areas of dereliction with low aesthetics value and few elements of interest Sporting and recreational landscapes where they can be easily replaced locally.
Very Low/Negligible	A degraded landscape. Infrastructural landscapes of no cultural heritage antiquity, including major transport corridors. Landscape where negative elements (e.g. traffic, noise, derelict, neglect, evidence of anti-social behaviour such as graffiti, vandalism, littering etc.) dominate the overall character. Brownfield sites with no associations of note. A landscape where change is likely to be positive.

Table 6 Rating of Visual Significance/Sensitivity - example evaluation criteria for baseline categorisation of visual significance and sensitivity

Rating of Visual Significance & Sensitivity	Criteria with examples of visual receptors
Very High	Designated views, viewpoints, and vistas. Areas containing protected views as outlined in Development Plans or landscape policies. Very highly aesthetic views and vistas, with lack of visual clutter and absence of traffic and other elements which may cause visual degradation. Night-time views within dark sky reserves.
High	Viewers with a proprietary interest and prolonged viewing opportunities such as local residents and frequent recreational users. Existing high quality views from public open spaces, where viewers are likely to experience the type of change resulting from the proposed scheme as an adverse or positive change and/or the quality of the existing view, as likely to be perceived by the viewer, is assessed as being high. Views from high usage public spaces, direct observers (e.g. views from local residential properties, residential care units with direct views to the development). Non-designated views of distinctive or characteristic landscapes from general road network. Views to and from local ridges, hills, high-points, buildings of note. Views to and from sites of regional ecological and / or cultural interest. Some visual discordance in streetscape. Traffic movements distracting visually but not predominant.
Medium	Viewers with a moderate interest in their environment such as recreational travellers and less frequent users of recreational facilities, e.g. walkers along canal, users of any adjacent parks, who are likely to experience the type of change resulting from the proposed scheme as an adverse (or positive) change in their view and/or the quality of the existing view, as likely to be perceived by the viewer, is assessed as being medium. Viewers within a landscape dominated by traffic. Visual condition of the landscape is degraded. Non-designated views of distinctive or characteristic landscapes from general road network. Views to and from open spaces, local parks. Views from sports and recreational facilities. Views to and from sites of local ecological and / or cultural interest. Views from general community, schools, institutional buildings, and associated outdoor areas.

Rating of Visual Significance & Sensitivity	Criteria with examples of visual receptors
Low	Viewers with a passing interest in their surroundings or whose interest is not specifically focused on the landscape, e.g. workers who are likely to experience the type of change resulting from the proposed scheme as an adverse (or positive) change in their view and/or the quality of the existing view, as likely to be perceived by the viewer, is assessed as being low. Viewers within an exclusively trafficked landscape (i.e. a major roadway or adjacent to one with no mitigation) Views of unremarkable landscapes from general road network. Viewers of users of recreational facilities where the purpose of that recreation is not related to the view. Views to and from industrial landscapes of little or no cultural heritage antiquity or aesthetic merit.
Very Low/Negligible	Areas of dereliction and poor visual quality due to such elements as graffiti, vandalism, derelict and run-down buildings and structures and littering. Views to and from degraded or abandoned urban or peri-urban landscapes or areas of dereliction with very low aesthetics value and little or no elements of interest. Views to brownfield or damaged landscapes with no associations of note. Views dominated by transportation and other infrastructure of no aesthetics merit.

5.3 Description of Landscape and Visual Effects

The Landscape Professional must use their professional experience and judgement in the identification and description of likely significant landscape and visual effects. However, identification and description of landscape and visual effects can only be made once the characteristics, nature, scale and impact of the proposed project is fully analysed and comprehended. This will vary significantly depending on the project and the context (*e.g.* proposed new road/proposed road upgrade; proposed cycleway, or proposed new urban railway).

The level and status of project information available will depend on the Phase or Stage of the project. For example, significantly less detail will be available at initial options selection stage than at preferred option stage. Where available, the following key characteristics of Specified Infrastructure Projects must be considered and analysed for potential landscape and visual impact:

- Horizontal alignment of linear projects;
- Vertical alignment of linear projects;
- Extent and location of cut and fill for linear projects
- Height and distribution of main junctions and structures for linear projects;
- Site development level and layout for site-based projects;
- Extent and location of cut and fill for site-based projects
- Height and distribution of main structures for site-based projects;
- Extent and scope of proposed illumination;
- Extent and location of construction compounds; and

- Construction programme and phasing proposals.

It is likely that other details, will have relevance to the LVIA and these will emerge as a project moves through the iterative design and assessment stages, for example design details for bridges, levels, surface water attenuation proposals, as well as mitigation proposals for other environmental aspects, *e.g.* noise barriers.

All or some of these project characteristics will have a corresponding impact on the receiving landscape and visual environment and the resulting effect will need to be identified, quantified and assessed for likelihood of significant landscape and/or visual effect.

Once identified, the description of the landscape and visual change should include both a causation (impact) and a quantitative and qualitative (effect) assessment.

The following descriptions as to the nature/magnitude of effects, which have had regard to Table 3.3 of *EPA Guidelines* (page 50 EPA, 2017), should be considered as a minimum:

- **Character, Extent, Scale and Context** of effects (*e.g.* area, number, localised, wide-spread, construction or operation, direct/indirect/cumulative, seasonal, day/night *etc*.);
- **Duration** of effects (*e.g.* momentary, temporary, short-term, long-term, permanent *etc*.);
- **Frequency** of effects (*i.e.* will occur once, rarely, daily, monthly, constant *etc*.).
- **Probability** of effects (*i.e.* likelihood that identified effects will occur. *e.g.* likely/unlikely);
- **Quality** of effects (*i.e*. positive, neutral, negative/adverse);

Consideration of these aspects of the proposed project allows for of an assessment of the magnitude of effect (refer to Table 7).

Table 7 Criteria for Assessment of Magnitude of Landscape and Visual Effects

Magnitude of Effect	Criteria/Typical Descriptions
Very High	Major alteration to, or complete loss of, key landscape or visual characteristics or components of the baseline condition. Effects likely to be experienced at a very large scale, considered permanent and irreversible.
High	Notable or longer-term change to a widespread area or view or a notable change in continuous or key landscape or visual characteristics or components.
Medium	Moderate or longer-term change over a restricted area or view or a moderate change in key landscape or visual characteristics or components.
Low	Minor short or medium-term change over a restricted area or view or a minor change in key landscape characteristics or components.
Very Low/Negligible	Imperceptible change in key landscape or visual characteristics or components.

The magnitude of change depends on the nature, scale, duration, and reversibility of the particular change that is envisaged, the location in which it is proposed, and the overall effect on a particular landscape or view.

5.3.1 Assessing the Significance of Landscape and Visual Effects

The EPA Guidelines provides a chart showing typical classifications for significance of effects (Figure 3.5, page 53, (EPA, 2017)). These classifications are defined within Table 3.3 of the EPA Guidelines (page 50, (EPA, 2017)).

The EPA Chart and Table are reproduced in these Guidelines below in Figure 3 and Table 8 and these classifications are proposed for use in the LVIA of specified infrastructure projects.

The chart as shown in Figure 3 below, indicates that 'significance of effect' is determined by comparing the Description/Nature of the Effect against the Existing Landscape and Visual Environment.

The approach to significance of effects, *i.e.* comparing the nature of effect to the significance and sensitivity of the baseline environment, applies equally to landscape (or townscape/seascape) and to visual effects.

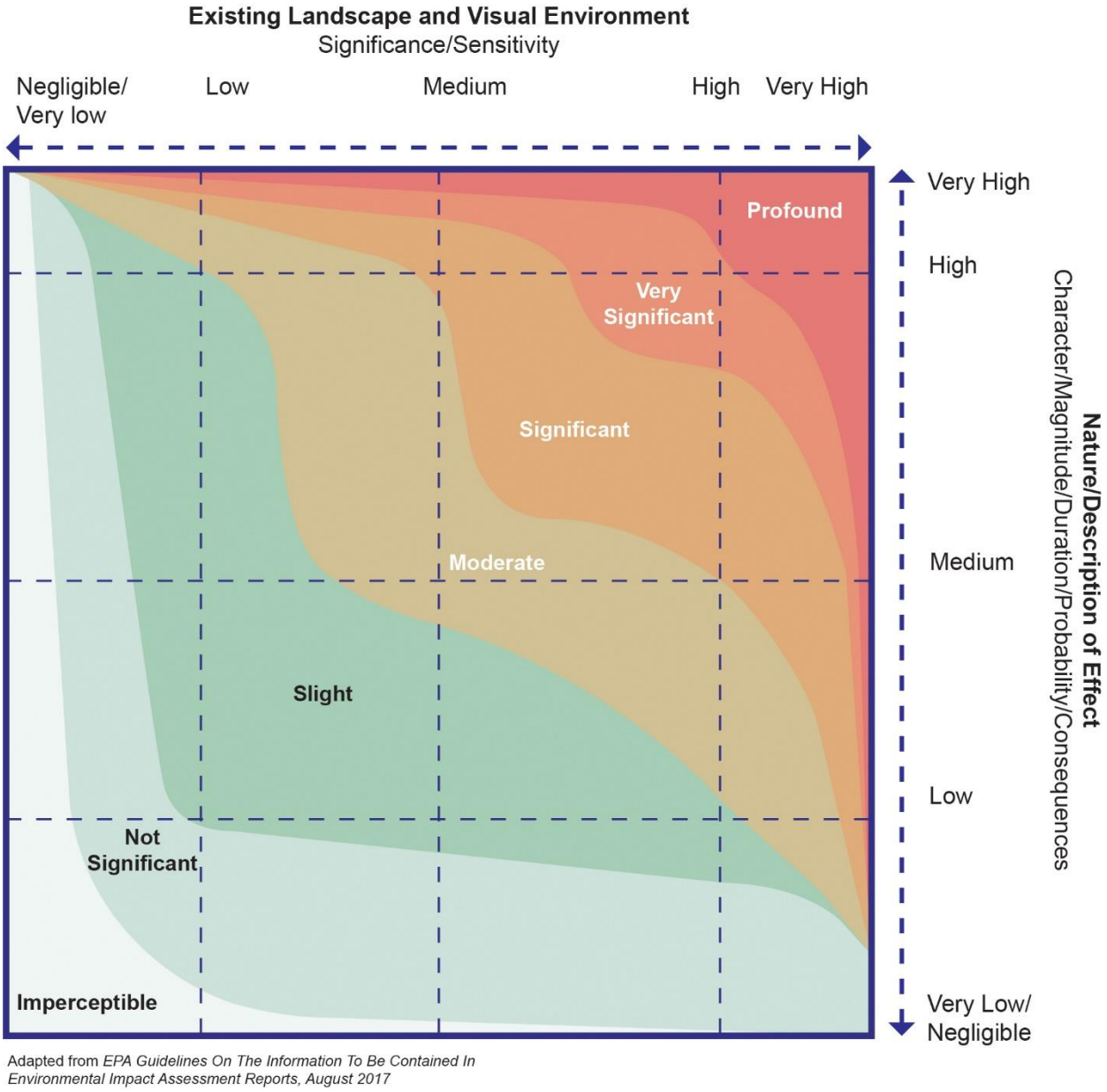

Figure 3 Classification of Significance of Effects (adapted from source Figure 3.5, (EPA, 2017))

Table 8 Describing the Significance of Effects (source extract from Table 3.3, (EPA, 2017))

Describing the Significance of Effects "Significance" is a concept that can have different meanings for different topics – in the absence of specific definitions for different topics the following definitions may be useful.	**Imperceptible** An effect capable of measurement but without significant consequences.
	Not significant An effect which causes noticeable changes in the character of the environment but without significant consequences
	Slight Effects An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
	Moderate Effects An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends.
	Significant Effects An effect which, by its character, magnitude, duration or intensity significantly alters most of a sensitive aspect of the environment.
	Profound Effects An effect which obliterates sensitive characteristics.

