Chapter 1

Introduction

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1 INTRODUCTION

Meath County Council (MCC), under the auspices of Transport Infrastructure Ireland (TII), are developing a bypass of Slane village to address a sub-standard section of the existing N2 National Primary Route. The development also encompasses public realm enhancements and traffic management measures within Slane village, together with works on the N51 between the proposed bypass and the centre of the village to further enhance community safety and wellbeing within the village once through traffic has been redirected from Slane Village. The collective elements together make up the N2 Slane Bypass and Public Realm Enhancement Scheme, hereafter referred to as the 'Proposed Scheme'.

The EIAR is prepared as part of the Environmental Impact Assessment (EIA) process governed by the EIA Directive 2011/92/EU as amended by Directive 2014/52/EU, and as transposed into Irish Law on the assessment of the effects of certain public and private projects on the environment, which has been adopted into Irish legislation for the purpose of road development through the Roads Act, 1993 – 2023. Under Section 50 of the Roads Act, 1993 – 2023, as amended (which Act, as amended, is referred to hereafter as 'the Roads Act, 1993 – 2023'), Act, an Environmental Impact Assessment Report (EIAR) is required to support the application to An Bord Pleanála (ABP) for any prescribed type of road development.

The EIAR is prepared by RPS on behalf of MCC and is submitted to ABP as part of the consent process for the Proposed Scheme.

1.1 Purpose of this Report

The purpose of the EIAR is to present the environmental information which has been gathered in order to carry out an assessment of the likely significant environmental effects of the Proposed Scheme on the receiving environment. The EIAR specifically:

- Provides statutory and non-statutory consultees with technical information to enable an understanding of the Proposed Scheme;
- Provides a description of the reasonable alternatives considered for the Proposed Scheme and an indication of the main reasons for the option selected including taking into account the effects of the Proposed Scheme on the environment;
- Presents the existing environmental baseline information, established from desktop studies, site-specific surveys and/or consultation;
- Indicates any limitations encountered during the compilation of the environmental information, including the acknowledgement of any data gaps or deficiencies and confidence in the information gathered;
- Describes the methodology used within the Environmental Impact Assessment (EIA) process;
- Presents the potential environmental impacts arising from the Proposed Scheme, based upon the baseline information and data gathered, and the analysis and impact assessments completed in accordance with best practice; and
- Proposes mitigation measures to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and, where appropriate, proposes monitoring arrangements. Where mitigation measures have been identified, the residual significance of effect has also been identified.

It is intended that the EIAR is read alongside the EIAR Non-Technical Summary (NTS) (**Volume 1**), which provides a brief non-technical overview of the information presented in the EIAR (**Volume 2**), scheme drawings (**Volume 3**) and technical appendices (**Volume 4**). The EIAR NTS is a stand-alone companion document to the EIAR.

1.2 Aims of the Scheme

The N2 National Primary route, through its connection with the M2 at Ashbourne, connects Dublin City to the border with Northern Ireland, passing through counties Dublin, Meath, Louth and Monaghan. At the border the route becomes the A5 to Derry, passing through counties Tyrone and Derry, with links at Strabane to the N14 and N15 National Primary routes in Donegal. The N2 route forms an integral part of this important long-distance transport corridor, as well as carrying significant volumes of local traffic. The N2 runs north-south passing through Slane village. The N2 also connects with the N51 National Secondary route in Slane village.

The N51 runs east-west and connects Drogheda to Navan and on to Mullingar and the midlands, via the N52 national secondary route at Delvin. The Scheme location in a regional context is shown in **Figure 1.1**.

The Proposed Scheme is intended to be a multi-modal transport solution, designed to provide transport infrastructure to improve a wide range of transport and other social needs within the study area in line with national, regional and local priorities. The headline aim of the scheme is to improve road safety along the N2 through Slane village, where the existing sub-standard alignment and the volumes and nature (large proportion of Heavy Good Vehicles (HGV)) of traffic passing through the village has resulted in a history of traffic accidents. In so doing, a number of other aims can be achieved which bring health, environmental and network benefits to the area. Other key aims of the scheme are:

- To remove the existing 'bottle-neck' at Slane from the national road network and thereby improve the overall efficiency of the network for enhanced regional and rural connectivity.
- To provide a safer road network in Slane and on the wider strategic road network.
- To provide active travel connectivity locally and regionally which will provide enhanced access to existing and future facilities in the area for the benefit of both local residents and visitors alike.
- To improve environmental quality in Slane village, particularly with regard to air quality emissions, traffic noise and vibration emissions and levels of traffic.
- To provide for new electric vehicle charging points, thus improving facilities to encourage the change from petrol/diesel powered vehicles to electric.
- To improve the movement of freight and other HGV traffic, removing the need for large vehicles to negotiate the high gradients and limited capacity on the N2 within the village area improving journey times and efficiency, and reduce the cost of travel across the wider transportation network at a cost that offers good value for money.
- To enhance the village centre as a viable, vibrant and attractive location for people to live, work and visit by improving the Public Realm in the village centre.

The above aims have been reviewed most recently against the Department of Transport's (DoT) National Investment Framework for Transport in Ireland (NIFTI) published in December 2021, and it aligns well with the priorities and hierarchies of choice set out in NIFTI; refer to **Chapter 2 – Background and Need for the Scheme** for more detail.

Figure 1.1: Scheme Location in a Regional Context

1.3 Environmental Impact Assessment

This section of the EIAR outlines the key steps that have been completed in the EIA process and how they have informed the EIAR (e.g. screening, scoping and assessment). It also presents the methodology and key principles that have been used to assess and document the potential impacts of the Proposed Scheme. The scope and content of the EIAR is also provided.

1.3.1 Requirement for EIA

The requirement for an EIA of a project was initially set out in EU Directive (85/337/EEC) as amended by Directive 97/11/EC, 2003/35/EC and 2009/31/EC on the assessment of the effects of certain public and private projects on the environment. The amendments were codified by Directive 2011/92/EU of the European Parliament and the Council on the assessment of the effects of certain public and private projects on the environment (and as amended in turn by Directive 2014/52/EU) (The Directives as amended being herein referred to as the 'EIA Directive').

