Chapter 1
Introduction

CONTENTS

1. INTRODUCTION

Córas Iompair Éireann, ("CIÉ" or "the Applicant"), is applying to An Bord Pleanála ("ABP" or "the Board") for a Railway Order ("RO") for the DART+ Coastal North project ("the Proposed Development") under the Transport (Railway Infrastructure) Act 2001 (as amended and substituted) ("the 2001 Act").

The 2001 Act was recently further amended by the European Union (Railway Orders) (Environmental Impact Assessment) (Amendment) Regulations 2021 i (S.I. No. 743 of 2021) to give further effect to the transposition of Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment as amended by Directive 2014/52/EU of 16 April 2014 ("the EIA Directive") In summary, Section 37 of the 2001 Act requires, *inter alia*, that the application be made in writing and be accompanied by:

- a draft of the proposed Railway Order;
- a plan of the proposed railway works;
- a book of reference to a plan describing the works which indicates the identity of the owners and of the occupiers of the lands described in the Plan; and
- a report on the likely effects on the environment of the proposed railway works, referred to as an environmental impact assessment report, i.e. this report.

A statement of the likely effects on the environment of the proposed railway works is addressed by the preparation of this Environmental Impact Assessment Report ("EIAR") (previously referred to as an Environmental Impact Statement ("EIS") in Section 39 of the 2001 Act prior to the amendments effected by S.I. No. 743 of 2021. This EIAR is based on a coordinated approach in order to facilitate the Board in carrying out a coordinated assessment with any assessment under Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora ("the Habitats Directive") and Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds ("the Birds Directive").

The initial directive, Council Directive 85/337/EEC of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment and its three amendments were codified by Directive 2011/92/EU of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment.

As noted above, Directive 2011/92/EU was amended in 2014 by Directive 2014/52/EU (which came into force in Ireland in May 2014) and together all of these Directives are referred to herein as "the EIA Directive".

A significant body of domestic/national and EU case law exists in relation to the interpretation of the EIA Directive and regard has been had to same in the preparation of this application and in the EIAR as whole. Accordingly, this EIAR has been prepared in accordance with the EIA Directive, Section 39 of the 2001 Act and with regard to relevant guidance documents and guidelines.

This chapter presents the purpose of the EIAR, a brief overview of the Proposed Development, the legislative requirement for undertaking an environmental impact assessment ("EIA") as part of the Railway Order application process and it introduces other key environmental legislative requirements that have informed this EIAR. The key stages in the EIA process are summarised to include the screening, scoping and preparation of an EIAR. The overarching assessment methodology used to describe and assess the potential effects of the project is presented and is further expanded in each of the EIA environmental factor chapters contained in this EIAR. Any difficulties encountered in the preparation of this EIAR are also identified. The overall structure of the report is presented as is an introduction to the EIA project team. Finally, an overview is provided of the consultations that have informed the EIAR and the next steps are outlined.

All necessary technical information required for the purpose of this EIAR is enclosed within this Report.

This EIAR was prepared by Arup on behalf of Iarnród Éireann ("IÉ"), which is wholly owned by CIÉ. It is submitted by CIÉ to the Board as the competent authority, as part of the Railway Order consent process.

1.1 Purpose of this report

This EIAR forms part of a Railway Order application that is submitted by CIÉ to the Board for its approval of the Proposed Development. The EIAR in relation to this Railway Order application has been compiled in accordance with the EIA Directive, the information referred to in Section 39 of the 2001 Act and with regard to relevant guidance documents and guidelines.

The purpose of this EIAR is to inform the decision-making process on the Railway Order application for the DART+ Coastal North project. The EIAR is a *"statement of the effects, if any, that the proposed project, if carried out, would have on the environment."* (EPA, 2022).

The primary objective of the EIAR is to present an evaluation of the likely significant environmental effects of the project. The EIAR presents the baseline environmental information relevant to the project under each of the environmental factors, it assesses and reports on the likely significant positive and/or negative effects as a result of the Proposed Development and proposes appropriate mitigation and monitoring measures where required. The EIAR has been prepared following the logical analysis of the Proposed Development having regard to the receiving environment. This process of environmental impact 'assessment' and the preparation of this report has been an evolving iterative process.

This EIAR has been prepared to facilitate the Board as the competent authority to undertake an Environmental Impact Assessment (EIA) and to enable the Board to determine, by way of a reasoned conclusion, the likely significant effects of the Proposed Development on the environment.

EIA is the process by which the likely significant effects on the environment (positive and negative) of a Proposed Development or project are assessed; where effects are significant, relevant design changes and / or other mitigation measures can be taken to avoid, reduce or mitigate those effects.

1.2 DART+ Programme Objectives

The DART+ Coastal North is the third of the infrastructural projects to launch as part of the DART+ Programme, which consists of five projects in total. The primary objective of the DART+ Programme is to support urban compact growth and contribute to reducing transport congestion and emissions in the Dublin region by enabling modernised high-quality commuter rail services between Dublin City Centre and the areas of Drogheda, Maynooth, Dunboyne, Celbridge and Greystones and thereby providing a safe, sustainable, efficient, integrated, and accessible public transport service along these corridors, see Image 1-1.

Sub-objectives of the DART+ Programme include the following:

- Cater for existing heavy rail travel demand and improve customer services along established rail corridors in the Greater Dublin Area ("GDA") through the provision of a higher frequency, higher capacity, electrified heavy rail service which supports sustainable economic development and population growth.
- Improve accessibility to jobs, education, and other social and economic opportunities through the provision of improved inter-rail and inter-modal connectivity and integration with other public transport services.
- Enable further urban compact growth along existing rail corridors, unlock regeneration opportunities and more effective use of land in the Greater Dublin Area, for present and future generations through the provision of a higher capacity heavy rail network.
- Deliver an efficient, sustainable, low carbon and climate resilient heavy rail network, which contributes to a reduction in congestion on the road network in the Greater Dublin Area and which supports the advancement of Ireland's transition to a low emissions transport system and delivery of Ireland's emission reduction targets; and
- Provide a higher standard of customer experience including provision of clean, safe, quiet, modern vehicles and a reliable and punctual service with regulated and integrated fares.

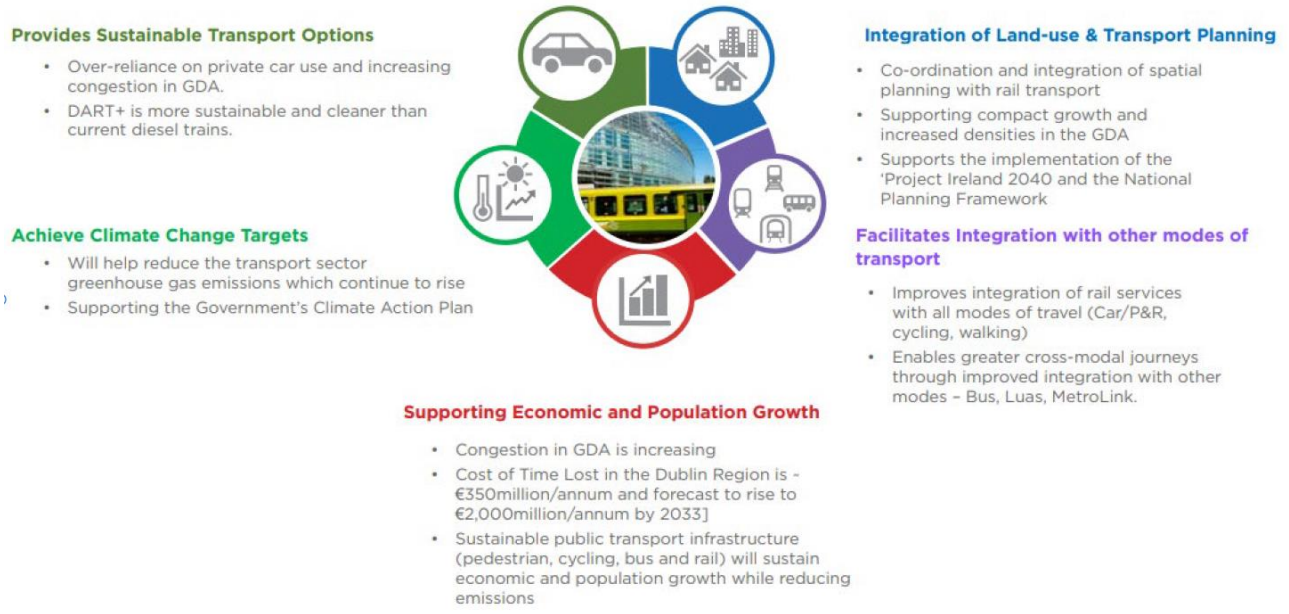


Image 1-1 DART+ Programme benefits (source: www.dartplus.ie)