In assessing landscape and visual effects, the magnitude of effect (Section 5.3 and Table 7 above), is assessed against the significance and sensitivity of the receiving environment (Section 5.2 and above), to give an overall significance for the individual landscape or visual effect which can be described as set out in the at Section 5.2, Figure 3 and Table 8 of these Guidelines.

The nature/quality of the effects, i.e. positive, negative, or neutral, should also be provided.

For example, "*the impact of the construction of a 250m long embankment will remove 75sqm of a 500sqm of deciduous woodland. The woodland is a distinctive landscape feature of high significance and sensitivity. This impact will result in the very likely, permanent loss of a small portion of the woodland and as such the magnitude of the landscape effect is low. The significance of the landscape effect is assessed as being moderate and negative".*

5.3.2 Cumulative Landscape and Visual Effects

The assessment of cumulative effects as required by the EIA Directive must be considered as part of the LVIA. Cumulative effects are described as "*The addition of many minor or significant effects, including effects of other projects, to create larger, more significant effects" (p.52* (EPA, 2017)*).*

The scope of what other projects are included in the cumulative assessment should to be agreed with the Project Manager / EIA co-ordinator (as defined in *PE-PMG-02041* (TII)) to ensure consistency across the assessment of all environmental factors.

Existing projects, those under construction and other projects permitted but not yet constructed or commenced, should be included for assessment. However, the projects considered need to be of a context, nature and scale to be relevant to the cumulative assessment for likely significant effects in the LVIA.

The use of mapping such as the Zone of Theoretical Visibility (ZTV) can be useful for highlighting potential inter-visibility and visual overlap between different projects.

The same principles used for the assessment of the landscape and visual effects of the proposed project should be used in the approach taken to the assessment of cumulative effects, indirect/secondary effects and this should extend to consideration and assessment under both construction and operation stages.

5.3.3 Interaction of Effects

There is a requirement of the EIA Directive for consideration to be given to the assessment of any effects likely to arise from the interaction of effects between different environmental factors (e.g. Landscape and biodiversity; visual and cultural heritage). Identification of potential interactions should be carried out in a project team or workshop environment and any landscape and visual interactions identified should be recorded and assessed in the same manner as other landscape and visual effects.

5.3.4 Residual Landscape and Visual Effects

Mitigation measures are described separately in Section 5.4 of these Guidelines, however, it will not always be possible or practical to mitigate all adverse effects. Any final effects which remain after all proposed mitigation measures have been implemented are referred to as 'Residual Effects'.

The assessment of the potential residual landscape and visual effects of the project should take account of mitigation measures proposed 15 years after implementation by which time all proposed planting and any other measures will be fully established and effective.

5.3.5 Non-Technical Summary

It is an EIA requirement that a Non-Technical Summary (NTS) be prepared for all EIA Report chapters, including the LVIA chapter. The NTS should not be viewed as direct summary of the main LVIA chapter but rather a standalone description of the main points of LVIA process undertaken. The NTS should be written in clear, concise, and easily understood language that avoids the use of technical jargon. All likely significant landscape and visual effects, associated mitigation measures, and any residual effects should be included.

5.4 Mitigation of Landscape and Visual Effects

Measures must be developed to mitigate likely significant landscape and visual effects of a project. This is a mandatory requirement for EIA projects and best practice for other projects.

Development of landscape and visual mitigation measures should be an iterative process between the project designers and the Landscape Professional. Professionals from other areas, *e.g*. ecologist, archaeologist, (and the TII-appointed Project Archaeologist) *etc*., should also be included so as to ensure that proposed measures are appropriate to all environmental factors and that they do not give rise to additional negative effects elsewhere.

Measures to avoid, reduce or remediate landscape and visual impacts should be considered at each stage/phase of the project delivery, this includes a preliminary options selection, options selection, and at preferred option stage, as well as through design and assessment for statutory approval.

Working with the Landscape Professional, a core objective of the project designers in the options selection and the design phase of the preferred option, must be to:

- Avoid the more significant and sensitive characteristics and features of the landscape, wherever possible;
- Avoid the more significant and sensitive visual receptors, wherever possible;
- Reduce impacts on the more significant and sensitive characteristics and features of the landscape, where they are unavoidable.
- Reduce impacts on the more significant and sensitive visual receptors, where they are unavoidable.
- Remediate any likely significant landscape or visual effects, which are unavoidable.

The LCA prepared as part of the baseline studies (refer to Section 4 of these Guidelines) should be used as the key reference for the consideration, development and description of mitigation measures. This will ensure that measures proposed are grounded in, and respect, the key characteristics of the receiving landscape and visual environment (or 'genius loci').

This context-based approach will help to both protect significant and sensitive attributes; maintain the key 'sense of place' of an area; allow for enhancement, where appropriate; and provide for low management, effective and sustainable measures that are in-keeping insofar as possible with the receiving landscape and visual environment, and also help to reduce life cycle costs.

With the objective to develop context sensitive mitigation measures that will avoid, reduce, or remediate adverse landscape and visual impacts, measures can include:

- Working with the general flow and grain of the landscape (*i.e.* landform, landcover, topography);
- Retaining and utilising existing strong landscape features to aid project integration in the landscape (*e.g*. aligning a linear infrastructure alongside a strong hedgerow or tree-line, which can be retained to provide immediate screening);
- Making use of less significant and sensitive characteristics to avoid or reduce landscape and visual effects elsewhere (*e.g.* road alignment may pass through a forest plantation);
- Grading and blending earth mounds, to better incorporate as part of existing landforms or to create more naturally-shaped features. Such features can also provide screening for visual receptors and can be sensitively planted to further enhance screening and to replicate existing landscape and landcover patterns;
- Reflect the beauty of the natural, built and historic environment through which the project passes, with the use of locally appropriate materials (e.g. boundaries, walls, stone,) and native, or locally appropriate plant species, wherever possible;
- Consideration of opportunities for enhancement of the landscape and/or the experience of the new user of the project, where this does not adversely affect other aspects (e.g. minimise or avoid planting, where appropriate to allow opportunity for landscape views from a new road or rail project, improving landscape appreciation and reducing driver fatigue).

All mitigation measures should be effective, practical, safe for the project user, and ideally self-sustaining in the medium and longer-term. Consideration should be given to ease of establishment, to minimising maintenance, and to the long-term development of the proposed measure so that it in itself does not become a safety concern in later stages (*e.g*. trees species in roadside planting impinge on or overhang a road corridor when mature). Consideration should also be given to full life cycle costs and to resilience to climate change.

The specific mitigation measures proposed to address particular landscape and visual effects should be described and documented (by way of Landscape Mitigation Plan(s)), and included within a schedule of environmental commitments. They measures should be linked to suitable clear and robust specification with performance standards covering the establishment, maintenance, management and monitoring. These documents should set out what is required for mitigation to be effective in sufficient detail to allow for clear understanding in the statutory approval phase of the project and for detailed plans to be prepared for approval prior to implementation.

5.4.1 Landscape Mitigation Plans

The landscape mitigation plan shall have regard to the following:

- ***GE-ENV-01102*** *A Guide to Landscape Treatments for National Road Schemes in Ireland* (TII);
- ***GE-ENV-01103*** *Guidelines in the Implementation of Landscape Treatments on National Roads Schemes in Ireland* (TII);
- ***GE-TBU-01019*** *NRA TB 11 NRA TD 19 and Forgiving Roadsides* (NRA);
- Road safety sightlines and lighting layouts during the design process, avoiding obstruction to visibility (TII);
- Mitigation strategies will consider the whole life costing particularly with regard to maintenance requirements;
- Proposed meadow, grass, and planting areas are of a size and nature to be effectively maintained;
- Consideration of the fully-grown nature of the proposed landscaping, particularly in respect of future maintenance;
- Planting proposals planting shall take account of the objectives of the *All-Ireland Pollinator Plan* (2015-2020) http://www.biodiversityireland.ie/projects/irish-pollinator-initiative/all-ireland-pollinator-plan/; [Note that a new version of the All-Ireland Pollinator Plan is being developed to cover 2021-2025.]
- Account shall also be taken of the National Biodiversity Plan (https://www.npws.ie/legislation/national-biodiversity-plan)
- Where applicable, *Design Manual for Urban Streets and Roads (DMURS),* (DTTaS (now DoT)/DHPLG, 2013)

The landscape mitigation plan will show, where applicable:

- Existing trees to be retained and protected;
- Existing landscape features to be retained;
- Measures proposed for mitigation of significant landscape effects;
- Measures proposed for mitigation of significant visual effects;
- Measures proposed for mitigation of ecological effects;
- Measures proposed for mitigation of temporary or short-term construction effects;
- Measures proposed for the appropriate treatment of boundaries;
- Measures proposed for the safe guarding of archaeological, architectural and/or cultural heritage monuments/features;
- Planting types, species and specification;
- Materials, finishes, types and specification;
- A description of the function/purpose of all landscape and visual mitigation measures; and,
- A description of how construction and whole life cycle costs have been addressed, in terms of mitigating significant effects on landscape and visual environments.

5.4.2 Monitoring

Monitoring involves the observation, measurement, and evaluation of the efficiency of mitigation measures.

The process is carried out during the construction and operation stages of the proposed infrastructure project with the objective of ensuring that measures proposed for mitigation are both implemented and effective.

Monitoring provides assurance that the proposed mitigation measures are being implemented and that are effective in the manner in which they are proposed and is a requirement under the EIA Directive (EU, 2014). Project specific and/or future mitigation strategies maybe be adapted or amended, as required, depending on the outcome of monitoring of the effectiveness of landscape mitigation proposals.

In its statutory role, TII act as the supervisory authority to ensure that local authorities comply with conditions imposed by An Bord Pleanála in respect of proposed national road development, which require EIA.

6. LVIA through the Project Phases & Stages

6.1 Introduction

Section 3 of these Guidelines outlines *where* LVIA applies in the different Project Phases and Stages of TII specified infrastructure projects. The following sections details *how* the LVIA process is applied to these Phases and Stages.