The EIA Directive requires that certain developments be assessed for likely significant effects before planning permission can be granted. An EIAR is required to be produced by the developer of a project under Articles 5(1) and 5(2), and with reference to Annex 1 and 2 of the EIA Directive and must contain the information specified in Annex IV. The EIA Directive has been transposed into Irish legislation with reference

to road development by the Roads Act, 1993 – 2023, and the Roads Regulations 1994 (S.I. No. 119 of 1994, as amended). Section 50 of the Roads Act, 1993 – 2023, sets out the requirements for EIA as they pertain to roads development, including the content of the EIAR. The information provided in this EIAR meets these requirements. **Table 1-1** includes the chapter reference where each of the information requirements is addressed in this EIAR.

Table 1-1: Annex IV Information Required by Art. 5.1 of 2011/92/EU, as amended by 2014/52/EU and as transposed into Irish Law

Information for the EIAR as per Article 5(1)	Chapter in this EIAR
1. Description of the project, including in particular: (a) a description of the location of the project; (b) a description of the physical characteristics of the whole project, including, where relevant, requisite demolition works, and the land-use requirements during the construction and operational phases; (c) a description of the main characteristics of the operational phase of the project (in particular any production process), for instance, energy demand and energy used, nature and quantity of the materials and natural resources (including water, land, soil and biodiversity) used; (d) an estimate, by type and quantity, of expected residues and emissions (such as water, air, soil and subsoil pollution, noise, vibration, light, heat, radiation) and quantities and types of waste produced during the construction and operation phases.	Chapter 4 and Chapter 5
2. A description of the reasonable alternatives (for example in terms of project design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.	Chapter 3
3. A description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without implementation of the project as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge.	Chapters 7-26
4. A description of the factors specified in Article 3(1) likely to be significantly affected by the project: population, human health, biodiversity (for example fauna and flora), land (for example land take), soil (for example organic matter, erosion, compaction, sealing), water (for example hydromorphological changes, quantity and quality), air, climate (for example greenhouse gas emissions, impacts relevant to adaptation), material assets, cultural heritage, including architectural and archaeological aspects, and landscape.	Chapters 7-26
5. A description of the likely significant effects of the project on the environment resulting from, inter alia: (a) the construction and existence of the project, including, where relevant, demolition works; (b) the use of natural resources, in particular land, soil, water and biodiversity, considering as far as possible the sustainable availability of these resources; (c) the emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances, and the disposal and recovery of waste; (d) the risks to human health, cultural heritage or the environment (for example due to accidents or disasters); (e) the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources; (f) the impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change; (g) the technologies and the substances used. The description of the likely significant effects on the factors specified in Article 3(1) should cover the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the project. This description should take into account the environmental protection objectives established at Union or Member State level which are relevant to the project.	Chapters 7-26
6. A description of the forecasting methods or evidence, used to identify and assess the significant effects on the environment, including details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information and the main uncertainties involved.	Chapters 7-26
7. A description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and, where appropriate, of any	Chapters 7-26 and 27

Information for the EIAR as per Article 5(1)	Chapter in this EIAR
proposed monitoring arrangements (for example the preparation of a post-project analysis). That description should explain the extent, to which significant adverse effects on the environment are avoided, prevented, reduced or offset, and should cover both the construction and operational phases.	
8. A description of the expected significant adverse effects of the project on the environment deriving from the vulnerability of the project to risks of major accidents and/or disasters which are relevant to the project concerned. Relevant information available and obtained through risk assessments pursuant to Union legislation such as Directive 2012/18/EU of the European Parliament and of the Council or Council Directive 2009/71/Euratom or relevant assessments carried out pursuant to national legislation may be used for this purpose provided that the requirements of this Directive are met. Where appropriate, this description should include measures envisaged to prevent or mitigate the significant adverse effects of such events on the environment and details of the preparedness for and proposed response to such emergencies.	Chapter 24
9. A non-technical summary of the information provided under points 1 to 8.	Volume 1: Non-technical Summary
10. A reference list detailing the sources used for the descriptions and assessments included in the report.	Volume 2: All chapters

1.3.2 Other Relevant Requirements to inform the Application

1.3.2.1 Habitats Directive 92/43/EEC

This EIAR is based on a coordinated approach in order to facilitate ABP carrying out a coordinated assessment with the Appropriate Assessment under the Habitats Directive (Council Directive 92/43/EEC of 21 May 1992). In order to ensure the protection of European sites in the context of land use planning and development, Article 6(3)[1] of the Habitats Directive provides for the assessment of the implications of plans and projects for European sites, as follows:

> *"Any plan or project not directly connected with or necessary to the management of the site[2] but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public."*

The requirements arising out of Article 6(3) are transposed into Irish law by Part XAB of the Planning and Development Acts, 2000 – 2022 (as amended and substituted) and by the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No.477 of 2011) as amended by, inter alia, SI No. 499 of 2013, SI No. 355 of 2015 and SI No. 293 of 2021 (SI No. 477 of 2011, as amended being herein referred to as 'the Birds and Natural Habitats Regulations'), including Part 5 thereof.

The assessment associated with Article 6(3) of the Directive, as transposed is referred to as an "Appropriate Assessment" (AA). This is a separate process to EIA, with its own distinct tests for compliance but it is nonetheless inter-related. The determination of whether or not a plan or project requires AA is referred to as 'Stage 1' or 'AA Screening'. A Stage 1 Screening Report for Appropriate Assessment has been prepared to consider whether the *Proposed Scheme*, individually or in combination with other plans or projects, is likely to have a significant effect on any European site(s). This AA Screening Report concluded that, in adopting the precautionary approach in accordance with current guidance, the assessment should progress to Stage 2 and the preparation of a Natura Impact Statement (NIS). The NIS accompanying the application for development consent contains an examination of the implications of the Proposed Scheme, on its own or in combination with other plans or projects, for European sites. It has been prepared in accordance with the

[1] Article 7 of the Habitats Directive provides that the provisions of, inter alia, Article 6(3) are to apply to SPAs under Directive 2009/147/EC (the "Birds Directive") also.