1.3 DART+ Coastal North Project overview

The DART+ Coastal North project is the third infrastructure project to launch as part of the DART+ Programme. The extent of the DART+ Coastal North project is presented in Image 1-2. The electrification of the rail line is located predominantly within the existing railway corridor within IÉ/CIÉ owned lands, however some works will involve the acquisition of private lands to facilitate the project.

The DART+ Coastal North project, as part of the DART+ Programme, will deliver an improved and extended electrified rail network and will enable increased passenger capacity and an enhanced train service between Dublin City Centre and Drogheda, including the Howth Branch railway line.

This increased rail capacity will be achieved by implementing an extended electrified railway network with high-capacity DART trains and an increased frequency of rail services. In addition, the DART+ Coastal North project requires that some track modifications be implemented, including the provision of turnback facilities at Malahide, Clongriffin and Howth Junction & Donaghmede Stations. These modifications are essential to facilitate the increase in train services by improving operational flexibility, allowing trains to be turned back clear of continuing services and allow for a higher frequency and a more reliable service.

The majority of proposed works and interventions are expected to be carried out within the existing railway corridor boundary. Some works and interventions, however, will be required outside of IÉ/CIÉ land such as:

- Bridge modifications/improvements to facilitate extended electrification.
- Construction of substations (to facilitate the provision of power to the line); and
- Use of land for temporary construction/storage compounds.

The key infrastructure elements of the DART+ Coastal North project include:

- Extension of existing 1500V DC electrification, which currently terminates at Malahide, as far as Drogheda MacBride Station (approximately 37km);
- Reconfiguration of the existing track layout and associated infrastructure in the vicinity of Drogheda MacBride, Malahide, Clongriffin and Howth Junction & Donaghmede Stations, as well as the provision of sections of additional track, station turnback facilities, and infrastructure that will enable the operation of both a DART Shuttle Service on the Howth Branch, at such time that future passenger demand warrants its use, and/or the continued operation of a direct through service (as existing) on the Howth Branch to/from Dublin City Centre. All interventions are designed to allow for improved operational flexibility and maximised passenger capacity and DART frequency on both the Northern and Howth Branch Lines;
- Construction of a new platform at Drogheda MacBride Station;
- Significant upgrades to Howth Junction & Donaghmede Station now proposed to provide a more accessible, user friendly and customer focused station for all rail users;
- Undertaking upgrades to existing signalling, telecoms, and power supplies to support the planned increase in train services, including the introduction of new electrical substations at key locations alongside the railway line;
- Undertaking modifications to bridges as a result of capacity enhancements, track reconfigurations and/or works to achieve necessary electrical clearances;
- Undertaking modifications to existing depots at Drogheda and Fairview to support the new train fleet, including the provision of additional train stabling at Drogheda; and
- Ancillary civils, drainage, and power work to cater for the changes.

A full project description with more information on the Proposed Development is presented in Chapter 4 (Description of the Proposed Development) in Volume 2 of this EIAR.

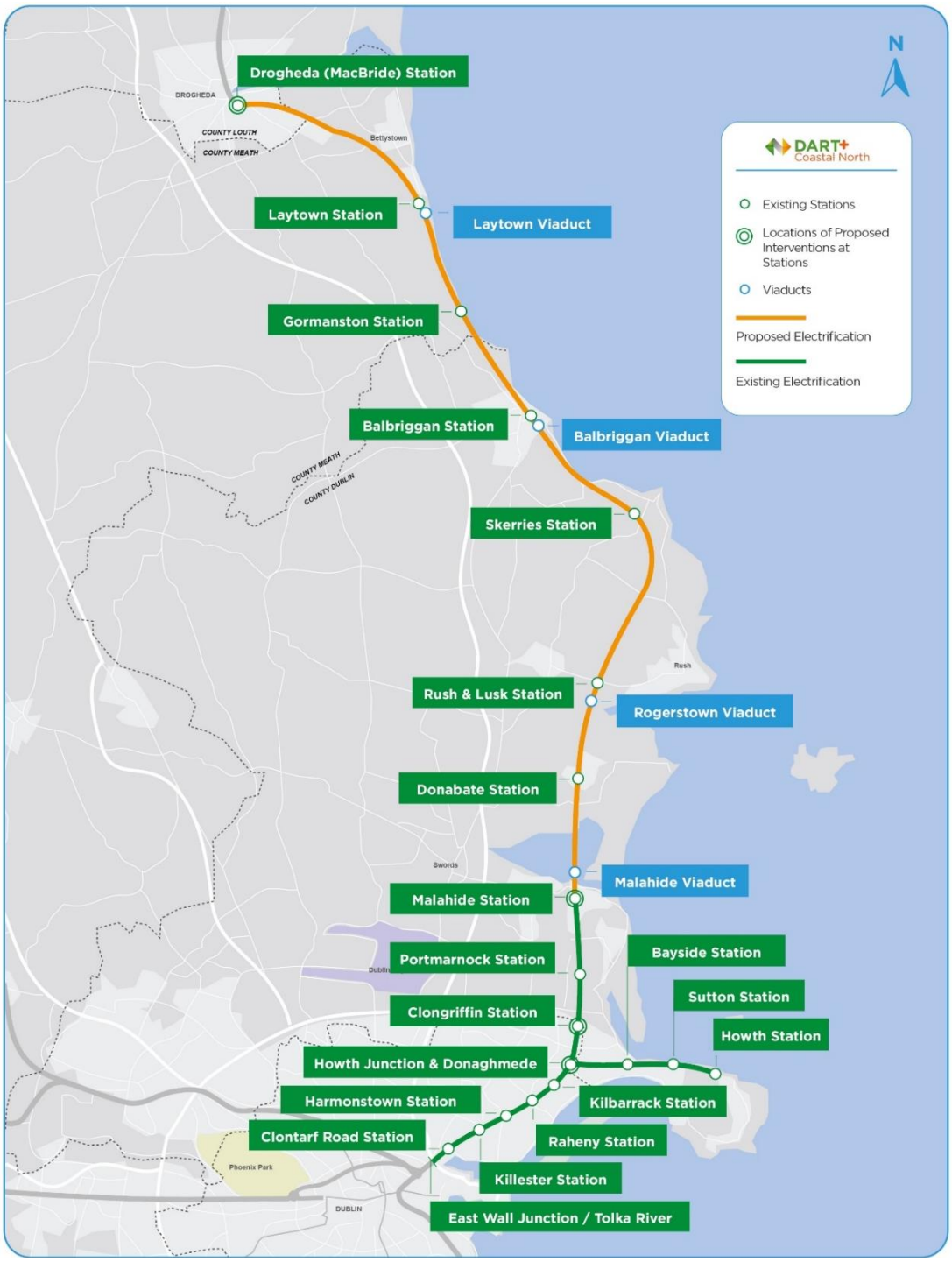


Image 1-2 Schematic of DART+ Coastal North project

1.4 The Applicant

The application is being made by CIÉ, Ireland's national public transport provider. Under Section 37(1) of the 2001 Act, CIÉ may apply to the Board for a railway order. As the leading provider of public transport services in the State, CIÉ is committed to provision of accessible services for all of its customers.