The following describes the LVIA approach and process for each of the Project Phases, which are broadly outlined as:

- **TII Phase 2 Options Selection**
- **TII Phase 3 Design and Assessment**
- **TII Phase 4 Statutory Process**

6.2 TII Phase 2 (Options Selection)

These phases of project delivery have three distinct option selection stages, which may run consecutively or be amalgamated for smaller projects:

- **Stage One - Preliminary Options Assessment** – Examination of all feasible project options.
- **Stage Two - Project Appraisal Matrix**- An examination of selected options.
- **Stage Three - Preferred Option** - Selection of the preferred option.

6.2.1 Stage One - Preliminary Options Assessment

The purpose of Stage 1 is to examine all feasible project options and to select a reduced number of options (or a preferred option for smaller projects) for further assessment.

Multiple route or site options may be identified and the level of detailed project information available is likely to be very limited. Linear projects may only be defined as potential corridors and site-based projects (e.g. motorway service area) may only indicate indicative locations.

Nevertheless, a proportionate LVIA must be carried out to allow for assessment of likely landscape and visual effects and for comparison and ranking of the options in a MCA. The LCA carried out for the project study area (refer to Section 4 of these Guidelines) will form the basis for the LVIA - though further refinement of the LCA findings will be required to facilitate the assessment. The findings of the Stage 1 LVIA should be described in the Stage 1 Options Selection Report.

6.2.1.1 Stage One - LVIA Approach and Process

The LVIA approach and process for the Stage 1 options selection will include:

- Definition of the purpose and scope of the assessment;
- A review of the geographic extent of the identified options and appropriate level of detail for baseline study;
- A review of the identified options against the baseline landscape and visual information collected at the LCA stage (Section 4 of these Guidelines);

- An updated field study to prepare a focused refinement of the description and mapping of the landscape and visual information (character areas, types, features, designations, visual receptors, *etc*.) along or around each identified option. This will allow appropriate and proportionate assessment and comparison of likely significant effects;
- A high-level identification, description and assessment of **likely significant** landscape and visual effects of each option (as set out in Section 5 of these Guidelines)
- Comparison and ranking in landscape and visual effects of the identified options in the MCA;
- Liaison with the Project Manager and the other relevant project professionals (including the TII-assigned Project Archaeologist); and
- Prepare Stage 1 LVIA report, describing the methodology used, the landscape and visual baseline, and the assessment of landscape and visual effects. The report should also highlight any measures that should be considered to mitigate significant effects in the LVIA.

6.2.1.2 Stage One - LVIA Outputs

The outputs will include:

- LCA mapping and description to assist the identification of options;
- Stage 1 LVIA report referencing each of the identified options to be included in Stage 1 Options Selection Report;
- Comparative ranking (MCA) of the identified options relative to their landscape and visual effects; and,
- Record that receipt of the outputs has been acknowledged by the Project Manager

6.2.2 Stage Two - Selected Options Assessment (Project Appraisal Matrix)

The purpose of Stage 2 is to carry out a more detailed or refined options selection based on a narrowing or reduction of selected options. This will likely include some of the options from Stage 1, but may also include amended (to improve performance) or indeed new options highlighted during the Stage 2 process.

While it is likely that more project information will be available it is still likely to be limited in detail. Linear projects may have indicative cut and fill and/or junction strategies) while site-based projects may have indicative site layouts.

Again, as with Stage 1, the requirement is to prepare a proportionate LVIA to allow for assessment of likely landscape and visual effects and for comparison and ranking of the options in a Stage 2 MCA. The information gathered from all of the assessments will be used to assist in identifying a preferred option for the project.

The LCA carried out for the project study area (refer to Section 4 of these Guidelines) as refined in Stage 1 option selection above will form the basis for the LVIA - though again further refinement of the LCA findings may be required to facilitate the assessment, especially where amended or new options are selected. The findings of the Stage 2 LVIA should be described in the Stage 2 Options Selection Report.

6.2.2.1 Stage Two - LVIA Approach and Process

The LVIA approach and process for the Stage 2 options selection will include:

- Review Stage 1 LVIA Report
- Definition of the purpose and scope of the assessment;
- A review of the geographic extent of the identified options and appropriate level of detail for baseline study;
- A review of the identified options against the baseline landscape and visual information collected at the LCA stage (Section 4 of these Guidelines);
- An updated field study for any amended or new options to prepare a focused refinement of the description and mapping of the landscape and visual information (character areas, types, features, designations, visual receptors, *etc*.) along or around each identified option. This will allow appropriate and proportionate assessment and comparison of likely significant effects;
- A high-level identification, description and assessment of **likely significant** landscape and visual effects of each option (as set out in Section 4 of these Guidelines)
- Comparison and ranking in landscape and visual effects of the identified options in the MCA;
- Liaison with the Project Manager and the other relevant project professionals (including the TII-assigned Project Archaeologist); and
- Prepare Stage 2 LVIA report, describing the methodology used, the landscape and visual baseline, and the assessment of landscape and visual effects. The report should also highlight any measures that should be considered to mitigate significant effects in the LVIA.

6.2.2.2 Stage Two - LVIA Outputs

The outputs will include:

- Further refined LCA mapping and description, where appropriate, relevant and scaled to the identified options;
- Stage 2 LVIA report referencing each of the identified options to be included in Stage 2 Options Selection Report;
- Comparative ranking (MCA) of the identified options relative to their landscape and visual effects; and
- Record that receipt of the outputs has been acknowledged by the Project Manager

6.2.3 Stage Three - Preferred Option Selection

The purpose of Stage 3 is to select the preferred option and to outline the likely environmental effects, including the landscape and visual effects.

Further project detail may or may not be available for the preferred option. Where available any additional detail should be reflected in the Stage 3 LVIA.

The Stage 3 requirement is to outline a proportionate LVIA for the selected preferred option, which may or may not have been amended or altered following the Stage 2 assessment.

The LCA carried out for the project study area (refer to Section 4 of these Guidelines) as refined in Stage 1 and Stage 2 options selection (above) will form the basis for the LVIA. Further refinement of the LCA findings may be required to facilitate the assessment, especially where an amended option is selected. The findings of the Stage 3 LVIA should be described in the Stage 3 Preferred Option Report.

6.2.3.1 Stage Three - LVIA Approach and Process

The LVIA approach and process for the Stage 3 preferred option selection will include:

- Review Stage 2 LVIA Report
- Definition of the purpose and scope of the assessment;
- A review of the geographic extent of the preferred option and appropriate level of detail for baseline study;
- A review of the preferred option against the baseline landscape and visual information collected at the LCA stage (Section 4 of these Guidelines);
- An updated field study for any amended section of the preferred option to prepare a focused refinement of the description and mapping of the landscape and visual information (character areas, types, features, designations, visual receptors, *etc*.) along or around the identified option. This will allow appropriate and proportionate assessment of likely significant effects;
- A high-level/outline identification, description and assessment of **likely significant** landscape and visual effects of the preferred option (as set out in Section 5 of these Guidelines);
- Liaison with the Project Manager and the other relevant project professionals (including the TII-assigned Project Archaeologist); and
- Prepare Stage 3 LVIA report, describing the methodology used, the landscape and visual baseline, and the assessment of landscape and visual effects for the preferred option. The report should also highlight any measures that should be considered to mitigate significant effects or to have the preferred option perform better in the LVIA.

6.2.3.2 Stage Three - LVIA Outputs

The outputs will include:

- Refined LCA mapping and description, where appropriate, relevant to the preferred option;
- Stage 3 LVIA report for the preferred option to be included in Stage 3 Preferred Option Selection Report; and
- Record that receipt of the outputs has been acknowledged by the Project Manager

6.3 TII Phase 3 (Design and Assessment)

This phases of project delivery allow for the iterative design and environmental assessment, where required, of the project. The environmental assessment will include LVIA as part of the EIA Report where EIA is required, otherwise LVIA may be undertaken where landscape and visual aspects are considered sufficiently relevant to be assessed in its own right. In the latter scenario the LVIA will either form a standalone report or be compiled within a project specific environmental report.

Significant detail will emerge through this iterative design and assessment phase of the project. This detail will address construction and operation stages as well as the detailed design of all aspects of the project. Phasing of construction may also be a relevant consideration.

As the design and assessments progress the detail of proposed mitigation measures for all environmental factors assessed, will also evolve.

All of this detail must be reflected and assessed in the LVIA where it is relevant to the determination of likely significant landscape and visual effects. The process for identifying, assessing, and mitigating significant landscape and visual effects is set out in detail in Section 5of these Guidelines. However, some key aspects of the process and outputs are outlined in the following.

6.3.1 Scoping the LVIA

Scoping for the LVIA will assist in identifying the issues that need to be covered in the assessment and should include for a review of the following:

- Review Stage 3 LVIA Report
- Review nature, scale, and complexity of the project. This will help in reviewing the likely extent of the LVIA study area; the likely extent and detail of LVIA required, if sufficient project information is available, or if further detail is required, *etc*.;
- Define the study area of relevance to the LVIA (see section 6.3.2) and review existing baseline information, including that gathered at LCA stage and options selection. Consider likelihood that further information or detail will be required;
- Identify of the main sources of relevant landscape and visual information and data, and consider new or additional information at hand, *e.g.* arising from public and/or statutory consultations;
- Consider and identify any statutory/non-statutory consultations that may be required *e.g*. The Heritage Council, Irish Landscape Institute, Local Authority, *etc*.
- Identify of the nature and range of possible landscape and visual effects and especially those deemed most likely to occur and to be of most significance;
- Identify the main receptors of the potential landscape and visual effects that need to be addressed in the full assessment including viewpoints that should be assessed;
- Consider methodology to be used in assessing the likely significance of the effects that may be identified. Adapt and record as appropriate;
- Consider requirements with respect to the assessment of likely significant cumulative landscape and visual effects;
- Consider the likely interactions with other environmental factors, such as with biodiversity and cultural heritage, that will need to be assessed;
- Consider if the preparation of Photomontages will likely be required. Draft potential locations and seek approval with Project Manager and consult with local authority(s) / consenting authority.

6.3.2 LVIA Study Area

The LVIA study area relevant to the project will likely be significantly smaller than the original project study area identified prior to the options selection stage. Identifying the relevant LVIA area is key to ensuring that all potential landscape and visual impacts are identified and should be done by the Landscape Professional using their professional experience and judgement.

It is likely that the core area will be defined by topography, buildings, vegetation *etc*. or by a combination of these and other factors.

The area from which the project may be visible is known by a range of terms such as: Zone of Theoretical Visibility (ZTV); Zone of Visual Influence (ZVI); or Visual Envelope, however all have broadly the same meaning.

The ZTV can be determined by digital analysis - however, this is highly dependent to the quality and detail of the input information and may be severely limited in dealing with buildings and vegetation, seasonality or the manner in which the eye views landscape. Where digital analysis is used it must be verified by site assessments to ensure accuracy and applicability. As discussed in Section 5 of these Guidelines, ZTV mapping can also be used for the identification of likely cumulative landscape and visual effects of a number of projects.

Whatever method is selected, the Landscape Professional should provide a brief description as to the methodology and basis of the ZTV mapping, and any limitations encountered.