[2] Including, where applicable, 'sites'.

provisions of the Habitats Directive and transposing national legislation, to facilitate the carrying out of an Appropriate Assessment by the competent authority, which in this case is ABP. The Stage 2 AA 'Natura Impact Statement' (NIS) is included as a separate document to this EIAR. There is overlap with the biodiversity chapters of the EIAR, which also address European Sites.

1.3.2.2 Water Framework Directive 2000/60/EC

The Water Framework Directive (WFD) (2000/60/EC) of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy came into force in December 2000 and establishes a framework for the protection of inland surface waters, transitional waters, coastal waters and groundwater. The directive has been transposed into Irish Law principally by the European Communities (Water Policy) Regulations 2003 (S.I. No. 722 of 2003), as amended. Ireland is required to comply with four main obligations under the environmental objectives of the WFD, namely to:

- Prevent deterioration of the status of all bodies of surface water and groundwater;
- Protect, enhance and restore all bodies of surface water and groundwater with the aim of achieving good status by the end of 2027;
- Protect and enhance all artificial and heavily modified bodies of water, with the aim of achieving good ecological potential and good surface water chemical status; and
- Achieve compliance with the requirements for designated protected areas.

Any works which could affect the biological, physiochemical or hydromorphological quality of a water body requires an assessment in line with the WFD to demonstrate how the proposed works will not lead to a degradation in status and where possible, enhance water body status in order to achieve the required "at least Good status" target as set out in the directive. The likely impacts to various hydrological and hydrogeological parameters and how these affect WFD status are assessed in this EIAR, in **Chapter 16 – Biodiversity: Aquatic Ecology** and **Chapter 17 – Water**.

1.3.2.3 The Planning System and Flood Risk Management Guidelines for Planning Authorities (S. 28 Guidelines)

In accordance with the requirements of The Planning System and Flood Risk Management, Guidelines for Planning Authorities and associated Technical Appendices (Office of Public Works [OPW], November 2009), a separate Flood Risk Assessment (FRA) has been carried out.

The Guidelines outline the key principles that should be considered when assessing flood risk to proposed sites. It recommends a staged approach to the assessment of flood risk. The FRA may conclude at any stage if criteria are not met to progress to the next stage. The stages are listed below:

- **Stage 1 Flood Risk Identification:** To identify whether there may be any flooding or surface water management issues.
- **Stage 2 Initial Flood Risk Assessment:** To confirm sources of flooding that may affect an area or proposed development, to appraise the adequacy of existing information and to scope the extent of the risk of flooding which may involve preparing indicative flood zone maps.
- **Stage 3 Detailed Flood Risk Assessment:** To assess flood risk issues in sufficient detail and to provide a quantitative appraisal of potential flood risk to a proposed or existing development or land to be zoned, of its potential impact on flood risk elsewhere and of the effectiveness of any proposed mitigation measures.

The FRA is intended to be read alongside, and to support, the main EIAR for the Proposed Scheme, including **Chapter 17 – Water** which addresses the Proposed Scheme's potential effects on the surface water environment. The FRA is included in **Appendix 17.2**.

1.3.2.4 Climate Action and Low Carbon Development Act 2015 and Amendment Act 2021

Meath County Council, as a body established by statute is a public body and therefore a relevant body under the Climate Action and Low Carbon Action 2015, as amended in 2021. Section 17 of the 2021 Act has replaced Section 15, subsection (1) of the 2015 Act as follows:

> 15 *(1) A relevant body shall, in so far as practicable, perform its functions in a manner consistent with—*
>
> *(a) the most recent approved climate action plan,*
>
> *(b) the most recent approved national long term climate action strategy,*
>
> *(c) the most recent approved national adaptation framework and approved sectoral adaptation plans,*
>
> *(d) the furtherance of the national climate objective, and*
>
> *(e) the objective of mitigating greenhouse gas emissions and adapting to the effects of climate change in the State.*

MCC, as a body established by statute, is a public body and therefore a relevant body under the Act of 2015. MCC, in progressing the Proposed Scheme, has had regard to the obligations of the foregoing as far as practicable. **Chapter 2 – Background and Need for the Scheme** sets out the policy context at a national and local level as it relates to climate. **Chapter 19 – Climate** sets out the assessment of the Proposed Scheme in relation to the topic of climate.