CIÉ's goal is to deliver attractive sustainable public transport services, which supports the continued growth of the Irish economy and social cohesion. CIÉ has the unique capacity to manage a cost-effective delivery of high-quality public transport solutions across Ireland. CIÉ works in collaboration with its shareholder, the Minister of Transport, and with the regulator, the National Transport Authority ("NTA").

IÉ (wholly owned by CIÉ) has developed the Proposed Development from concept to application stage. IÉ is responsible for the operation of the DART and intercity rail passenger services throughout Ireland and more specifically for the area of the Proposed Development. IÉ provides passenger and some freight rail services along the area of the Proposed Development.

1.5 Requirement for EIA

Arup have been commissioned by CIÉ to prepare the RO application, including this EIAR, for the DART+ Coastal North project in accordance with relevant EU and national legislation, associated guidelines and standards.

1.5.1 Legislation and Guidance

The applicable legislation has been set out in the Introduction section of this chapter This application for a Railway Order is made under the 2001 Act as amended, in particular, by the European Union (Railway Orders) (Environmental Impact Assessment) (Amendment) Regulations 2021 in S.I. No. 743 of 2021 ("the 2021 Regulations"). The statutory requirement to submit an EIAR in conjunction with an application for a railway order arises under the 2001 Act and the EIA Directive.

The 2001 Act sets out a bespoke process covering all aspects of the Railway Order requirements in relation to the application, consideration, assessment and decision-making for a proposed railway order and if granted, for the construction, maintenance, improvement and operation of a railway and railway works, including powers of compulsory acquisition. The railway order application is made pursuant to the provisions of Section 37 of the 2001 Act.

Section 37 requires, *inter alia*, that the application be made in writing and be accompanied by:

(a) a draft of the proposed Railway Order;
(b) a plan of the proposed railway works;
(c) in the case of an application by the Agency or a person with the consent of the Agency, a plan of any proposed commercial development of land adjacent to the proposed railway works;
(d) a book of reference to a plan describing the works which indicates the identity of the owners and of the occupiers of the lands described in the Plan; and
(e) a report of the likely effects on the environment of the proposed railway works (this Report).

A report of the likely effects on the environment of the proposed railway works (at point (e)) is addressed by the preparation of this EIAR as described in Section 39 of the Act.

1.5.1.1 Compulsory acquisition of land and other rights in relation to land

A railway order, if granted, confers powers on CIÉ to acquire land and other rights in relation to land to facilitate the construction, maintenance, improvement and operation of the railway. For example, Section 45(1) of the 2001 Act *inter alia* states:

> *"Upon the commencement of a railway order, the Agency or CIÉ shall thereupon be authorised to acquire compulsorily any land or rights in, under or over land or any substratum of land specified in the order and, for that purpose, the railway order shall have effect as if it were a compulsory purchase order…"*

In accordance with Section 37(3)(d) of the 2001 Act, a book of reference has been prepared (indicating the identity of the owners and of the occupiers of the lands described in the plan) and this EIAR has assessed the proposed railway works set out in the plan. All reasonable efforts have been made to engage with all affected property owners throughout the design and EIA process. Where engagement has been forthcoming this has informed the design and EIA process and is documented as appropriate in this EIAR.

1.5.2 EIA Directive

This EIAR has been prepared in accordance with requirements of the 2001 Act (as amended) and the EIA Directive and includes the information set out in Article 5 and Annex IV to the EIA Directive. The information provided in this EIAR meets these requirements. The Table 1-1 below includes the chapter reference where each of the information requirements is addressed in this EIAR.

Table 1-1 Information for the EIAR - Annex IV of EIA Directive as amended by Directive 2014/52/EU

Ref	Information for the EIAR as per Article 5(1)	Chapter in this EIAR
1	Description of the project, including in particular: • a description of the location of the project. • 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. • 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. • 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 Development 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

Ref	Information for the EIAR as per Article 5(1)	Chapter in this EIAR
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.	Chapter 6 – 24
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.	Chapter 6 – 24 (refer to Table 1-2)
5	A description of the likely significant effects of the project on the environment resulting from, inter alia: • the construction and existence of the project, including, where relevant, demolition works. • the use of natural resources, in particular land, soil, water and biodiversity, considering as far as possible the sustainable availability of these resources. • the emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances, and the disposal and recovery of waste. • the risks to human health, cultural heritage or the environment (for example due to accidents or disasters). • 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. • 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. • 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 6 – 24, Chapter 25 and Chapter 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 6 – 24, Chapter 25 and Chapter 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 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.	Chapters 6 – 24, Chapter 25, Chapter 26 and Chapter 27
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.	Chapter 24

Ref	Information for the EIAR as per Article 5(1)	Chapter in this EIAR
	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.	
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

1.6 Other relevant requirements to inform application.

1.6.1 Habitats Directive and Birds Directive

This EIAR is based on a coordinated approach in order to facilitate the Board in carrying out a coordinated assessment with any assessment under the Habitats Directive or the Birds Directive. The Habitats Directive and the Birds Directive provide legal protection for habitats and species of European importance. Articles 3 to 9 of the Habitats Directive provide the legislative means to protect habitats and species of Community interest through the establishment and conservation of an EU-wide network of sites known as Natura 2000. In Ireland, these Natura 2000 sites are designated as European Sites and include Special Areas of Conservation ("SAC"), established under the Habitats Directive for habitats and species and Special Protection Areas ("SPA"), established under the Birds Directive.

In order to ensure the protection of European sites in the context of land use planning and development, Article 6(3) of the Habitats Directive provides for the assessment of the implications of plans and projects for European sites, as follows:[1]

> "*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."*

[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'

The requirements arising out of Article 6(3) are transposed into Irish law by Part XAB of the Planning and Development Act 2000 (as amended and substituted) ("the 2000 Act") and by the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No.477 of 2011) as amended ("the Habitats Regulations"), including Part 5 thereof.

The assessment associated with Article 6(3) of the Habitats 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 Development, individually or in combination with other plans or projects, is likely to have a significant effect on any European site(s).

The 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 railway order application contains an examination of the implications of the Proposed Development, on its own or in combination with other plans or projects, for European sites. It has been prepared in accordance with the provisions of the Habitats Directive and Part XAB of the 2000 Act, including *inter alia* Sections 177U, 177V, 177S thereof, to facilitate the carrying out of an Appropriate Assessment by the Board.

The Stage 2 AA 'Natura Impact Statement' (NIS) is included as a separate document to this EIAR. Chapter 8 (Biodiversity) of the EIAR also references European sites.

1.6.2 Water Framework Directive Assessment

Directive 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 ("the "Water Framework Directive" or "WFD") came into force in December 2000.It establishes a framework for the protection of inland surface waters, transitional waters, coastal waters and groundwater. The Directive has been transposed into Irish law by, *inter alia*, the European Communities (Water Policy) Regulations 2003 (S.I. No. 722 of 2003) (as amended), the European Communities Environmental Objectives (Groundwater) Regulations 2010 (S.I. No. 9 of 2010) (as amended) and the European Communities Environmental Objectives (Surface Waters) Regulations 2009 (S.I. No. 272 of 2009) (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 waterbody 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 waterbody status in order to achieve the required "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 Volume 2 of this EIAR, in Chapter 10 (Water) and Chapter 11 (Hydrogeology).