6.3.3 TII Phase 3 - LVIA Approach and Process

The approach and process will include:

- Definition of the purpose and scope of the LVIA;
- The methodology used and any assumptions relied upon;
- Detailed review of the geographic extent and likely Zone of Theoretical Visibility (ZTV) of the project;
- A review of the project against the baseline landscape and visual information collected at the LCA stage (Section 4 of these Guidelines) and against any further information gather at the options selection stage;
- Undertake and record a detailed field study, survey, and analysis of the receiving landscape and visual environment of the project; the likely significant landscape and visual effects; and any potential measures that may be employed to mitigate such effects.
- Prepare a focused refinement of the description and mapping of the landscape and visual information (character areas, types, features, designations, visual receptors, *etc*.) for the project. The will form the description of the baseline or receiving landscape and visual environment, and allow for the appropriate and proportionate assessment of likely significant effects, and development of context-based locally appropriate mitigation measures;
- A detail identification, description and assessment of all **likely significant** landscape and visual effects of the preferred option (as set out in Section 5 of these Guidelines);
- Consider other potential impacts: *e.g*. construction/operation; direct/indirect; cumulative/residual, and interaction of effects, *etc*.;
- Liaison with the Project Manager and the other relevant project professionals (including the TII-assigned Project Archaeologist); and
- Propose and sufficiently describe in detail measures required to mitigate significant landscape and visual effects. These measures should be grounded in the LCA and reference the LCA as appropriate.

6.3.4 TII Phase 3 - LVIA Outputs

The outputs will include:

- Detailed landscape and visual (LCA) mapping and description of the baseline environment for the project;
- Detailed assessment and mapping of likely significant landscape and visual effects;
- Detailed description and mapping of measures proposed to mitigate significant landscape and visual effects, and
- Compilation of above information into the formal LVIA Chapter of the EIA Report where EIA is required, or into the project specific environmental report or standalone LVIA report where EIA is not required.
- A separate Non-Technical Summary (NTS) of the LVIA, where EIA is required.
- Record that receipt of the outputs has been acknowledged by the Project Manager

6.4 TII Phase 4 (Statutory Processes)

This phase is focused on securing approval for the project from the consenting authority (*e.g*. the Local Authority, An Bord Pleanála).

Landscape-related inputs are likely to include:

- Reviewing and drafting responses, where warranted, to landscape and visual issues raised in submissions to the consenting process;
- Reviewing and drafting responses to any landscape and visual-related requests for further information issued by the consenting authority;
- Reviewing and updating if necessary any aspect of the LVIA, and documenting same;
- Drafting a Landscape Statement of Evidence, where a public oral hearing is to be held, in relation to landscape and visual aspects, including the LCA, LVIA and responses to submissions *etc*.;
- Taking part in oral hearing preparation meetings;
- Finalising the Landscape Statement of Evidence;
- Presenting the Statement of Evidence at the public oral hearing and responding to any questions on landscape and visual aspects direct from the public, other bodies, or the inspector for the consenting authority;
- Review and report on any landscape or visual aspects addressed in the decision of the consenting authority (and planning inspector's report).

7. Presentation of Information

7.1 Presentation of Information on Landscape and Visual Effects

Landscape assessments should be presented in a logical structure using comprehensive, concise, and impartial text, supported by illustrations and tables. In an EIA Report the reporting will be consistent across all chapters and usually to an agreed project structure.

A well-structured landscape assessment report will include details of:

- The scope and purpose of the assessment;
- The methodology used for the assessment;
- A clear, concise and focused description of the baseline, or receiving landscape;
- A description of the characteristics of the project relevant to the landscape and visual assessment;
- The identification and assessment of likely significant construction and operation stage landscape and visual effects, indirect and cumulative effects, and effects arising from the interaction with other environmental factors;
- A description of the measures proposed to mitigate likely significant adverse effects;
- Any difficulties encountered in compiling the report.

7.1.1 Maps

Mapping should be at a suitable scale and level of detail to reflect the information required to describe the baseline landscape, to illustrate the principal landscape and visual effects and to define the landscape mitigation measures. Maps will typically illustrate the defining landscape character areas and types and landscape planning context, key landscape features, key views, and the location of visual receptors relevant to the project.

Typical maps produced will include the following:

- Landscape Character Assessment Map;
- Landscape Planning Context Map;
- Landscape Effects Map;
- Visual Effects Map;
- Landscape and Visual Mitigation Plan.

Maps should be produced digitally using appropriate software. Geographical Information Systems (GIS) is a useful tool for presentation and co-ordination of landscape character assessments. GIS also allows the information to be collated and used for analysing the relationships and interactions between topics such as topography, soils, hydrology, vegetation, habitats, settlement patterns, landuse, historical and cultural heritage.

The level of detail will be proportional to the project phase, nature of the receiving environment and project.

7.1.2 Photographs

Photographs are useful for illustrating the character and key characteristics of the landscape/ townscape in supporting the description of the baseline landscape.

They should be representative of a range of landscape character types/areas for large study areas.

For each photograph the following information should be recorded:

- Location of photograph and direction of view shown on a map;
- Lens type and focal length (For further information refer to the UK Landscape Institute's Technical Advice Note *06/19* (LI, 2019));
- Date and time of photograph.

7.1.3 Photomontages

Photomontages are a useful tool for demonstrating the physical and visual nature of landscape and visual impacts. As a minimum an 'as existing' view and an 'as proposed' view is provided, though options for the 'as proposed' view could include with and without established mitigation.

The requirement for photomontages will be determined during the scoping Phase and the number and location of views selected should be discussed and agreed with the consenting authority. During later Phases following public engagement, additional viewpoints for photomontages may be required.

Photomontages must be accurate and this requirement must be capable of being demonstrated.

Key requirements are:

- Selected viewpoints are representative of the view and character of the location and a rationale for selection of the viewpoints should be provided within the assessment;
- The baseline photography should be taken during good weather with good visibility;
- The photomontages should show all the components of the proposed project that will be visible. They may also show future changes that are proposed and have planning permission but not currently constructed;
- The field of view and image size should be selected to provide a realistic view of how the landscape will appear when the image is held at the correct specified viewing distance from the eye (i.e. between 300-500mm);
- The photomontages should show the project post-construction prior to mitigation being effective, with an alternative post-establishment of mitigation (e.g. year 15+). The time of year when the photography is taken will be dependent on the project timescale. Ideally winter and summer views should be shown but this may not be feasible;
- Particular projects may require night time views to illustrate proposed illumination levels at for example interchanges, Motorway Service Areas. In areas of existing low levels of illumination, night-time photomontages should be an integral part of the assessment;
- Where appropriate and applicable, photomontages may also include significant cumulative effects arising from other projects.
- At each agreed representative viewpoint, existing baseline photographs should be taken to record the existing view. These will be prepared in accordance with *Advice Note 06/19 Visual representation of development proposals* (LI, 2019). A note should be kept of the dates and details of the photographs.

7.1.4 Landscape Strategy Report and Landscape Mitigation Plan

Measures are to be provided to mitigate significant adverse landscape and visual impacts. These measures should be developed with regard to the landscape character types, areas, and key landscape characteristics identified in the LCA. This will ensure that the measures are landscape and locality appropriate and specific - which will provide the best opportunity for successful integration of the project in the landscape.

The landscape mitigation plan will illustrate, at an appropriate scale, the proposed project and design measures included to reduce adverse landscape and visual effects. The plan should clearly illustrate:

- Existing landscape characteristics, features, planting, trees, boundaries, etc. to be retained;
- Existing landscape characteristics, features, planting, trees, boundaries, etc. to be removed;
- Proposed landscape mitigation - landforms, vegetation (blending or enhancement), boundary integration and reinstatement, etc.
- Proposed visual mitigation - use of proposed landforms, new planting areas, and types (woodland, trees, hedgerows, shrubs, fences, etc.) to provide appropriate and timely screening or visual buffering of adverse elements.
- A list of proposed locally appropriate plant species should be provided (height, size, girth and percentage of species);
- Appropriate treatment of cut slopes/embankments with proposed grades and sections;
- Treatment of detention ponds, wetlands, swales and other SUDS features;
- Materials and finishes that help to integrate the design into the existing context. This is relevant to urban areas where materials can make a significant contribution to the local landscape character;
- Location of signage/ road gantries to ensure that safety zones and visibility requirements are not obstructed by the landscape proposals;
- Location of structures including overbridge, underpass, viaduct, pedestrian bridge, green bridges, lift shafts, etc. Design of these structures and associated earthworks can significantly mitigate their potential landscape impact and make a positive contribution to the visual quality of the transport corridor.

A series of cross sections through the development will be useful to show variations/changes in ground level and the scale (depth and height) of landscape planting relative to the proposed development to illustrate the effectiveness of screening at various stages of establishment. The cross sections will illustrate management and lifecycle of the scheme to maturity.

The Landscape Strategy Report will comprise a written statement of the design strategy including the function of all elements of the proposed scheme as a record of design intent for the project management going forwards. Identification of specific mitigation measure will be required.

A Landscape Mitigation Plan is also useful to illustrate the design purpose and intents. The plan should highlight connectivity zones, visual screening areas, habitat compensation areas, and any vegetation to be retained. The Landscape Mitigation Plan can then be used to formulate the Landscape Mitigation Schedule (see Section 12, Mitigation Measures).

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9. Other Information Sources and Guidelines

Transportation Infrastructure Ireland (TII) Standards

Project Management Guidelines

Guidance document in line with the project management structures, processes, and procedures of Construction Works Management Framework (CWMF) for managing the development and delivery of National Road and Public Transport Capital Projects in Ireland.

PE-PMG-02041 - Project Management Guidelines. Retrieved from; http://tiipublications.ie/document/?id=1694

Project Manager's Manual for Major National Road Projects

Guidance document to provide supporting details on the processes and deliverables outlined within the Project Management Guidelines (PE-PMG-02041) to assist with ensuring consistency of approach in the delivery of major national road projects.

PE-PMG-02042 - Project Manager's Manual for Major National Road Projects. Retrieved from; http://tiipublications.ie/document/?id=1696

Project Appraisal Guidelines

Guidance documents for the appraisal of National Road Projects

PE-PAG-02009 - Project Appraisal Guidelines. Retrieved from; http://tiipublications.ie/document/?id=1472

TII Guidelines

Environmental Assessment

Retrieved from http://www.tii.ie/technical-services/environment/planning/Environmental-Impact-Assessment-of-National-Road-Schemes-Practical-Guide.pdf

Environmental Impact Assessment of National Road Schemes – A Practical Guide.

Landscape

Retrieved from http://www.tiipublications.ie/

GE-ENV-01102 - A Guide to Landscape Treatments for National Road Schemes in Ireland

GE-ENV-01103 - Guidelines on the Implementation of Landscape Treatments on National Roads Schemes in Ireland.

Ecology

Guidelines for Assessment of Ecological Impacts of National Road Schemes.

Ecological Surveying Techniques for Protected Flora and Fauna during the Planning of National Road Schemes

Best Practice Guidelines for the Conservation of Bats in the Planning of National Road Schemes.