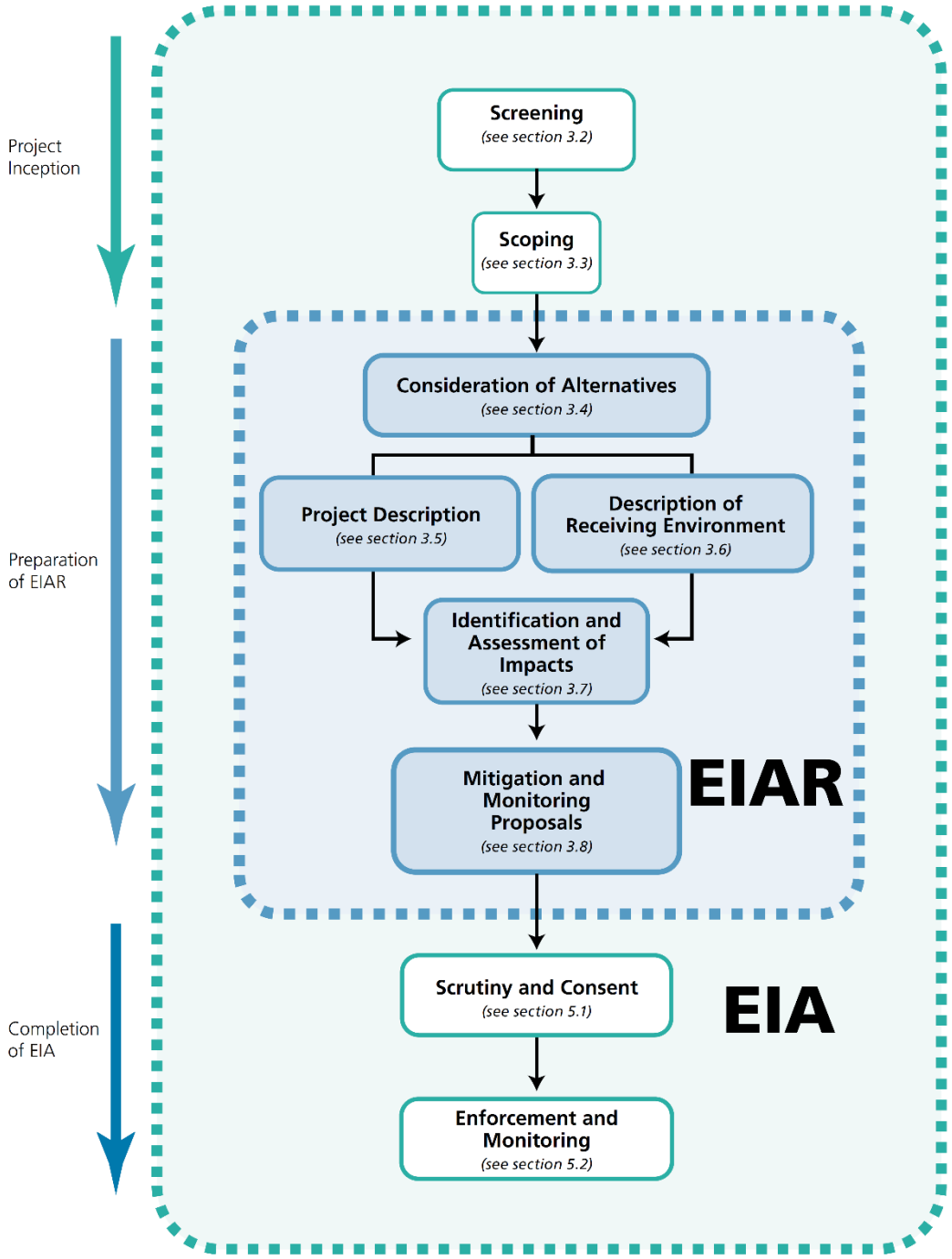
1.3.3 EIA Process

Broadly speaking, the EIA process involves a number of steps which includes the production of an EIAR, although this is not the end in itself but rather an output to assist in a wider decision-making framework. The EPA (2022) define EIA as:

> *"The process of examining the anticipated environmental effects of proposed project - from consideration of environmental aspects at design stage, through consultation and preparation of an Environmental Impact Assessment Report (EIAR), evaluation of the EIAR by a competent authority, the subsequent decision as to whether the project should be permitted to proceed, encompassing public response to that decision".*

An EIAR is a statement prepared by the developer, providing information on the significant effects on the environment based on current knowledge and methods of assessment. It is carried out by competent experts, with appropriate expertise to provide informed assessment on the environmental factors as required under the EIA Directive. The EIAR consists of a systematic analysis and assessment of the potential effects of a proposed development on the receiving environment.

Figure 1.2 outlines the overall EIA process and the position of the EIAR in the process (EPA, 2022). The following sections outline the key activities undertaken for the Proposed Scheme during project inception, preparation of the EIAR and EIAR completion.



Source: *Guidelines on information to be contained in the Environmental Impact Assessment Report (EPA, 2022)*

Figure 1.2: The EIA Process

1.3.3.1 Environmental Impact Assessment Guidance

This EIAR has been prepared in accordance with both the provisions of the EIA Directive and the relevant provisions of the Roads Act, 1993 – 2023, as amended, and the Roads Regulations 1994, as amended. The preparation of the EIAR has also been informed by relevant international and national EIA guidelines including the following:

- Guidelines on information to be contained in the Environmental Impact Assessment Report (EPA, 2022);

- Advice Note Seventeen: Cumulative effects assessment relevant to nationally significant infrastructure projects, published by the Planning Inspectorate, an executive agency of the Ministry of Housing, Communities and Local Government of the United Kingdom (2019);
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (DHPLG, August 2018);
- Environmental Impact Assessment of Projects – Guidance on Screening (Directive 2011/92/EU as amended by 2014/52/EU) (European Commission, 2017a);
- Environmental Impact Assessment of Projects – Guidance on Scoping (Directive 2011/92/EU as amended by 2014/52/EU) (European Commission, 2017b);
- Environmental Impact Assessment of Projects – Guidance on the Preparation of the Environmental Impact Assessment Report (European Commission, 2017c);
- Environmental Impact Assessment of National Road Schemes – A Practical Guide, Revision 1 (NRA/TII, 20 November 2008);
- Advice notes on current practice in the preparation of Environmental Impact Statements (EPA, 2003); and
- Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions (European Commission, 1999).

Other legislation, guidelines from TII and other bodies have also been considered and are detailed in the relevant technical assessment chapters of this EIAR. Each environmental factor assessed in this EIAR sets out the legislative context, policy context and guidance relevant to that environmental factor. In addition to the applicable EIA legislation and guidance, relevant EU Directives and national legislation relating to the specialist areas have also been considered as part of the process and are addressed in each of the relevant assessment chapters contained in this EIAR.

1.3.4 Key Stages of EIA

1.3.4.1 Screening – Need for an EIA

The purpose of screening as set out in the European Commission's Guidance on Screening (European Commission, 2017) is to determine whether or not an EIA is required for a particular project.

An Environmental Impact Assessment (EIA) Screening exercise was undertaken to establish whether the *Proposed Scheme* would require an EIA under the Planning and Development Acts, 2000 – 2022, as amended, the Roads Act, 1993 – 2023 (as amended) or any other planning legislation.

As described in **Section 1.3.1** of this EIAR, Section 50 of the Roads Act, 1993 – 2023, as amended, and the Roads Regulations 1994 (S.I. No. 119 of 1994), as amended, set out the requirements for EIA as they pertain to road development, including those instances where EIA is mandatory and where sub-threshold EIA may be required. Screening of the N2 Slane Bypass concluded that mandatory EIA is required for the following reason:

- The Proposed Scheme will include a bridge over the River Boyne approximately 258 m in length. The threshold for mandatory EIA under Section 50(C) and 50 (d) of the Roads Act, 1993 – 2023, as amended, and the regulations made pursuant to same, is any bridge over 100 m in length and as such this criterion is met for the project.

Therefore, the proposed road development exceeds the thresholds set for mandatory EIA as specified in Irish legislation.