1.6.3 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, 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 I Flood Risk Identification** – to identify whether there may be any flooding or surface water management issues.
- **Stage II 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 III 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 site-specific flood risk assessment ("SSFRA") for the Proposed Development is included as a separate document to this EIAR. It is intended to be read alongside, and to support, the main EIAR for the Proposed Development, in particular Chapter 10 (Water), which addresses the Proposed Development's potential effects on the surface water environment.

1.7 EIA Process

In summary, the carrying out of an EIA in relation to proposed railway works in a draft railway order by the Board means a process consisting of:

- the preparation of an EIAR by the applicant – in this case CIÉ – in accordance with Section 39 of the 2001 Act.
- the carrying out of consultation
- the examination by the Board of –
- (a) the information presented in the EIAR
- (b) any further information provided by the applicant under Section 41 and, where applicable, Section 47D, and
- (c) any relevant information received through consultation under Section 40, Section 41 and,
- where applicable, Section 47D of the 2001 Act

- the reaching of a reasoned conclusion by the Board in accordance with Section 42B of the 2001 Act on the significant effects of the proposed railway works on the environment, taking into account the results of the examination referred to in (c) and, where appropriate, its own supplementary examination; and
- the integration by the Board of its reasoned conclusion into its decision under Section 43 of the 2001 Act
- an examination, analysis and evaluation by the Board under Sections 42B and 43 in order to identify, describe and assess, in the light of each individual case, the direct and indirect significant effects of the Proposed Development, including significant effects derived from the vulnerability of the activity to risks of major accidents and disasters relevant to it, on: population and human health; biodiversity, with particular attention to species and habitats protected under the Habitats and Birds Directives; land, soil, water, air and climate; material assets, cultural heritage and the landscape, and the interaction between the above factors.

The Guidelines on information to be contained in the Environmental Impact Assessment Report (EPA, 2022) further define it in Appendix 1 – Glossary of Terms 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'*.

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.

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.

This EIAR will be used by the Board to make a decision to consent or refuse the application or to seek further information if required. In line with current guidance, the EIA for the project commenced at the project design stage.

The Board is the competent authority for the purpose of carrying out an environmental impact assessment of the Proposed Development.

1.7.1 Guidance

The preparation of the EIAR has 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);

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

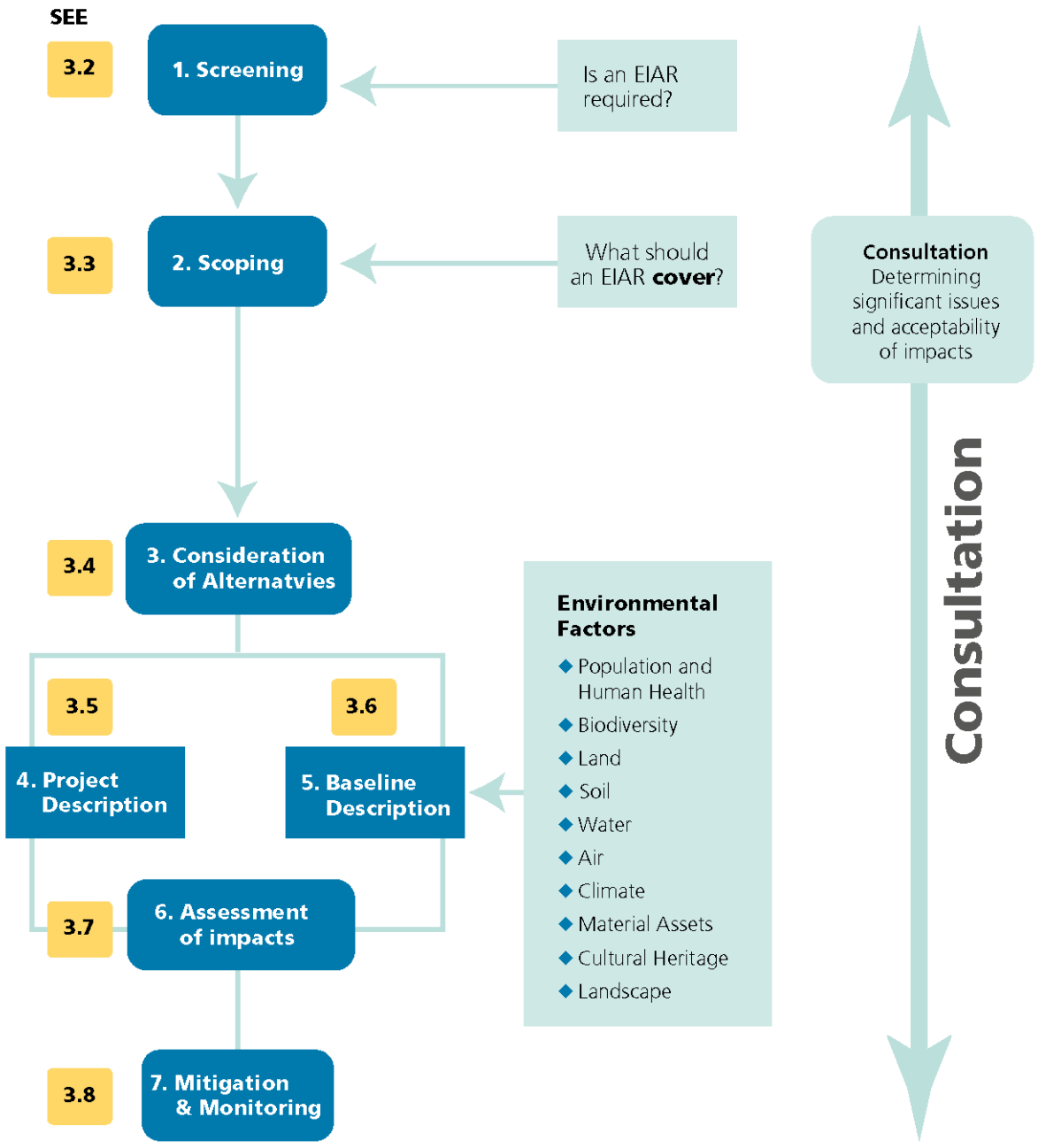
Other legislation, guidelines from Transport Infrastructure Ireland ("TII") and other bodies have been considered and are detailed in the relevant technical assessment chapters of this EIAR. Each environmental factor assessed in this EIAR sets out the legislative context, policy context and guidance relevant to that environmental factor. In addition to the applicable EIA legislation and guidance, all 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.

1.8 Key Stages of EIA Process

The key stages of the EIA process are:

- Screening;
- Scoping;
- Consideration of alternatives;
- Preparation of EIAR;
- Project description;
- Baseline description;
- Assessment of impacts; and
- Mitigation and monitoring measures.

The key stages of the EIA process are illustrated in Image 1-3. The figure also illustrates the role of consultation throughout the EIA process. An overview of the key stages of the EIA process is presented in the sections below.



The information that must be included in an EIAR is shown as seven steps in sequence in the diagram above. The environment is described under a number of specific headings that are shown on the right. Adherence to this general sequence and structure helps ensure an objective and systematic approach.