Cultural Heritage

PE-ARC-02006 - Guidelines for the Assessment of Archaeological Heritage Impacts of National Road Schemes.

PE-ARC-02007 -Guidelines for the Assessment of Architectural Heritage Impacts of National Road Schemes.

PE-ARC-02008 - Guidelines for the Testing and Mitigation of Wetland Archaeological Heritage for National Road Schemes

Construction

http://www.tii.ie/technical-services/environment/construction/

Guidelines for the Protection and Preservation of Trees, Hedgerows and Scrub, Post, Prior and During the Construction of National Road Schemes.

Guidelines of the Treatment of Bats during the Construction of National Road Schemes.

Guidelines for the Treatment of Badgers prior to the Construction of National Road Schemes.

Guidelines for the Treatment of Otters prior to the Construction of National Road Schemes.

Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes.

*Guidelines for the Creation, Implementation, and Maintenance of an Environmental Operating Pla*n.

Guidelines on the Management of Noxious Weeds and Non-Native Invasive Plant Species

Noise

Good Practice Guidance for the Treatment of Noise during the Planning of National Road Schemes

Water

Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology, and Hydrogeology for National Road Schemes

Air

Guidelines for the Treatment of Air Quality during the Planning and Construction of National Road Schemes

NTA Guidelines

Project Management Guidelines for Project funded by the National Transport Authority (Up To €20 Million in Value).

Other useful Guidelines and Standards

Landscape Character Assessment/Landscape and Visual Impact Assessment

- *An Approach to Landscape Character Assessment* (Natural England, 2014)
- *Landscape and Landscape Assessment, Consultation Draft Guidelines* (DOELG, 2000)
- *Guidelines for Landscape and Visual Impact Assessment* (LI/IEMA, 2013)

- *Guidelines on the information to be contained in Environmental Impact Assessment Reports* (EPA, 2017)
- *Draft Advice Notes for preparing Environmental Impact Statements* (EPA, 2015)
- *Guidelines for the Implementation of the European Landscape Convention, Recommendation CM/Rec (2008)3 of the Committee of Ministers to Member States, 2008*
- *Townscape Character Assessment* (LI, 2018)
- *Guidance on Heritage Impact Assessments for Cultural World Heritage Properties* (ICOMOS, 2011)

Photography/Photomontages

Landscape Institute Technical Advice Note 01/11

This guidance provides advice to Landscape Professionals on photography and photomontage methods in landscape and visual impact assessment. It does not consider the use of photography or photomontage for other purposes, such as promoting or exhibiting a scheme.

https://www.landscapeinstitute.org/visualisation/photography-and-photomontage/

Visual Representation of Development Proposals

Landscape Institute Technical Guidance Note 02/17 (31 March 2017)

This guidance aims to help Landscape Professionals, planning officers and other stakeholders to select types of visualisation which are appropriate in the circumstances for which they will be used. It is particularly aimed at visualisations supporting development proposals. It links to, follows, and amplifies the broad principles set out in the *Guidelines for Landscape Visual Impact Assessment 3rd edition (GLVIA 3),* (LI/IEMA, 2013). These advocate proportionate and reasonable approaches to the scope of assessments.

https://www.landscapeinstitute.org/visualisation/photography-and-photomontage/

Highways England Design Manual for Roads and Bridges

- *Landscape and visual effects LA 107* (Highways England, 2019)
- *Landscape Design LA 117* (Highways England, 2019)
- *Landscape Elements, DMRB, Vol. 10, HA 88/01*
- *New roads, DMRB, Vol. 10, Section 1*
  - *Landform and Alignment, HA 55/92* (Highways England, 2001)
  - *Planting, Vegetation and Soils, HA 56/92* (Highways England, 1992; Highways England, 1992)
  - *Integration with Rural Landscapes, HA 57/92* (Anon., 2001)
  - *The Road Corridor, HA 58/92* (Highways England, 1997)
  - *Heritage, HA 60/92* (Highways England, 1992)
- *Improving Existing Roads, DMRB, Vol 10, Section 2*
  - *Road Improvement within Limited Land Take, HA 85/01* (Highways England, 2001)

  - *Improving Existing Roads Improvement Techniques, HA 63/92* (Highways England, 2001)
- *Landscape Management DMRB, Vol 10, Section 3*
  - *Wildflower Handbook, HA 67/93* (Highways England, 1993)
  - *Landscape Management Handbook, DMRB, Vol. 10, HA108/84* (Highways England, 2004)
  - *Establishment of an Herbaceous Plant Layer in Roadside Woodland* (Highways England, 2005)
- *Environmental Barriers, DMRB, Vol. 10, Section 5*
  - *Design for Environmental Barriers, HA 65/94* (Highways England, 2001)

Other useful Source Information

- Ordnance Survey Ireland vector, raster and web mapping (1:250,000; 1:50,000; orthophotography; lidar/dtm; historical mapping)
- Web based mapping and GIS data
  - http://www.geohive.ie/
  - https://gis.epa.ie/EPAMaps/
  - www.heritagemaps.ie
  - www.myplan.ie
  - http://data-osi.opendata.arcgis.com/
  - https://data.gov.ie/data/search?q=landscape
  - http://webgis.archaeology.ie/historicenvironment/
  - OSi Prime2 datasets
- TII-acquired LiDAR data:

  https://dcenr.maps.arcgis.com/apps/webappviewer/index.html?id=b7c4b0e763964070ad69bf8c1572c9f5
- NIAH mapping, including Historic Gardens and Designed Landscapes, noting Feature Richness Index and site significance

  http://www.buildingsofireland.ie/Surveys/Gardens/ProjectMethodology/
- Existing landscape character area assessments, current professional landscape evaluations or studies, design guides, strategies or initiatives and current or future trends. Examples would include:
  - Other landscape character assessments (e.g. from Local Area Plans, Environmental Reports (SEA) or from other EIA Reports, etc.). These will need to be critically examined to ensure they are or value and are ‘fit for purpose’.
  - *Northern Ireland Landscape Character Assessment* (DAERA, 2000) and *Regional Landscape Character Assessment* (DAERA, 2000)

    https://www.daera-ni.gov.uk/articles/landscape-character-northern-ireland
  - Initiatives by statutory bodies, e.g.:
    - *National Landscape Strategy* (DCHG, 2015)
    - *National Planning Framework* (DECLG, 2015)

  - The Heritage Council publications http://www.heritagecouncil.ie/publications
  - *People, Place and Policy - Growing Tourism* (DTTaS (now DoT), 2015)
  - *Waters of National Tourism Significance* (Failte Ireland, 2009)
  - *National trails* - http://www.irishtrails.ie/
  - *Amenity forests* - http://www.coillte.ie/our-forests/recreation-map/

- Local Development Plans, Planning Guidance including Urban Design Frameworks, Development Strategies, Guides, and Village Design Statements.
- Past and future trends and forces for landscape change. Examples include;
  - Trends in landuse or land management, agriculture, forestry, energy generation/transmission etc.;
  - Future growth of existing vegetation (or future timber harvesting of commercial forestry);
  - Significant future developments with planning permission or within the planning process;
- Landuse/landcover (e.g. National Land Cover and Habitat Mapping and settlement patterns taken from historic data, aerial photographs, and maps. (NPWS, 2017))
- Books, journals, and reports including reports on local landscape and, if available, Townscape Character Assessments, and tourism studies, etc.
- Cross references to other environmental factors and assessments such as data on planning policy and designations, historic environment, biodiversity, community, and cultural landscape (e.g. Protected Structures, National Monuments, Architectural Conservation areas etc.) and Historic and/or Cultural Landscape Characterisation (HLC) where available or generated for the study area.
- *Tree surveys and Arboricultural Reports. BS 5837:2012 Trees in relation to design, demolition, and construction - Recommendations*.

10. Glossary of Terms

Term	Definition
Abutment	A structure built to support the lateral pressure of a viaduct or bridge.
Accommodation/access road or track	A road/track that serves a piece of land or residential property and is not considered a public road.
Amenity	The benefits of enjoyment and well-being which are gained from a resource in line with its intended function. Amenity may be affected by a combination of factors such as: sound, noise, and vibration; dust/air quality; traffic/congestion; and visual impacts.
Appropriate assessment	An assessment (required under Article 6(3) of the Habitats Directive 92/43/EEC) of the effects of a plan or project on the Natura 2000 network of European sites of nature conservation significance. The assessment focuses on the plan or project's implications for the site and any potential adverse effects on its integrity.
Architectural Conservation Area (ACA)	A place, area, group of structures or townscape that is of special architectural, historical, archaeological, technical, social, cultural, or scientific, interest, or that contributes to the appreciation of a Protected Structure. The designation, determined by local authorities, aims to identify and protect areas of special significance and promote an awareness of this significance.
At grade	Crossing on the same level (e.g., when a road or railway line is on the current ground level).
Attenuation pond	Pond designed to attenuate and control flow rates from surface runoff.
Baseline studies	Description of the current status of the environment in and around the area in which the proposed road development will be located. It forms the foundation upon which the assessment will rest.
Biodiversity	Biodiversity (from biological diversity) is generally defined as the variety of all life on earth. It includes all of the living organisms across all habitats, including in terrestrial, freshwater, and marine ecosystems.
Built heritage	A structure, building, manmade landscape of historic value. These structures are visible above ground level.
Bund	An embankment or linear earth mound which acts as a visual or noise screen, or acts as a barrier to control the spillage of fluids.
Buried heritage (archaeology)	A heritage asset beneath ground level, which may include earthworks.
Carriageway	Each of the two sides of a motorway or dual carriageway/ part of the road intended for vehicle usage.
Chainage	The distance (measured in metres) along the centre line of a linear transport route from a defined start point.
Characterisation	The process of identifying areas of similar character, classifying and mapping them and describing their character.

Term	Definition
Characteristics	Elements, or combinations of elements, which make a particular contribution to distinctive character.
Compensation	Measures devised to offset or compensate for residual negative effects which cannot be prevented/avoided or further reduced.
Consenting authority	The authority which determines the application for consent, permission, licence, or other authorisation to proceed with a proposal. The authority must consider the environmental information before granting any kind of authorisation.
Construction plant	Portable construction machinery and equipment.
Consultation bodies	Anybody specified in the relevant EIA Legislation, which the competent authority must consult in respect of an EIAR, and to gather information.
Culvert	A tunnel, pipe, or box-shape, carrying a stream or open drain under a road or railway.
Cultural Landscape	According to the *'Operational Guidelines for the Implementation of the World Heritage Convention', 'cultural landscapes are cultural properties that represent the combined works of nature and man designated in Article 1 of the Convention'. They are illustrative of the evolution of human society and settlement over time, under the influence of the physical constraints and/or opportunities presented by their natural environment and of successive social, economic, and cultural forces, both external and internal.'* (UNESCO, 2012)
Cumulative Effects	Effects that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the proposed road project, to create larger, more significant effects.
Curtilage	An area of surrounding land associated with the use of a house or building for a particular purpose.
Cutting	Excavation of soil and/or rock material to lower the existing ground level to allow a transport corridor remain level, or gently climb/decline within topography.
Cycleway	A path or track for bicycles and not motor vehicles.
Depot	Storage, maintenance, and despatch facility for road or rail maintenance and management.
Designated landscape	Areas of landscape identified as being of importance at international, national, regional, or local levels, either defined by statute or identified in development plans or other documents.
Development	The carrying out of any works on, in, over, or under land or the making of any material change in the use of any structures or other land.
Direct effect	An effect that is directly attributable to the proposed development.
Directive	A directive is a legal act of the European Union, which requires member states to achieve a particular result without dictating the means of achieving that result. It can be distinguished from regulations which are self-executing and do not require any implementing measures.