1.3.4.2 Scoping – Matters to be Considered in the EIAR

Scoping is an integral part of the EIA process, the aim of which is to identify matters that should be covered in the EIAR. Scoping identifies the aspects of the environment where there is likely to be an interaction (either direct or indirect, positive or negative) with the proposed development and the potential effects, which need to be assessed. The process is dynamic, reflecting the evolution of the project design, comment from stakeholders and development of baseline information relevant to the receiving environment as a result of desktop and field surveys.

A scoping process to identify the issues that are likely to be most important during the EIA process was carried out by MCC, the design team and EIAR team, and this informed the format of this EIAR. An EIA Scoping Report was prepared for the Proposed Scheme and sent to environmental stakeholders in Q4 2021. Comments and observations were made by a number of stakeholders and details are summarised in **Chapter 6 – Consultation**; such feedback was considered by the EIA topic specialists in the preparation of the EIA.

On the basis of the information provided in the preliminary EIA Scoping Report, views were sought on the scope and level of detail that should be considered when preparing this EIAR, including proposed content of the EIAR and the potential impacts that have been scoped in/out, proposed assessment methodologies to assess the potential impacts and any other data that the environmental assessments should consider and address. The relevant bodies and key stakeholders were invited to comment between 1 October to 5 November 2021. The submissions received have been considered as part of the preparation of this EIAR. The list of stakeholders that were invited to comment, feedback received and how the feedback has been considered by the project team as part of preparation of this document is provided in **Chapter 6** of this EIAR.

Taking into account the nature, size and location of the Proposed Scheme (see **Chapter 4 – Description of the Proposed Scheme**), the information provided from EIA scoping and other consultation responses, the topics outlined in **Table 1-2** have been identified as requiring consideration within this EIAR. The topics have been aligned to refer to the factors outlined by Article 3(1) and 3(2) of the 2014 EIA Directive.

Table 1-2: The Environmental Factors Included in this EIAR

EIA Directive – Environmental Factors	Where addressed in the EIAR
1(a): Population and human health	Chapter 8 – Population Chapter 11 – Human Health
1(b): Biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC	Chapter 15 – Biodiversity: Terrestrial Ecology Chapter 16 – Biodiversity: Aquatic Ecology
1(c): land, soil, water, air and climate	Chapter 9 – Noise and Vibration Chapter 10 – Air Quality Chapter 17 – Water *[including Hydrology and Flood Risk]* Chapter 18 – Land, Soils, Geology and Hydrogeology Chapter 19 – Climate Chapter 20 – Material Assets: Agricultural Properties
1(d): material assets, cultural heritage and the landscape	Chapter 7 – Traffic and Transport Chapter 12 – Landscape and Visual Chapter 13 – Archaeological and Cultural Heritage *[including World Heritage]* Chapter 14 – Architectural Heritage Chapter 20 – Material Assets: Agricultural Properties Chapter 21 – Material Assets: Non-agricultural properties Chapter 22 – Material Assets: Utilities Chapter 23 – Material Assets: Resource and Waste Management
1(e): the interaction between the factors referred to in points (a) to (d).	Chapter 26 – Interaction between the Environmental Factors
2: The effects referred to in paragraph 1 on the factors set out therein shall include the expected effects deriving from the vulnerability of the project to risks of major accidents and/or disasters that are relevant to the project concerned	Chapter 24 – Risk of Major Accidents and/or Disasters

1.3.4.3 Consideration of Alternatives

The EIA Directive requires that the EIAR contains:

> *"A description of the reasonable alternatives (for example in terms of project design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects."*

Further information on this process and consideration of the various reasonable alternatives studied is presented in **Chapter 3** of this EIAR. This summarises the overall route selection process carried out in relation to the Proposed Scheme (which is the subject of a published report) and also design alternatives developed as the design has evolved.

1.3.4.4 Impact Assessment

This EIAR has been developed with regard to the TII suite of planning guidelines (various from 2004 onwards), the EPA's *Guidelines on the Information to be contained in Environmental Impact Assessment Reports* (2022) and where appropriate, alternative or supplementary topic-specific guidance listed in the relevant chapters.

The following key stages formed the basis for the identification and assessment of impacts undertaken to inform the EIAR as outlined in **Chapters 7** to **26**:

- Topic specialists undertook a review of the description of the Proposed Scheme (see **Chapter 4 – Description of the Proposed Scheme** and **Chapter 5 – Description of the Construction Phase**) to understand the activities with potential to cause significant effects and to define a suitable study area within which to establish a baseline and understand the zone of influence for each topic;
- A robust baseline of the existing environment was established using sources of information to inform the assessment including desktop review of available data and literature, interpretation of site-specific surveys where required and consideration of relevant feedback from the consultation process;
- An assessment of effects during construction and operation of the Proposed Scheme was undertaken, focussing on impacts that were both likely and significant and impact descriptions that were accurate and credible. This process utilised an iterative approach, where impacts that were initially assessed as possibly significant were discussed with the design team to allow changes to be incorporated into the design to reduce the impact. The design team and the environmental specialists maintained a regular dialogue through the design preparations and revisions to ensure that this objective was achieved, particularly with regard to reducing impacts on the European sites and the UNESCO World Heritage Property (WHP); and
- Measures were developed to mitigate the potential impacts of the Proposed Scheme that could not be avoided practically through design.

1.3.4.4.1 Approach to Describing Impacts

The Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, 2022) has formed the basis for describing the potential impacts as part of this environmental impact assessment process (the EPA description of impacts from the guidelines is replicated below in **Table 1-3**). The consideration of potential impacts has included direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium- term and long-term, permanent and temporary, positive and negative effects of the project, as appropriate.

Table 1-3: Description of Effects

Description of Effects	
Quality of Effects:	
Positive	A change which improves the quality of the environment.
Neutral	No effects, or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.
Negative	A change which reduces the quality of the environment.