Image 1-3 Key Stages of the EIA Process in Sequence (EPA, 2022)

1.8.1 Screening

As further described in Section 1.5.1 of this chapter, Section 37 (3)(e) of 2001 Act and as recently further amended by the European Union (Railway Orders) (Environmental Impact Assessment) (Amendment) Regulations 2021 (S.I. No. 743 of 2021) requires a railway order application to be accompanied by:

> *"a statement of the likely effects on the environment (referred to subsequently in this Part as an 'environmental impact statement') of the proposed railway works.'"*

It is therefore mandatory to submit an EIAR (formerly referred to as an EIS) with a railway order application. An EIA Screening exercise was undertaken for the project to confirm this requirement.

This requirement effectively negates the need to apply further EIA screening criteria as it is mandatory to submit a "report of the likely effects on the environment" to accompany the application for a Railway Order.

1.8.2 Scoping

"Scoping" is a process of deciding what information should be contained in an EIAR and what methods should be used to gather and assess that information. The Scoping stage provides an opportunity to consult with prescribed bodies and key stakeholders about the extent of the information to be contained within the EIAR.

An EIA Scoping report was prepared on the DART+ Coastal North project and sent to prescribed bodies and key stakeholders on the 6th March 2023, as part of an informal EIA scoping consultation process. This report is available in Appendix A1.1 EIA Scoping Report in Volume 4 of this EIAR. The key objectives of the EIA Scoping Report were to:

- Provide a description of the Proposed Development
- Identify likely significant impacts which may arise during construction and operation of the Proposed Development that will be assessed in the EIAR.
- Outline proposed assessment methodologies for completing the assessments.
- Outline the likely contents of the EIAR; and
- Form a basis of common reference for consultation about the scope and methodology for the EIAR.

On the basis of the information provided in the EIA Scoping Report views were sought on the scope and level of detail that should be considered when preparing this EIAR, including any additional environmental issues or alternative methodologies that should be taken into consideration. The prescribed bodies and key stakeholders were invited to comment over a six-week period. The submissions received have been considered as part of the preparation of this EIAR, as appropriate.

The EIA Scoping Response Report included in Appendix A1.2 documents the process undertaken. This report details the list of prescribed bodies and key stakeholders that were invited to comment, the feedback received and how the feedback has been considered by the project team as part of the preparation of the EIAR.

1.8.3 EIAR

As set out earlier, the amendments to the 2001 Act which were affected by the European Union (Railways Orders) (Environmental Impact Assessment) (Amendment) Regulations 2001 (S.I.) reflect and mirror many of the following provisions of the EIA Directive and apply same to the application for a railway order.

To recap, the Transport (Railway Infrastructure) Act 2001 (as amended) provides for the making of a railway order application by Córas Iompair Éireann (CIÉ) to An Bord Pleanála ('ABP'). The European Union (Railway Orders) (Environmental Impact Assessment) (Amendment) Regulations 2021 (S.I. No. 743 of 2021) gives further effect to the transposition of the EIA Directive (EU Directive 2011/92/EU as amended by Directive 2014/52/EU) on the assessment of the effects of certain public private projects on the environment by amending the Transport (Railway Infrastructure) Act 2001 ('the 2001 Act').

By virtue of Section 38 of the 2001 Act the development the subject matter of a railway order is deemed to be exempted development and the provisions of Part IV of the Planning and Development Act 2000 are disapplied where the works involved are authorised by a railway order.

An examination, analysis and evaluation is carried out by the Board in order to identify, describe and assess, in the light of each individual case, the direct and indirect significant effects of the proposed railway works, including significant effects derived from the vulnerability of the activity to risks of major accidents and disasters relevant to it, on: population and human health; biodiversity, with particular attention to species and habitats protected under the Habitats and Birds Directives; land, soil, water, air and climate; material assets, cultural heritage and the landscape, and the interaction between the above factors.

In carrying out an EIA in respect of an application made under Section 37 of the 2001 Act, the Board is required, where appropriate, to co-ordinate the assessment with any assessment under the Habitats Directive or the Birds Directive.

The 2001 Act as amended (including by Statutory Instrument No. 743/2021) at Section 37 requires, inter alia, that the application be made in writing and be accompanied by:

- A draft of the proposed railway order
- A plan of the proposed railway works.
- A book of reference to a plan describing the works which indicates the identity of the owners and of the occupiers of the lands described in the Plan; and
- A report on the likely effects on the environment of the proposed railway works.

A report of the likely effects on the environment of the proposed railway works is addressed by the preparation of this Environmental Impact Assessment Report (EIAR) (previously referred to as an Environmental Impact Statement in Section 39 of the 2001 Act prior to the amendments effected by S.I. No. 743/2021). As mentioned, this EIAR is based on a coordinated approach in order to facilitate An Bord Pleanála carrying out a coordinated assessment with any assessment under the Habitats Directive (Council Directive 92/43/EEC of 21 May 1992) or the Birds Directive (Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009).

In accordance inter alia with Section 39 of the 2001 Act and the provisions of the EIA Directive, CIÉ, as the applicant for this railway order, has ensured that the EIAR is prepared by competent experts; contains a description of the proposed railway works comprising information on the site, design, size and other relevant features of the proposed works; contains a description of the likely significant effects of the proposed railway works on the environment; contains the data required to identify and assess the main effects which the proposed railway works are likely to have on the environment; contains a description of any features of the proposed railway works, and of any measures envisaged, to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment; contains a description of the reasonable alternatives studied by the applicant – here CIÉ – which are relevant to the proposed railway works and their specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the railway works on the environment; contains a summary in non-technical language of the above information; takes into account the available results of other relevant assessments under European Union or national legislation with a view to avoiding duplication of assessments; in addition to and by way of explanation or amplification of the specified information referred above, the EIAR contains such additional information specified in Annex IV to the EIA Directive relevant to the specific characteristics of the particular railway works, or type of railway works, proposed and to the environmental features likely to be affected and in this regard Annex IV sets out the information which is referred to in Article 5(1) of the EIA Directive. Further the EIAR includes the information that may reasonably be required for reaching a reasoned conclusion in accordance with Section 42B of the 2001 Act on the significant effects of the proposed railway works on the environment, taking into account current knowledge and methods of assessment. This assessment has been undertaken in accordance with the above legislative and regulatory regime.

Among the matters which An Bord Pleanála is required consider when an application is made for a railway order are the matters referred to in Section 143 of the Planning and Development Act 2000 (as amended) (Section 43(1)(h) of the Transport (Railway Infrastructure) Act 2001 (as amended and substituted). Accordingly, An Bord Pleanála in the performance of its functions is required to have regard to (a) the policies and objectives for the time being of the Government, a State authority, the Minister, planning authorities and any other body which is a public authority whose functions have, or may have, a bearing on the proper planning and sustainable development of cities, towns or other areas, whether urban or rural; (b) the national interest and any effect the performance of the Board's functions may have on issues of strategic economic or social importance to the State, and (c) the National Planning Framework and any regional spatial and economic strategy for the time being in force.

The main purpose of an EIAR is to:

'" *identify, describe and present an assessment of the likely significant impacts of a project on the environment. This informs the competent authority's assessment process, its decision on whether to grant consent for a project and, if granting consent, what conditions to attach* (EPA, 2022)*.'"*

The EIAR focuses on:

- Impacts / effects that are both likely and significant; and
- Impact / effects descriptions that are accurate and credible.

In accordance with the EIA Directive and guidance documents, the EIA process facilitates ongoing design review allowing for the project design to be adapted and reviewed in light of predicted environmental effects emerging during the preparation of an EIAR.

The design team and the environmental specialists have maintained a regular dialogue through the design preparations and revisions to ensure that this objective is achieved.