Term	Definition
Do nothing scenario	The likely state and evolution of the landscape if the proposed road development does not go ahead.
Dual carriageway	A national road with two or more lanes in each direction and with a dividing strip between traffic in opposite directions
Earthworks	The removal or placement of soils and rocks such as in cuttings, embankments, and environmental/landscape mitigation, including the in-situ improvement of soils/rocks to achieve the desired properties.
Ecological landscape design/mitigation	Landscaping treatments for mitigation which are environmentally sustainable and are sensitive to or enhance the ecological networks within the landscape.
Effect	Any change in the receiving physical, natural, or cultural environment brought about by the proposed road development (see also: 'impact').
Elements	Individual components which make up the landscape, such as trees and hedges.
Embankment	Artificially raised ground, commonly made of earth/soil/stone material, on which the road infrastructure is laid.
Environmental Impact Assessment (EIA)	The process to systematically assess the potential environmental effects of proposed development. An environmental impact assessment is a legal requirement for certain public and private projects in European Union countries under Directive 2011/92/EU, as amended by Directive 2014/52/EU.
Environmental Impact Assessment Report (EIAR)	The Environmental Impact Assessment Report is the document prepared by the Developer that presents the output of the assessment. It contains information regarding the Project, the likely significant effect of the Project, the Baseline scenario, the proposed Alternatives, the features and Measures to mitigate adverse significant effects as well as a Non-Technical Summary and any additional information specified in Annex IV of the EIA Directive
Features	Particularly prominent or eye catching elements, like tree clumps, church towers, or wooded skylines.
Fill	Material used to artificially raise the existing ground levels.
Geographical Information System (GIS)	A system that captures, stores, analyses, manages and presents data linked to location. It links spatial information to a digital database.
Grade separation	Method of aligning a junction of two or more transport routes at different heights (grades), so that they will not disrupt the traffic flow on other routes when they cross each other. For example, a bridge to carry vehicles over a road, motorway or railway line.
Green Infrastructure (GI)	Approach for protecting and enhancing nature and natural processes, which are integrated into spatial planning and development. For example, network of green spaces, watercourses, and water bodies that connect rural areas, villages, towns, and cities.
Haul roads	Temporary roads provided within a contractor's site area to allow for the movement of construction material, construction machinery and/or construction labour around the site.

Term	Definition
Heritage asset	A building, monument, site, place, area, or landscape of historic/cultural value.
Historic Landscape Characterisation (HLC)	Identifies the contribution of the past to the landscape. It looks at the time depth of the existing landscape and applies to all landscape areas, not just particular sites, or monuments. It complements and contributes to LCA by enhancing the historic consideration of historic aspects of the landscape. "*It is a method of recognising the historic character, interest or value or widely different places and environments (rural, urban, coastal, or marine).*" The Heritage Council has produced a guidance document on Historic Landscape Characterisation (HLC) in Ireland: Policy and Best Practice Guidance (2010).
Hoarding	A temporary fence erected around a construction site.
Impact	The action being taken (see also: 'effect').
In-combination effects	In-combination effects arise where landscape or visual receptors are affected by a combination of a number of environmental effects, e.g. noise, light, ecological, cultural heritage etc.
Indirect effect	Effects that result indirectly from the proposed project because of the direct effects, often occurring away from the site, or because of a sequence of interrelationships or a complex pathway. They may be separated by distance or in time from the source of the effects.
Iterative design process	The process by which project design is amended and improved by successive stages of refinement which respond to growing understandings of environmental issues
Key Characteristics	Those combinations of elements which are particularly important to the current character of the landscape and help to give an area its particularly distinctive sense of place.
Landcover	The surface cover of the land expressed in terms of vegetation and manmade structures. Waterbodies may be described within landcover or landform.
Landform	Natural feature of the solid surface of the landscape which has resulted from a combination of natural process (geological, geomorphological, hydrological, weathering/erosive, depositional, and/or manmade processes).
Landscape and Visual Impact Assessment (LVIA)	A tool used to identify and assess the significance of and the effects of change resulting from development on both the landscape as an environmental resource in its own right and on people's view and visual amenity.
Landscape Capacity	The degree to which a particular landscape character type or area is able to accommodate change without unacceptable negative effects on its character. Capacity is likely to vary according to the type and nature of the change being proposed.
Landscape Character Areas	Are single unique areas which are the discrete geographical areas of a particular landscape type. Each has its own individual character and identity, even though it shares the same generic characteristics with other types.
Landscape Character Assessment (LCA)	The process of identifying and describing variation in the character of the landscape. It seeks to identify and explain the unique combination of elements and features (characteristics) that make landscapes distinctive. This process results in the production of a Landscape Character Assessment, (Institute 2013).

Term	Definition
Landscape Character Types	These are distinct types of landscape that are relatively homogenous in character. They are generic in nature in that they may occur in different areas in different parts of the country, but wherever they occur they share broadly similar combinations of geology, topography, drainage patterns, vegetation, historic land use and settlement pattern. Examples include 'drumlin farmland', or 'upland heath/moorland'.
Landscape Character	A distinct, recognisable, and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse.
Landscape Effects	Effects on the landscape as a resource in its own right (as perceived by people).
Landscape Features	Particularly prominent or visual focal foci, e.g. mature tree clumps, church spires, or wooded skylines.
Landscape Management	Action, from a perspective of sustainable development, to ensure the regular upkeep of a landscape, to guide and harmonise changes which are brought about by social, economic, and environmental processes.
Landscape Planning	Process of reconciling competing land uses, while protecting natural processes and significant cultural and natural resources, with forward-looking action to enhance, restore, or create landscapes.
Landscape Policy	An expression by the competent public authorities of general principles, strategies, and guidelines that permit the taking of specific measures aimed at the protection, management and planning of landscapes.
Landscape Protection	Actions to conserve and maintain the significant or characteristic features of a landscape, justified by its heritage value derived from its natural configuration and/or from human activity.
Landscape Quality/Condition	Based on judgements about the physical state of the landscape, and about its intactness, from visual, functional, and ecological perspectives. It also reflects the state of repair of individual features and elements which make up the character in any one place.
Landscape Receptors	Defined aspects of the landscape resource that have the potential to be affected by the proposal
Landscape Sensitivity	The extent to which a landscape can accept change of a particular type and scale without unacceptable adverse effects on its character.
Landscape Value	The relative value or importance attached to a landscape (often as a basis for designation or recognition), which expresses national or local consensus, special qualities including perceptual aspects such as scenic beauty, tranquillity or wildness, cultural associations or other conservation issues
Landscape	An area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors.
Landscape Impact Assessment (LIA)	Is the process of evaluating changes to landscape as a resource arising from a proposed development. Society as a whole has an interest in this and it is recognised as one of the key dimensions of environmental interest, alongside matters such as biodiversity, or cultural heritage.

Term	Definition
	It is concerned with issues like protected landscapes, the contribution of landscape character to sense of place and quality of life for all, and the way that change may affect individual components of the landscape.
Landscaping	The process of works to screen features and increase ecological diversity by cultivating soils and planting of trees, hedges shrubs, grass/meadows.
Land take	The precise area of land required for the infrastructure proposal and other accompanying ancillary developments.
Landuse	What land is used for, based on broad categories of functional land cover, such as urban and industrial use and the different types of agriculture and forestry?
Local Planning Authority	The local authority or council that is empowered by law to exercise planning functions.
Local Road	Smaller roads not classified as national or regional routes but linked to such roads within the wider network.
Magnitude (of effect)	A term that combines judgements about the size and scale of the effect, the extent of the area over which it occurs, whether it is reversible or irreversible, and whether it is short or long term in duration.
Motorway Service Area	Areas provided at regular intervals along motorways allowing drivers to park and rest. Facilities typically include fuel stations and canopies, toilets, convenience shops, and can also include a café/restaurant/food outlet, showers, tourist information, and play areas for children. They are usually well lit and may include some landscaping.
Motorway	The highest category of road in Ireland; major linear transport infrastructure for fast flowing traffic with multiple lanes connecting cities/regions.
National Primary Road	A major arterial route between major cities/towns (including motorways)
National Secondary Road	Part of national road network but secondary to main arterial route of national primary roads.
Natural Heritage	Valued aspects of the present natural environment inherited from past generations.
Noise barrier	A solid construction that reduces unwanted sound. It may take many forms including: engineering cutting; retaining wall; noise fence barrier; landscape earthworks; a 'low level' barrier on a viaduct; a parapet barrier on a viaduct; or any combination of these measures.
Non-technical summary	A report which briefly describes the main points discussed in the EIAR without the use of technical language.
Ordnance Datum (OD)	Ordnance Datum refers to the height above mean sea-level, taken from a reference point at Malin Head, which is the vertical datum for Ireland, adopted by Ordnance Survey Ireland in 1970. Earlier maps may have Poolbeg Datum, which is approximately 2.7m below Malin Head datum.
Optioneering	The consideration of various options and then to advise on the best option.

Term	Definition
Park and Ride	A public transport system in which car drivers may leave their cars in car parks outside the city centre and utilise public transport for the remainder of the journey.
Perception	The way in which the landscape is regarded, understood or interpreted, combining the sensory (that we receive through our senses) with the cognitive (our knowledge and understanding gained from many sources and experiences).
Photomontage	A visualisation which superimposes an image of a proposed development upon a photograph or series of photographs to create an illustrative representation of potential changes to existing views.
Public Realm	Generally all areas to which the public has access (such as roads, streets, lanes, parks, squares and bridges) make up the 'public realm'.
Re-Alignment	The modification of the horizontal alignment of linear infrastructure route.
Receptor	A component of the natural or built environment (such as a human being, residential property, landscape asset) affected by an impact of the construction and/or operation of the proposed development.
Residential Visual Amenity Assessment (RVAA)	Assesses the visual component of residential amenity form local residential properties.
Road	Linear paved/tarmacked thoroughfare for transportation (including vehicles, bikes, pedestrian paths) through rural/peri-urban/urban areas connecting places.
Safety barrier	Road vehicle restraint systems contain errant vehicles. Pedestrian restraint systems provide guidance for pedestrians.
Scoping	An initial stage in the environmental impact assessment process to determine the nature and potential scale of environmental effects arising as a result of a proposed development, and an assessment of what further studies are required to establish their potential environmental impacts and effects.
Scoping (EIA)	The process of identifying the issues to be addressed by an EIA.
Screening	The process by which a decision is taken on whether or not EIA is required for a particular road project.
Seascape	Means an area of sea, coastline and land, as perceived by people, whose character results from the actions and interactions of land with sea, by natural and/or human factors
Setting (cultural heritage)	The landscape surroundings in which a heritage asset is experienced. Its extent may not be fixed and may change as the asset and its surroundings evolve. Elements of a setting may make a positive, negative, or neutral contribution to the significance of an asset and may affect the ability to appreciate it.
Significance	A measure of the importance or gravity of the landscape/visual effect, defined by significance criteria specific to the topic.