Description of Effects	
Describing the Significance of Effects:	
Imperceptible	An effect capable of measurement but without significant consequences.
Not significant	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities.
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 a sensitive aspect of the environment.
Very significant Effects	An effect which, by its character, magnitude, duration or intensity significant alters most of a sensitive aspect of the environment.
Profound effects	An effect which obliterates sensitive characteristics.
Describing the Extent and Context of Effects:	
Extent	Describe the size of the area, the number of sites, and the proportion of a population affected by an effect.
Context	Describe whether the extent, duration, or frequency will conform or contrast with established (baseline) conditions (is it the biggest, longest effect ever?)
Describing the Probability of the Effects:	
Likely effects	The effects that can reasonably be expected to occur because of the planned project if all mitigation measures are properly implemented.
Unlikely effects	The effects that can reasonably be expected not to occur because of the planned project if all mitigation measures are properly implemented.
Describing the Duration and Frequency of Effects:	
Momentary effects	Effects lasting from seconds to minutes
Brief effects	Effects last less than a day
Temporary effects	Effects lasting less than a year
Short-term effects	Effects lasting one to seven years
Medium-term Effects	Effects lasting seven to fifteen years
Long-term effects	Effects lasting fifteen to sixty years
Permanent effects	Effects lasting over sixty years
Reversible effects	Effects that can be undone, for example through remediation or restoration.
Frequency of effects	Describe how often the effect will occur (once, rarely, occasionally, frequently, constantly – or hour, daily, weekly, monthly, annually).

1.3.4.4.2 Consideration of Cumulative Effects

Annex IV of the EIA Directive includes the requirement to provide:

> *"A description of the likely significant effects of the project on the environment resulting from, inter alia:*
>
> *(e) the cumulation of effects with other existing and/or approved projects taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources;"*

Annex IV also refers to "*the description of the likely significant effects on the factors specified in Article 3(1) should cover the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the project. This description should take into account the environmental protection objectives established at Union or Member State level which are relevant to the project*."

A fundamental requirement of undertaking cumulative impact assessment (CIA) is to identify those projects, plans or activities with which the Proposed Scheme may interact to produce a cumulative impact. These

interactions may arise during the construction or operational and maintenance phases. A process has been applied which methodically and transparently screens the projects and activities that may be considered cumulatively alongside this Proposed Scheme. This involved a staged process that considered the level of detail available for projects and activities, as well as the potential for interactions on a physical and temporal basis.

Further explanation of the staged approach to CIA and the cumulative impacts within the Proposed Scheme in respect of each of the environmental factors are identified and addressed in **Chapter 25** of this EIAR.

1.3.4.4.3 Consideration of Interactions

Article 3(1) of the EIA Directive requires that the interaction between the environmental factors (population and human health, biodiversity, land, soil, water, air and climate, material assets, cultural heritage and the landscape) is identified, described and assessed in the EIAR.

The interactions assessment has been carried out with regard to the following guidelines:

- Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, 2022); and
- Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions (EC, 1999).

The potential for interaction of effects has been assessed throughout this EIAR, as part of the impact assessment process (see **Chapters 7** to **26** of the EIAR). These chapters detail the individual environmental baseline information and identify the significant potential and residual construction and operational and maintenance effects of the Proposed Scheme. In addition, the potential for other environmental interactions are identified and the relevant impact either on, or from, these other aspects is analysed via data exchange between, and assessment review by, the relevant specialists and where required the design team. This process is managed by the EIA coordinator when collating the integrated findings from the impact assessment process.

Chapter 26 – Interaction between the Environmental Factors provides a matrix indicating the significant interactions that are likely to occur between the various environmental topics along with a description of the potential interactions. Where any potential negative interactive impacts have been identified during the assessment process, these impacts have been avoided or reduced by design and or the implementation of proposed mitigation measures. It is important to note that the interactions assessment considers only effects produced within the Proposed Scheme, and not those from other projects (which are considered within **Chapter 25 – Cumulative Effects**). Further detail on the approach and methodology for the assessment of interactions is provided in **Chapter 26**.

1.4 Structure of the EIAR

The EIAR is divided into four volumes as follows:

- **Volume 1 –** Non-Technical Summary;
- **Volume 2 –** EIAR Main Report;
- **Volume 3 –** Technical and Design Drawings; and
- **Volume 4 –** EIAR Technical Appendices.

Table 1-4 outlines the general layout of the EIAR volumes.

Table 1-4: Layout of the EIAR

Volume	Chapter / Title	
Volume 1	**Non-technical Summary (NTS)** *This provides a non-technical summary of the information contained in Volumes 2, 3 and 4.*	
Volume 2	**Main Report and Specialist Chapters** *This is the subject of this Volume of the EIAR. It includes general information on the Proposed Scheme (Chapter 1-6) and presents the environmental assessments of the Proposed Scheme on the receiving environment (Chapters 7-27).*	
	Preface and Glossary/Acronyms	
	Chapter 1	Introduction and EIA Approach
	Chapter 2	Background and Need for the Scheme
	Chapter 3	Consideration of Alternatives
	Chapter 4	Description of the Proposed Scheme
	Chapter 5	Description of the Construction Phase
	Chapter 6	Consultation
	Chapter 7	Traffic and Transport
	Chapter 8	Population
	Chapter 9	Noise and Vibration
	Chapter 10	Air Quality
	Chapter 11	Human Health
	Chapter 12	Landscape and Visual
	Chapter 13	Archaeological and Cultural Heritage *[including World Heritage]*
	Chapter 14	Architectural Heritage
	Chapter 15	Biodiversity: Terrestrial Ecology
	Chapter 16	Biodiversity: Aquatic Ecology
	Chapter 17	Water *[including Hydrology and Flood Risk]*
	Chapter 18	Land, Soils, Geology and Hydrogeology
	Chapter 19	Climate
	Chapter 20	Material Assets: Agricultural Properties
	Chapter 21	Material Assets: Non-agricultural Properties
	Chapter 22	Material Assets: Utilities
	Chapter 23	Material Assets: Resource and Waste Management
	Chapter 24	Risks of Major Accidents and/or Disasters
	Chapter 25	Cumulative Effects
	Chapter 26	Interaction between Environmental Factors
	Chapter 27	Schedule of Environmental Commitments
Volume 3	**Technical and Design Drawings** *This volume provides the technical and design drawings and illustrations specific to the Proposed Scheme.*	
Volume 4	**Technical Appendices** *This volume includes the specialist raw data, supporting details and other illustrations (e.g. photomontages) etc. to support the chapters in Volume 2.*	

1.5 Study Team

This EIAR has been prepared on behalf of Meath County Council by RPS with input from specialist sub-consultants. The list of the EIAR contributors outlining their competence and experience, including relevant qualifications is provided in **Table 1-5**.