1.8.3.1 Consideration of alternatives

The consideration of alternatives as mentioned above is provided for in Section 39 of the 2001 and the EIA Directive. Article 5(1)(d) of the Directive, for example, provides that the information to be provided by the developer shall include: *"A description of the reasonable alternatives studied by the developer, which are relevant to the project and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the project on the environment."*

Specifically, in terms of railway works, this requirement has been transposed through Section 39 (1) of the Transport (Railway Infrastructure) as inserted by Section 49 (b) of the Planning and Development (Strategic Infrastructure) Act 2006 and as amended and substituted by the European Union (Railway Orders) (Environmental Impact Assessment) (Amendment) Regulations 2021 (S.I. No. 743/2021), which requires inter alia that the EIAR contain the following: *"(v) a description of the reasonable alternatives studied by the applicant which are relevant to the proposed railway works and their specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the railway works on the environment."*

The Guidelines on the information to be contained in Environmental Impact Assessment Reports (EPA, 2022) states the following in respect of alternatives: *"The objective is for the developer to present a representative range of the practicable alternatives considered. The alternatives should be described with 'an indication of the main reasons for selecting the chosen option'. It is generally sufficient to provide a broad description of each main alternative and the key issues associated with each, showing how environmental considerations were taken into account in deciding on the selected option. A detailed assessment (or 'mini-EIA') of each alternative is not required".*

Alternatives may be considered at several stages in the EIA process, reflective of initial stages where location and form are most relevant and at later stages where alternative designs may be required to address emerging environmental issues.

Further information on this process and consideration of the various reasonable alternatives studied is presented in Chapter 3 (Alternatives) of this EIAR.

1.8.3.2 Impact assessment methodology

The EIA environmental factors specified in the EIA Directive are assessed in the respective chapters of this EIAR. Each chapter addresses.

- the relevant legislation, policy and guidance;
- the methodology used to assess the impacts including the relevant study area, sources of information survey techniques, consultations undertaken, and details the relevant criteria for assessment of impacts;
- presents a description of the receiving/baseline environment;

- describes the potential impacts on the environmental factor under examination;
- the mitigation and monitoring measures (where required) proposed to avoid, reduce and/or mitigate impacts;
- residual effects after mitigation are applied;
- interactions with other environmental factors; and
- assessment of cumulative effects of any plans or projects.

1.8.3.3 Criteria for the assessment of effects

A key document that has informed the assessment methodology is the *Guidelines on the information to be contained in Environmental Impact Assessment Reports* (May 2022) published by EPA 2022. Section 3.7 of these Guidelines, and specifically Table 3.4 (replicated in Table 1-2 below) forms the basis for describing the potential impacts as part of this environmental impact assessment. The consideration of potential impacts includes direct, indirect, secondary and cumulative impacts as appropriate, with reference to the appropriate guidance. Where specialists' environmental factors have recognised guidance / standards relating to the description and the significance of effects, these are set out in the respective sections as part of that specialist chapter, as appropriate.

Table 1-2 Description of effects (EPA, 2022)

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.
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 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 a sensitive aspect of the environment.
Very Significant	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.
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 measure 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.
Describing the Types of Effects:	
Indirect effects	Effects on the environment, which are not a direct result of the project, often produced away from the project site or because of a complex pathway.
Cumulative effects	The addition of many minor or insignificant effects, including effects of other projects, to create larger, more significant effects.
'Do-nothing' effects	The environment as it would be in the future should the subject/project not be carried out.
'Worst Case' effects	The effects arising from a project in the case where mitigation measures substantially fail.
'Indeterminable' effects	When the full consequences of a change in the environment cannot be described.
'Irreversible' effects	When the character, distinctiveness, diversity or reproductive capacity of an environment is permanently lost.
'Residual' effects	The degree of environmental change that will occur after the proposed mitigation measures have taken effect.
'Synergistic' effects	Where the resultant effect is of greater significance than the sum of its constituents (e.g. combination of SOx and NOx to produce smog).

1.8.3.4 Interactions

Article 3(1) of the EIA Directive requires that:

> '*The environmental impact assessment shall identify, describe, and assess in an appropriate manner, in light of each individual case, and in accordance with Articles 4 to 12, the direct and indirect significant effects of a project on the following factors:*
>
> - (a) human beings, fauna, and flora
> - (b) soil, water, air, climate, and the landscape
> - (c) material assets and the cultural heritage

- (d) the interaction between the factors referred to in points (a), (b) and (c).'

The interaction between impacts on different environmental factors are considered as relevant throughout the EIAR. Close co-ordination and consultation between the EIA team was maintained throughout the process to ensure that interactions are adequately addressed in this EIAR.

1.8.3.5 Mitigation and monitoring

Annex IV (7) of the EIA Directive states:

> "*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 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."*

Early in the design process assessments are carried out to identify likely significant effects and to integrate mitigation measures into the fundamental design to address potential adverse effects.

Close consultation and collaboration between the EIA team was undertaken during the development and assessment of the final mitigation measures. Mitigation measures may unintentionally cause indirect effects, on other environmental factors. For example, landscaping mitigation to reduce visual impacts could interact with proposals for a noise barrier wall to mitigate noise effects. Co-ordination via EIA project team workshops were undertaken to ascertain if mitigation proposed needs to be referred to and/or assessed in other sections of the EIAR has been undertaken as part of this EIAR.

1.8.3.6 Residual impacts

The residual impacts are the final or intended effects which occur after the proposed mitigation measures have been implemented. Residual effects are described in the relevant chapters of this EIAR in accordance with the system of describing effects as set out previously.

1.8.3.7 Cumulative assessment of effects

Annex IV (5)(e) of the EIA Directive requires that the EIAR shall contain:

> *"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;"*

Furthermore, Annex IV (5) states that the EIAR shall contain:

> *"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 Development may interact to produce a cumulative impact. These interactions may arise during the construction or operational and maintenance phases. This process is referred to as 'screening'. A process is applied to methodically and transparently screen the projects and activities that may be considered cumulatively alongside the Proposed Development. This involves a staged process that considers the level of detail available for projects and activities, as well as the potential for interactions on a conceptual, physical and temporal basis.

Further explanation of the staged approach to CIA and the cumulative impacts within the Proposed Development in respect of each of the environmental factors are identified and addressed in Chapter 26 (Cumulative Effects) of this EIAR.

1.9 Difficulties Encountered / Limitations

No significant difficulties were encountered during the preparation of this EIAR. Any technical limitations associated with assessment of an environmental factors are detailed in the relevant EIAR chapter. However, it must be noted that during the preparation of the emerging preferred design options, government restrictions resulting from the Covid 19 pandemic presented unique challenges for the project team to progress the EIAR. However, the compilation of the information necessary for the EIAR did not present any significant difficulties.

Due to public health restrictions, in-person consultation was not possible for Public Consultation no. 1 (PC1). Public participation during this period was instead facilitated through a series of on-line webinars. Public engagement for Public Consultation no. 2 (PC2) was a combination of webinar and in-person consultation events, to facilitate the widest audience possible.

Survey work has been undertaken to complement data from official sources to provide reliable and up-to date baseline information on which to undertake the environmental assessments.

This EIAR has been prepared based on the best available information and in accordance with current best practice and relevant guidelines.

Any topic specific difficulties encountered beyond those presented above have been noted within the specialist Chapters 6-24 of this EIAR.

1.10 Structure of the EIAR

This EIAR has been prepared on behalf of the Applicant, CIÉ by Arup with the assistance of a team of competent experts. See Section 1.11 for further details.