Term	Definition
Stakeholders	The whole constituency of individuals and groups who have an interest in a subject or place.
Susceptibility	The ability of a defined landscape or visual receptor to accommodate the specific proposed development without undue negative consequences.
Toll booth/scheme	A series of barriers on a major road where a charge or levy is imposed on each vehicle using the road.
Townscape	Means the landscapes within the built-up area, including the buildings and the relationship with them.
Tunnel portal	Tunnel entrances and exits.
UNESCO	United Nations Educational, Scientific and Cultural Organization
Viewpoint	A place from which something can be viewed.
Visual amenity	The overall pleasantness of the views people enjoy of their surroundings, which provides an attractive visual setting or backdrop for the enjoyment of activities of the people living, working, recreating, vising or travelling through the landscape.
Visual Impact Assessment (VIA)	Is the process of evaluating how the views of individuals or groups of people may be specifically affected by change in the landscape arising from a proposed development. This means assessing changes in specific views and in the general visual amenity experienced by particular people in particular places.
Visual effects	Effects on the entire visual resource, including protected views and the general visual amenity experienced by people.
Visual receptor	People who may have a view of the Proposed Scheme during construction or operation.
Visualisation/visual representation	A computer simulation, photomontage, or other technique illustrating the predicted appearance of a development.
World Heritage Site (WHS)	World Heritage sites are places that are important to and belong to everyone no matter where they live. They have been selected by UNESCO as having cultural, historical, scientific, or other form of significance, and is legally protected by international treaties. Brú na Bóinne and Skellig Michael are on the WHS for Ireland. There are a number of other sites on the 'Tentative' list. http://www.worldheritageireland.ie/home/ https://whc.unesco.org/en/criteria/
Zone of theoretical visibility (ZTV)	The likely (or theoretical) extent of visibility of a development, usually shown on a map. Usually prepared with GIS software but can also be prepared manually by the Landscape Professional.

11. Abbreviations & Acronyms

List of Acronyms and Abbreviations	
AA	Appropriate Assessment
ABP	An Bord Pleanála
ACA	Architectural Conservation Area
AONB	Area of Outstanding Natural Beauty (NI/UK)
CAF	Common Appraisal Framework
CDP	City/County Development Plan
CoE	Council of Europe
cSAC	candidate Special Area of Conservation
DCHG	Department of Culture, Heritage and the Gaeltacht.
DHPLG	Department of Housing, Planning, and Local Government.
DTTAS (DoT)	Department of Transport, Tourism and Sport (Department of Transport)
EEC	European Economic Community
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EIS	Environmental Impact Statement
ELC	European Landscape Convention
EPA	Environmental Protection Agency
EU	European Union
GIS	Geographical Information System
GLVIA	Guidelines for Landscape and Visual Impact Assessment
HLC	Historic Landscape Characterisation
IEMA	Institute of Environmental Management and Assessment
ILI	Irish Landscape Institute
IPI	Irish Planning Institute
LAP	Local Area Plan
LCA	Landscape Character Assessment
LI	Landscape Institute (UK)
LIA	Landscape Impact Assessment
LVIA	Landscape and Visual Impact Assessment
MCA	Multi Criteria Analysis
MSA	Motor Service Area
NHA	Natural Heritage Area
NI	Northern Ireland
NIAH	National Inventory of Architectural Heritage
NILCA	Northern Ireland Landscape Character Assessment
NIRLCA	Northern Ireland Regional Landscape Character Assessment
NLCA	National Landscape Character Assessment
NLS	National Landscape Strategy
NPF	National Planning Framework
NPWS	National Parks and Wildlife Service
NRA	National Roads Authority (now TII)
NTA	National Transport Authority
OD	Ordnance Datum (Malin Head)
OTD	Overarching Technical Document
OSI	Ordnance Survey Ireland
PAG	TII Project Appraisal Guidelines
PDA	Planning and Development Act
PMG	TII Project Management Guidelines
pNHA	proposed Natural Heritage Area
RVAA	Residential Visual Amenity Assessment
SAAO	Special Amenity Area Order
SAC	Special Area of Conservation

List of Acronyms and Abbreviations	
SCA	Seascape Character Assessment
SD	Standards Document
SEA	Strategic Environmental Assessment
SPA	Special Protection Area
TII	Transport Infrastructure Ireland
UNESCO	United Nations Education, Scientific and Cultural Organisation
VIA	Visual Impact Assessment
WHS	World Heritage Site
ZTV	Zone of Theoretical Visibility
ZVI	Zone of Visual Influence

12. Sample LVIA Chapter Headings (Phase 3)

Supported with accompanying maps/graphics and photomontages as necessary.

Scope and Purpose of the Assessment

The Methodology used for the Assessment

Receiving Environment

Site context (surrounding landscape)

- Site location, context and study area
- Topography, slope/aspect and drainage
- Vegetation
- Enclosures, including field boundaries
- Settlement patterns, land uses, zoning
- Natural features
- Archaeological, architectural, historical or cultural features
- Circulation routes

Site description

- Site topography and drainage
- Vegetation
- Structures
- Boundaries
- Adjoining landuse

Landscape Character

- Existing landscape character assessments
- Landscape character type
- Landscape character areas
- Key landscape features/elements
- with supporting maps

Landscape Significance

- Designations
  - Designated landscape
  - Designated scenic views/routes
- Other designations
  - Tourism/amenity
  - Architectural heritage/archaeology setting and intervisibility
  - Ecology

Landscape Sensitivity

- Landscape Value

Visual context, value, and sensitivity

- Visual foci - external and internal (buildings, topography, trees, natural features etc.)
- Visibility, views to/from site, ZTV, etc. Particular attention is drawn to views from:
  - designated tourism routes and viewpoints;
  - other roads;
  - residences, hotels, and amenities.
  - sites and monuments of archaeological, architectural, or historical interest.

The Proposed Development/Characteristics of Development

- Scope of the impacts
- Likely effects of the proposal:
  - Impact on trees/hedgerows/vegetation
  - Changes to topography, built development
- "Do Nothing" Impact
- Worst Case Scenario

Assessment of Effects of the Development

- Predicted impact (assessing sensitivity and magnitude of change)
- Noting location and extent of areas affected, with changes in character and visibility; changes in patterns of land-use; consequences of change, referring to indirect, secondary, and cumulative impacts; potential for interaction with other impacts.

Landscape character effects

- Construction phase
- Operational phase
- Cumulative impact on landscape character
- Impacts on particular features of significance in landscape, e.g. trees/vegetation, amenities

Visual effects, with Visual Effects Schedule and Visual Effects Drawings

- Settlements
- Routes
- Other designations (e.g. architectural heritage, tourism, amenity)
- Working receptors (if appropriate)
- Viewpoint assessment

Mitigation Measures

- Describe mitigation measures proposed to:
  - avoid developments in sensitive or prominent landscapes;
  - reduce the visual intrusiveness of the design;
  - reduce the visibility of the project.
- Landscape Strategy Report
- Landscape Mitigation Plan

- Landscape Mitigation Schedule

Residual Impacts

Monitoring

Difficulties in Compiling Specified Information

Non-Technical Summary

13. Example Landscape/Visual Survey Notes

These notes indicate the wide range of features and characteristics that may be found in Ireland (adapted from SNH EIA Guidance (Scottish National Heritage (SNH), 2018)). They are not exhaustive and should be reviewed/modified as appropriate for each project.

Table 9 below provides an outline of the elements that contribute to a particular landscape, townscape, & seascape character.

Table 9 Sample of Baseline Landscape Features, Elements, and Characteristics

Location				
Viewpoint				
Date				
Visible, physical components of landform/topography, features and characteristics				
Lowland	Drumlin	Plains	Mounds/ moraines	
Undulating	Distinct hills	Rolling hills/slopes	Hollows	
Mountains	Peak	Ridge	Outcrops	Spur
Coom/corrie	Bench/terrace	High plateau	Low plateau	Valleys (broad/narrow)
Coastal headland	Bay	Beach	Islands	
Notes				
Land cover and landuse – water/drainage				
Sea	Inlet	Intertidal	Mud/sand	Estuary
Lake/Lough/Turlough	Pools	River	Waterfall	Canal
Stream	Drain/ditch	Reservoir	Floodplain	
Notes				
Landcover and landuse – vegetation				
Semi-natural woodland	Broadleaved plantation	Mixed plantation	Coniferous plantation	Scrub woodland
Tree copses/clumps	Shelterbelts/tree lines	Road side/ Avenue trees	Parkland trees	
Hedgerow trees	Notable single trees			
Notes				

Landcover and landuse – agriculture				
Pasture/grassland	Unimproved grassland	Intensive grassland	Rough hill grazing	Bog/peatland
Arable crops	Cereal	Fodder	Energy	Mushroom
Horticulture	Protected crops	Fruit	Vegetables	Nursery
Animals:	Cattle (dairy/beef)	Sheep	Equine	
	Pigs	Poultry		
Notes				
Land cover and land use – Enclosure: hedgerows, fields and boundaries				
Continuous hedgerows	Hedgerows with gaps	Managed hedgerows	Remnant hedgerows	Lost hedgerows
High stone walls	Dry stone walls	Sod and stone bank/ditch	Concrete walls	Post and wire fencing
Wooden/metal gates	Hawthorn/blackthorn hedge	Beech hedge	Ornamental evergreen hedge	Post and rail fencing
Field size:	Large	Medium	Small	
Field shape/pattern:	Regular	Irregular	Mixed	
Notes				
Land cover and land use - other uses				
Industrial	Warehousing	Retail	Utilities	Energy
Quarry – hard rock	Sand/gravel quarry	Airfield	Military	Transport
Urban park	Country park	Nature reserve	Sports fields	Car park
Golf course	Angling	Camping/caravan	Marine/boat	Harbour/dock/ferry port
Notes				
Land cover and landuse – settlement pattern				
Urban	Town	Village	Suburban	Traditional
Modern	Clustered	Dispersed/scattered	Ribbon/linear	Frequent
Infrequent	Planned/model	Unplanned	Absent	
Notes				

Circulation and Linear Features				
Motorway	Primary road	Secondary Road	Regional road	Local road
Track	Trail	Rail line	Powerlines	Telephone lines
Rivers/streams	Canals	Coast/shoreline	Lighting	
Notes				
Visual foci - point features				
Church	Castle	Ruin	Folly/obelisk	Wind turbine
Lighthouse	Bridge	Cairn	Large house	Sign
Mast/transmitter	Industrial site/chimneys	Quarry buildings	Specimen tree	
Notes				
Components of landscape experience – visible/spatial characteristics				
Scale	Intimate	Small	Large	Expansive/vast
Openness	Tightly enclosed	Confined	Open	Exposed
Colour	Monochrome	Muted	Colourful	Garish
Texture	Smooth	Varied texture	Rough	Craggy
Diversity	Uniform	Simple	Diverse	Complex
Form	Vertical	Sloping	Rolling	Flat/horizontal
Line	Straight	Angular	Curved	Sinuous
Balance	Harmonious	Balanced	Discordant	Chaotic
Movement	Dead	Calm	Active	Busy
Pattern	Random/indistinct	Organised/irregular	Planned/regular	Formal/geometric
Seasonality	Summer	Autumn	Winter	Spring
Lighting (Institute of Lighting Professionals, 2011)	Intrinsically dark (E1)	Low district (E2)	Medium district (E3)	High district (E4)
Management	Semi-natural	Derelict/disturbed	Tended	Manicured
Notes				
Components of landscape experience – other senses/sense of tranquillity				
Sound	Silent	Quiet	Disturbed	Noisy

Smell	Fresh	Agricultural	Coastal	Industrial
Other				
Notes				

Sample of Landscape Receptors

Landscape receptors – what will be affected	Sensitivity – how important is it? Low to very high	Impact – what will the effect be?	Significance of effects
Landform/topography			
Water/drainage			
Vegetation			
Agriculture			
Enclosure - Hedgerows, fields and boundaries			
Other land uses			
Settlement pattern			
Circulation and linear features			
Visual foci - point features			
Aspects of landscape experience			
Colour			
Texture			
Pattern etc.			