Table 1-5: Qualifications and Experience of EIAR Competent Experts

Specialist	Qualifications	Responsibility and Relevant Experience
Michael Noonan (RPS)	BE, MEngSc, CEng, MIEI, MICE	**Scheme Design and Traffic/Transport:** Michael Noonan is a Director in the Highways and Transportation Sector in RPS and a Chartered Engineer with over 34 years' experience in infrastructure design and construction supervision, multi-disciplinary team management, contract procurement, infrastructure design, and contract administration. He has worked on projects such as the M28 Cork to Ringaskiddy Motorway project, and the M50 South-Eastern Motorway project. He has extensive expert witness experience, having provided evidence at Oral Hearings including the M28 Cork to Ringaskiddy Motorway project, Corrib Natural Gas Project and the M50 South Eastern Motorway project.
Dr Antonia Gaughran (RPS)	BSc (Hons), PhD, AdvDip Planning & Env. Law, MIEnvSc	**EIA Co-ordination:** Dr Antonia Gaughran is a Technical Director with RPS with over 22 years' experience in the field of environmental assessment. She has input to statutory processes and co-ordinated statutory environmental documentation to support consent applications for major infrastructural projects in Ireland and internationally including the Navan Bypass (part of M3 Clonee to north of Kells), the Limerick Southern Ring Road and Tunnel and DART South West. Antonia has a PhD dealing with ecological subject matter and holds an Advanced Diploma in Planning and Environmental Law and is a member of the Institution of Environmental Sciences.
Michael Higgins (RPS)	BA (Hons), MSc, HDip, MIPI, CIHT	**Population:** Michael Higgins is an experienced Transport and Urban Planner with over 12 years' experience. He holds a BA in Economics and English, an MSc in Regional and Urban Planning and a HDip in Education. He is a corporate member of the Irish Planning Institute (IPI) and a member of the Institute of Highways and Transport (IHT). He has worked on a diverse portfolio of land use, transportation and development projects in both the public and private sectors in Ireland and the UK and has experience in the areas of Planning, Transport and Land Use Assessment, Mobility Management Plans, EIARs and Site Development Appraisals.
Ryngan Pyper (RPS)	BA & MA (Hons), PGDip Public Health, GDip Law, PGDip Legal Practice	**Human Health:** Ryngan is the Director of Health and Social Impact at RPS. Ryngan has over 15 years' experience as a professional consultant and works across the fields of public health, environmental science and impact assessment. Ryngan provides health input into EIA for major infrastructure schemes including road transport. He also advises Government and professional bodies on good practice. Ryngan has advised the World Health Organization on addressing health in EIA and in 2021 was involved in the updated HIA Guidance for Ireland and Northern Ireland for the Institute of Public Health (IPH), incorporating the most recent developments and best practice in the field. Ryngan is the current chair of the health section of the International Association for Impact Assessment.
Paul Chadwick (RPS)	BA (Hons), MPhil, AIEMA	**Air Quality, Climate and Risk:** Paul Chadwick is a Technical Director in RPS with over 21 years' experience. Paul specialises in the fields of air quality and climate and risk assessment. He has considerable experience, both academic and professional, in ambient air quality and a wide range of atmospheric pollutants. As a result of two years research in atmospheric chemistry, he has an in-depth knowledge of the chemical and physical transformations associated with local and regional air pollution and climate change. Paul also specialises in risk assessments and the identification and quantification of risks on projects.
Eugene McKeown (RPS)	BE, LLB, MSc, CEng, MIOA, MASA, FIEI	**Noise and Vibration:** Eugene McKeown is a Senior Associate at RPS, a Chartered Engineer and a Fellow of Institution of Engineers of Ireland. Eugene holds a BE in Mechanical Engineering, an LLB and a MSc in Applied Acoustics. Eugene specialises in the fields of airborne noise, underwater noise and vibration and has over 40 years' experience on airborne and underwater acoustic modelling, designing and operating large scale acoustic monitoring systems. Eugene has prepared noise models and undertaken noise impact assessments for major road projects, wind farms, electrical grid infrastructure, energy plants, marine infrastructure, wastewater treatment plants and industrial sites.
Dr John Mahon	BA BAI (Hons), PhD, MIEI, MIA, CEng	**Noise and Vibration:** John Mahon is an Associate at RPS and a Chartered Engineer. John holds a BA BAI in Mechanical Engineering and PhD in Acoustics and Vibration, both from Trinity College Dublin. John has 18 years'