This EIAR is presented as follows:

Volume 1: Non-Technical Summary

Volume 2: Main Text

Chapter 1: Introduction

Chapter 2: Policy Context and Need for the Project

Chapter 3: Alternatives

Chapter 4: Description of the Proposed Development

Chapter 5: Construction Strategy

Chapter 6: Traffic and Transportation

Chapter 7: Population

Chapter 8: Biodiversity

Chapter 9: Land and Soils

Chapter 10: Water (including Hydrology and Flood Risk)

Chapter 11: Hydrogeology

Chapter 12: Air Quality

Chapter 13: Climate

Chapter 14: Noise and Vibration

Chapter 15: Landscape and Visual Amenity

Chapter 16: Material Assets: Agricultural Properties

Chapter 17: Material Assets: Non-agricultural Properties

Chapter 18: Material Assets: Utilities

Chapter 19: Material Assets: Resources and Waste Management

Chapter 20: Archaeology and Cultural Heritage

Chapter 21: Architectural Heritage

Chapter 22: Electromagnetic Compatibility and Stray Current

Chapter 23: Human Health

Chapter 24: Major Accidents and Disasters

Chapter 25: Interactions

Chapter 26: Cumulative Effects

Chapter 27: Summary of Mitigation and Monitoring Measures

Volume 3A: Technical Figures

Volume 3B: Photomontages

Volume 4: Technical Appendices

Supporting Environmental Documents

1.11 EIA Project team

The EIA Directive requires the developer to ensure that the EIAR is prepared by competent experts. Table 1-3 outlines the qualifications and expertise of the key members of the project team who were involved in the preparation of this EIAR.

Table 1-3 EIA Project Team

Topic	Specialist Contributors	Company	Qualifications	Responsibility and Relevant Experience	Experience (Years)
Chapter 1: Introduction	Clodagh O'Donovan	Arup	B.E.(civil engineering) MEng.Sc (water engineering), C.Eng, FIEI, FConsEI	Clodagh is the Planning Service Lead in Arup and has 29 years' experience in civil engineering, environmental assessment and the statutory consent process. She has led the EIA, AA and consent process for a wide variety of large-scale infrastructure projects, across the transport, energy and water sectors, including specific SID and oral hearing experience.	29
	Stephen Hyland	Arup	MSc, BSc, PIEMA	Stephen is a Senior Environmental Consultant in Arup and has 13 years' experience in environmental assessment, stakeholder engagement, environmental construction management and statutory consent processes. He has experience delivering EIA for a wide variety of large-scale transport infrastructure projects including BusConnects (Dublin) and High Speed Two (HS2) in the UK. He is the Environmental Coordinator on the DART+ Coastal North Project.	13
Chapter 2: Policy Context and Need for the Project	Clodagh O'Donovan	Arup	As above	As above	As above
	Máire McNamee	Arup	BSc (Hons) Environmental Planning, MSc Spatial Planning, MRTPI	Planning Policy and Guidance: Máire is a Principal Planner with over 11 years' experience and is Chartered by the Royal Town Planning Institute. Máire's expertise ranges from advising on strategic infrastructure and renewable energy projects to developing Town Centre Masterplans and Urban Regeneration Strategies. Maire's experience also includes community and stakeholder engagement facilitation in accordance with IAP2 principals, project management, due diligence, masterplans mixed-use developments, statutory approval procedures and policy development.	11
Chapter 3 Alternatives	Clodagh O'Donovan	Arup	As above	As above	As above
	Stephen Hyland	Arup	As above	As above	As above

Topic	Specialist Contributors	Company	Qualifications	Responsibility and Relevant Experience	Experience (Years)
Chapter 4: Description of the Proposed Development	Clodagh O'Donovan	Arup	As above	As above	As above
	Stephen Hyland	Arup	As above	As above	As above
	Gillian Sisk	Arup	PhD, BEng, CEng MIEI	Gillian has 21 years' experience in the field of project management and transport infrastructure within Ireland, Australia, and SE Asia. Through her project experience and her leadership roles she has led and managed large multidisciplinary teams of both local and international professionals. Gillian is currently the Project Manager for DART+ Coastal Project.	21
	Darragh Beirne	Arup	BEng, MIEI, MPWI	Darragh is a Senior Engineer with over 16 years' experience across a wide variety of large-scale infrastructure projects. He has held key design management roles on railway projects in both the UK and Ireland, responsible for multi-disciplinary coordination of designs, value engineering and liaison with clients, design partners and stakeholders to meet the project requirements. He is the Engineering Manager on the DART+ Coastal North Project.	16
Chapter 5: Construction Strategy	Tom Honnywill	Arup	BEng; CEng; MICE.	Tom Honnywill is an Associate Director with 30 years of construction planning experience, starting his career with contractors and now working for Arup. He specialises in planning the construction of railway projects, with a particular focus on how works can be undertaken as efficiently and safely as reasonably possible. This includes projects such as East West Rail, HS2 or Crossrail 2. He has contributed to the development of many environmental impact assessments, liaising with a multitude of stakeholders in the process so that optimum plans can be developed overall. This has helped to mitigate disruption to the local community whilst works are ongoing.	31

Topic	Specialist Contributors	Company	Qualifications	Responsibility and Relevant Experience	Experience (Years)
	Clodagh O'Donovan	Arup	As above	As above	As above
	Stephen Hyland	Arup	As above	As above	As above
Chapter 6: Traffic and Transportation	Gerna van Jaarsveld	Arup	MSc (Transportation Planning)	Gerna is an Associate with Arup and has more than 25 years' experience as a Transport Planner, of which she has spent over 10 years in Ireland. She holds a Town and Regional Planning degree with a masters in Transport Planning and has experience in delivering a wide range of transport planning projects in the public and private sector. She supported the development of the All Island Rail project on behalf of the DoT. She has prepared a number of Traffic Impact Assessments for Environmental Impact Assessments in Ireland including Arklow Wind Farm, Lower Lee Flood Relief Scheme and the N25 Little Island Pedestrian and Cyclist Bridge.	25
Chapter 7: Population	Dr. Craig Bullock	Optimize Consultants	PhD Environmental Economics 2004, Diploma EIA 2000	Dr. Craig Bullock has inputted to c40 EIAs including transport infrastructure (roads, rail, public transport, greenways) and built development. CBA, Social Impact Assessment and contribution to SEAs. Second Review of SEA Practice in Ireland (EPA 2019). Related studies (publications) on natural environment, natural capital accounting, health and green infrastructure, environmental liability, adaptation to climate change, bike share, etc.	32
Chapter 8: Biodiversity	Andrew Speer	Scott Cawley	MCIEEM, BSc (Hons) Zoology, Pg Dip GIS, Adv Dip in Planning & Environmental Law	Andrew Speer is CTO with Scott Cawley with responsibility for technical review and oversight of the biodiversity assessments. He has extensive experience in biodiversity impact assessment and Appropriate Assessment across a diverse range and complexity of projects. Andrew has extensive experience in in designing, undertaking, managing and delivering large scale ecological field survey programmes, assessing impacts and designing/implementing mitigation strategies.	17