Sample of Visual Receptors

Visual receptors – people who will be affected	Sensitivity of viewpoint. Low to very high	Impact – e.g. visual intrusion/obstruction	Significance of effects
Residential properties			
Public roads/streets			
Rail/canal			
Open space and recreation areas			
Workplaces			
Designated/important viewpoints			
Recreation users (land/water)			
Visitor destinations, hotels			

Places of community congregation/public/civic buildings			
Sites and monuments of architectural, archaeological or historic interest			

Figure 4 **Aspects of landscape character (adapted from Swanwick, C., Tudor, C., Heritage Council and National Landscape Strategy)**

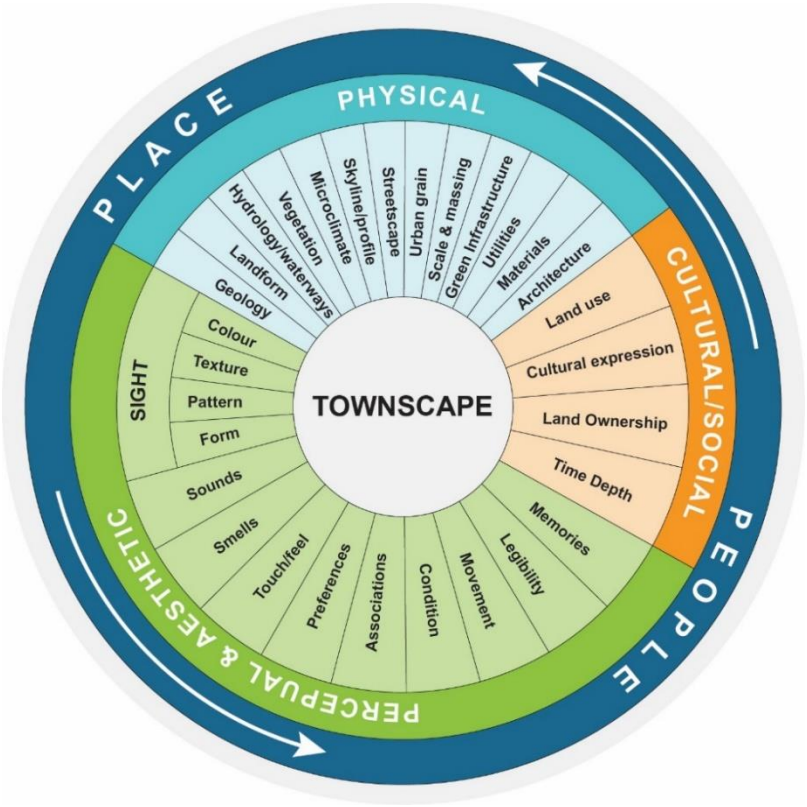


Figure 5 **Aspects of townscape character (adapted from Swanwick, C., Tudor, C., Heritage Council and National Landscape Strategy)**

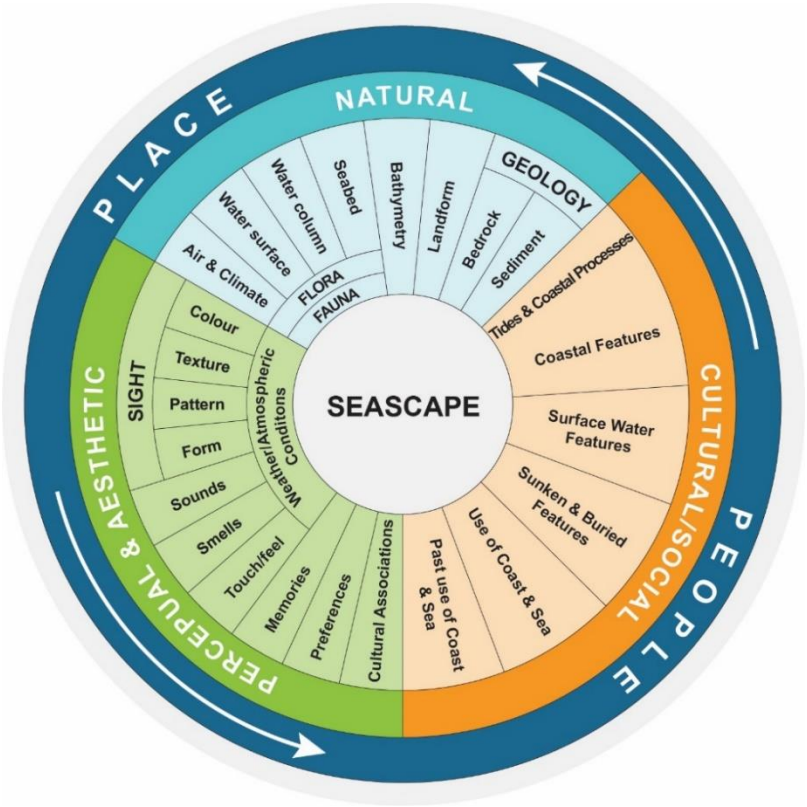


Figure 6 **Aspects of seascape character (adapted from Swanwick, C., Tudor, C., Heritage Council and National Landscape Strategy)**

Appendix A:

Requirements of Landscape Professional for carrying out LCA/LVIA

Recital 33 of the Preamble to Directive 2011/92/EU, as amended by Directive 2014/52/EU, states, *inter alia, 'Experts involved in the preparation of environmental impact assessment reports should be qualified and competent.' Article 5(3)(a) of the amended EIA Directive states 'the developer shall ensure that the environmental impact assessment report is prepared by competent experts'.* It is therefore reasonable to surmise that Landscape Professionals who carry out LCA/LVIA on TII projects (which require EIA) must be expert, qualified and competent. Furthermore, it is the responsibility of the developer (e.g. the road authority) to ensure that this is the case. To assist developers in meeting this responsibility, the following recommendations are made.

It is recommended that Landscape Professionals involved in the preparation of environmental impact assessment reports and/or the carrying out of LCA/LVIA in respect of TII projects have the following qualifications as a minimum:

- an honours degree (National Framework of Qualifications (NFQ) Level 8 (or equivalent level)) in landscape architecture (or equivalent discipline); and/or, a master's degree (NFQ Level 9 (or equivalent level)) in landscape architecture (or equivalent discipline).

It is also recommended that such Landscape Professionals hold:

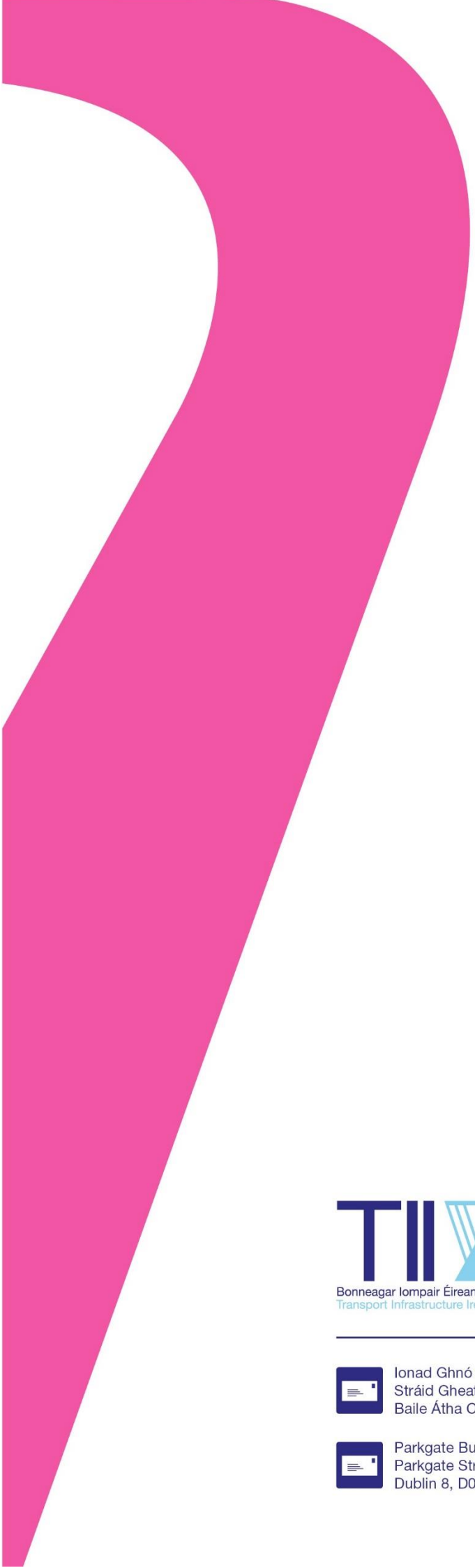
- full corporate membership of the Irish Landscape Institute (MILI); or,
- full membership of an equivalent professional body that:
  - represents landscape professionals; and,
  - is a member of the International Federation of Landscape Architects[8].

Furthermore, it is recommended that the Landscape Professionals have at least 10 years' relevant post-graduate experience as a landscape architect. It is important to note that the minimum number of years' relevant post-graduate experience may change (upwards or downwards) depending on the size, nature, complexity, etc., of the project in question. Furthermore, it is essential to carefully lay down further criteria defining what post-graduate experience is considered relevant in the context of the project at hand.

The developer must document the criteria (along with the underlying rationale) it has devised to ensure that its Landscape Professionals are qualified, competent and expert. The developer shall also document how these criteria have been applied in the selection of its Landscape Professionals.

Again, it is essential to note that it is the developer's responsibility to ensure that its Landscape Professionals, who carry out LCA/LVIA on TII projects (which require EIA), are qualified, competent and expert.

[8] http://iflaonline.org/members/



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