Specialist	Qualifications	Responsibility and Relevant Experience
		experience in environmental projects including planning applications and Environmental impact assessments for a wide range of strategic infrastructure projects, including linear transport projects. He has contributed to Irish wind energy association planning group and provided expertise on the area of wind turbine noise. He also sits on the Irish Committee for Standardization CEN/TC226/WG 6 in relation to road traffic noise reducing devices.
Dr Rob Rowlands (RPS)	BSc (Hons), PhD, MCIEEM, CEnv	**Terrestrial Ecology:** Dr Rob Rowlands is a Technical Director in RPS with over 20 years' experience. He is a full member of the Chartered Institute of Ecology and Environmental Management (CIEEM) and a Chartered Environmentalist. He is an experienced multi-disciplinary project manager; in particular, advising on strategy with respect to ecology, landscape, heritage/archaeology and arboriculture. He is an experienced ecologist. His ecological experience has included the completion of Ecological Impact Assessments (including for EIA) and Appropriate Assessments with respect to the Habitats and Birds Directive.
Lauren Williams (Consultant)	BSc, PgDip, EMAE, MCIEEM	**Aquatic Ecology:** Lauren Williams is a qualified freshwater ecologist with over 20 years professional consultancy experience working in in Ireland and New Zealand. Lauren holds a BSc in Zoology, a Certificate in Environmental Law and a Post Graduate Diploma in Environmental Monitoring Assessment and Engineering. She is a full member of the Chartered Institute of Ecology and Environmental Management (CIEEM). Lauren specialises in water quality assessment, monitoring, aquatic ecological impact assessment and protected aquatic species and habitat surveys; regularly undertaking specialised aquatic field studies and conducting EcIA and EIAR reporting, plus Appropriate Assessment (AA Screening/NIS) in relation to a wide range of infrastructural developments. She also carries out aquatic sampling, monitoring and reporting as part of national river monitoring and research programmes.
Eoin Hurst (RPS)	BEng (Hons), DIC, MSc, MIEI	**Land, Soils, Geology and Hydrogeology:** Eoin has over 12 years' experience and holds a BE and Diploma of Imperial College London in Civil Engineering, and MSc in Environmental Technology. He has worked in the fields of civil and environmental engineering, environmental impact assessment, contaminated land assessment and remediation, environmental due diligence, geology and hydrogeology, water management, air quality and climate change policy. Eoin has experience in environmental infrastructure assessments, feasibility studies, policy assessment and development, and permitting and regulatory compliance. Eoin has experience in the preparation and coordination of EIS and EIA, preparation of chapters on the topics of land, soils, geology, hydrogeology, hydrology, has specialist knowledge of CEMP development as well as experience with on-site assessment methods and in relation to enforcement of planning conditions.
Dr Uzzal Mandal (RPS)	BSc, PhD, CEng, MSc, MIEI, MIAHS	**Water (Hydrology & Flood Risk):** Dr Uzzal Mandal is an Associate in RPS with over 31 years' experience in hydrology, flood risk assessment, hydraulic modelling and detailed design of flood relief and highway drainage works in both Ireland and outside of Ireland. He has carried out hydrological impact assessments and detailed designs of the hydrological and hydraulic aspects of a number of major road and gas field development projects. He has carried out flood risk assessments for several major commercial and residential developments.
Siobhan Deery (Courtney Deery Heritage Consultancy)	MA (Hons), HDip, MIAI	**Archaeology and Cultural Heritage:** Siobhan Deery has over 23 years' experience in carrying out surveys and evaluations of archaeological monuments, buildings, sites and landscapes for the purposes of conservation, environmental impact assessment, management and development control. Siobhan has accumulated a significant knowledge in identifying and communicating to all interested parties the uniqueness of the character of cultural heritage in various landscapes and cityscapes and the issues surrounding the treatment, protection and promotion of archaeological and architectural sites and remains in these environments.
Dr Stephen Carter (Headland Archaeology)	BSc, PhD, MCIfA, FSA Scot	**World Heritage:** Dr Stephen Carter has worked in the cultural heritage profession for over 35 years. He was a director and founder member of Headland Archaeology Consultancy and has worked throughout the UK and Ireland with much of his Irish experience stemming from the roads building programme between 2000 and 2010. This included work on the N25 Waterford Bypass, Limerick Southern Ring Road and M7 (Nenagh to Limerick). In the

Specialist	Qualifications	Responsibility and Relevant Experience
		context of the N2 Slane Bypass, he brings over 17 years' experience of environmental impact assessment including expert witness services for over 50 projects. This includes previous collaboration with Courtney Deery on the Emlagh and Castletownmoor Wind Farm applications in Co. Meath where impact on the setting of the Brú na Bóinne World Heritage Property and the Hill of Tara and Kells candidate sites was a key issue. Stephen has also worked on other development projects affecting the setting of World Heritage Property in the UK including the Heart of Neolithic Orkney and the Frontiers of the Roman Empire (projects affecting both Hadrian's Wall and the Antonine Wall).
Rob Goodbody (Historic Building Consultants)	BA (Mod), MA, PGDip, DipABRC, MUBC	**Architectural Heritage:** Rob Goodbody is an established Historic Building Consultants with over 18 years' experience. He holds a MA in Local History in Urban and Building Conservation. He also has a diploma in Applied Building Repair and Conservation and a further diploma in Environmental Planning. He has worked on more than a thousand buildings and other projects relating to architectural heritage, including alterations, demolitions, new developments and recording. This has included urban and rural areas, industrial heritage and eighteenth-, nineteenth- and twentieth-century buildings.
Raymond Holbeach (RPS)	BSc (Hons), MLArch, CMLI, MILI	**Landscape and Visual:** Raymond Holbeach is a Director with RPS, Chartered Member of the Landscape Institute and Member of the Irish Landscape Institute and a member of the Institute of Environmental Management and Assessment. He has over 30 years' experience of landscape and environmental consultancy in both public and private sectors. Acting as a landscape architect, Raymond has completed landscape and visual impact assessments for numerous linear infrastructure projects including gas pipelines and road projects throughout the UK and Ireland, including the M28 Cork to Ringaskiddy Upgrade. Ray has provided expert witness evidence on a large number of projects.
Conor McGovern (RPS)	BSc (Hons), MSc (MEM), MIEI, MCIWM	**Resource and Waste Management:** Conor McGovern is an Associate with RPS specialising in resource and waste management, energy and sustainability. He holds BSc in Environmental Science, an MSc in Engineering Management, a National Diploma in Pollution Assessment and Control, and a National Certificate in Applied Chemistry. He has over 22 years' experience working and advising on waste management projects with a focus on waste, biowaste and bioenergy, market development and regulatory compliance.
Conrad Wilson (RPS)	BAgrSc (Hons), MIEnvSc	**Agricultural Material Assets:** Conrad Wilson is a Senior Associate with RPS and a member of the Institution of Environmental Sciences. He has over 25 years' experience as an agricultural advisor and in landowner engagement and EIA co-ordination. He has worked on a wide range of projects involving environmental assessment, mediation between disputing parties and assessing the impacts of linear infrastructure on land use and agronomy.
Niamh O'Neill (RPS)	BSc (Hons), MSc, Dip, MIEnvSc, CSci, Cert (ILM)	**Non-agricultural Material Assets/ Utilities:** Niamh is a Principal Environmental Scientist with RPS and is a member and Chartered Scientist with the Institution of Environmental Sciences. Niamh holds a BSc in Geology, an MSc in Applied Environmental Science, and a Diploma in Geographic Information Systems. She has over 13 years' experience in the application of environmental assessment techniques and GIS analysis of constraints and landtake information. Niamh has prepared a number of chapters for EIAs for built infrastructure, including for the topics of land, soils and geology, and material assets. Niamh has been assisted in the assessments by the Utilities and Property design team leads.

1.6 Chapter References

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