Topic	Specialist Contributors	Company	Qualifications	Responsibility and Relevant Experience	Experience (Years)
	Siofra Quigley	Scott Cawley	B.Sc (Hons) Zoology, M.Sc Wildlife Biology and Conservation	Síofra Quigley is a senior ecologist with Scott Cawley. Síofra is an experienced ecologist in field surveys of several protected species, including; bat, otter, badger, birds, red squirrel, reptile, pine marten, and undertakes and manages surveys for a range of projects. Síofra is also experienced in project management, and the preparation of reports, including Ecological Impact Assessment (EcIA) Appropriate Assessment (AA) Screening reports, and Natura Impact Statements (NIS) for residential, commercial, and infrastructure projects across Ireland.	5
	Tim Ryle	Scott Cawley	B.Sc (Hons) Botany, Ph.D, MIES	Tim Ryle is an experienced ecological consultant with over twenty years' experience in private consultancy in designing, undertaking and managing a wide range of ecological survey and in assessing impacts and designing mitigation measures and biodiversity enhancements, in particular for protected species including badgers, otters, bats, birds, amphibians as well as habitats of conservation importance. He is also experienced in undertaking Appropriate Assessment for small-scale development projects and larger infrastructural projects, land plans as well as national/government plans.	23
Chapter 9: Land and Soils	Marie Fleming	Arup	MSc, BSc, DIC Engineering Geology, Past President of Institute of Geologists Ireland, Chair of Registration Authority of the European Federation of Geologists, Member of External Relations Committee of the Geological Society of London	Marie Fleming is a Chartered Engineering Geologist, with over 20 years' experience. She holds an MSc in Engineering Geology and has a wide range of experience such as geotechnical studies, geophysics earthworks and geotechnical design. Marie has been the Land and Soils lead on various projects from large infrastructure projects to private developments providing expert advice.	21
Chapter 10: Water (including Hydrology & Flood risk)	Mesfin Desta	Arup	PhD (Hydrology), MSc (Hydrology), BSc (Hydraulic), CEng FIEI	Mesfin Desta is a Principal Hydrologist with Arup and has over 17 years of experience as a hydrologist. He holds a PhD in Civil Engineering from UCD and MSc in Engineering Hydrology from NUI Galway. He is a chartered member and Fellow of Engineers Ireland.	17

Topic	Specialist Contributors	Company	Qualifications	Responsibility and Relevant Experience	Experience (Years)
				He was responsible for the preparation of Water/Hydrology Chapters of EIAR's for various projects including Galway BusConnects, N24 Waterford to Cahir, and various Strategic Housing Developments.	
Chapter 11: Hydrogeology	Christopher Newton	Arup	MSc Geology, Fellow of Geological Soc. Of London, Chartered with Geological Soc. Of London, Vice Chair of Irish Brownfield Network.	Christopher is a Senior Hydrogeologist with 17 years' experience preparing Land, Soils, Geology and Hydrogeology chapters and land contamination assessments for Environmental Impact Assessments. He is a Chartered Geologist, has an MSc Geology (Bristol) and a Diploma in Planning and Environmental Law. He is a Fellow of the Geological Society of London and is Chair of the Ireland Brownfield Network.	17
Chapter 12: Air Quality	Sinead Whyte	Arup	BSc, MSc, CIWEM. Diploma in Acoustics and Noise Control	Sinead Whyte was responsible for the preparation of the Air Quality and Climate Chapters of the EIAR. She is an Associate Director with Arup with over 25 years' experience in the field of air quality and climate impact assessments of infrastructural projects. She has presented expert witness evidence at numerous An Bord Pleanála oral hearing.	25
Chapter 13: Climate	Sinead Whyte	Arup	As above	As above	As above
Chapter 14: Noise and Vibration	David Owen	Arup	BEng (Honours) in Engineering Acoustics and Vibration, Chartered Engineer (CEng), Fellow of the Institute of Acoustics (FIOA)	David Owen has more than 25 years' experience as a noise and vibration consultant in the planning, design, construction, and operation of major infrastructure projects, including High Speed 2 (HS2), London Overground, Crossrail, High Speed 1, DART Underground, and Thames Tideway Tunnel. He has substantial experience in providing sound, noise and vibration chapters for the environmental assessment of infrastructure projects, derivation and agreement of construction policy, baseline and stakeholder liaison.	27

Topic	Specialist Contributors	Company	Qualifications	Responsibility and Relevant Experience	Experience (Years)
	Tom Marshall	Arup	BEng in Mechanical Engineering, Professional Engineer (P.Eng.) with the Association of Professional Engineers and Geoscientists of BC, Member of Institute of Acoustics (MIOA)	Tom Marshall joined Arup in 2016 and has worked in acoustics, noise and vibration engineering for 20 years. He has written and presented several papers on the effects of environmental noise and vibration from railways and other acoustic topics at international conferences. He has experience in the development of strategies, management plans, impact assessments and noise mitigation measures for large scale infrastructure projects in North America, the Caribbean, Europe, Asia and the UK.	20
	Sinead Whyte	Arup	As above	As above	As above
Chapter 15: Landscape and Visual	Thomas Burns	Brady Shipman Martin (BSM)	BAgrSc (Landscape), DIP EIA, Adv Dip Planning and Environmental Law	This chapter of the EIAR has been prepared by Thomas Burns, Partner with Brady Shipman Martin environmental, landscape and planning consultants. Thomas has a primary degree in Landscape (B.Agr.Sc. (Landscape), 1989) and a postgraduate diploma in EIA Management (Dip. EIA Mgmt., 1994) both from University College Dublin (UCD) and an Advanced Diploma in Environmental and Planning Law from King's Inn (Ad. Dip. En. & Plan. Law, 2018). Thomas has over 30 years direct experience in carrying out landscape and visual impact assessments for major commercial, infrastructural, mixed-use and residential developments.	25
Chapter 16: Material Assets Agricultural Properties	Con Curtin	Curtin Agricultural Consultants	B.Agric.Sc, Level 6 Land Drainage (Teagasc)	Con Curtin is an agricultural consultant with 35 years of experience advising farmers. Since 1998 he has carried out Agricultural Impact Assessments for more than 20 major infrastructural projects such as North South Electricity Interconnector Project (140kms), M20 Cork to Limerick (80km), M7 Castletown to Nenagh (40km) and has worked on rail projects such as Metro North and Dublin to Hazelhatch Electrification Project.	35

Topic	Specialist Contributors	Company	Qualifications	Responsibility and Relevant Experience	Experience (Years)
Chapter 17: Material Assets: Non-agricultural properties	Stephen Hyland	Arup	As above	As above	As above
Chapter 18: Material Assets: Utilities	Attila Gazdag	Arup	BEng Tech, B.Sc. (Hons), ME, MIEI	Attila Gazdag is a Drainage and Utility Lead in Arup. He has 17 years' experience at scoping utility surveys and identifying and categorising utility disputes. He has also delivered conflict detection final deliverables to the NTA. He has experience designing and implementing utility diversions for critical bus routes. He has worked in electrical, gas, water, and telecommunications utilities. His expertise in utility management, conflict detection, and infrastructure upgrading helps deliver key transit projects.	17
Chapter 19: Material Assets: Resources and Waste Management	Janet Lynch	Arup	BE (Hons) Civil and Env Engineering, Ellen MacArthur University of Exeter Circular Economy Masterclass, FETAC Certificate in Waste Facility Management, CEng, MIEI, Chartered Resource and Waste Manager (MCIWM)	Janet Lynch is an Associate with Arup with over 17 years' experience in Industrial Emissions licensing, EIA and planning including, Resource and Waste Management: Construction and operational waste management plans, Energy from Waste, waste re-use, recycling and landfill, Innovative waste treatment technologies; Planning and EIA project management (energy, renewables, industrial, infrastructure); Industrial Emissions (IE) License applications & review (waste, biomass, oil and gas, energy, cement, pharmaceutical); Circular Economy; Water: Tender Assessments for Irish Water and Dublin City Council; Assistant Project Manager for the expansion of Irelands largest water treatment plant at Ballymore Eustace, Co. Kildare in 2006. Janet holds an honours degree in Civil and Environmental Engineering from University College Cork, a FETAC Certificate in Waste Facility Management and a Certificate in Applied Project Management from the IEI and University Limerick. She is a Chartered member of the Chartered Institution of Wastes Management (MCTWM) and a Chartered Member of Engineers Ireland.	23

Topic	Specialist Contributors	Company	Qualifications	Responsibility and Relevant Experience	Experience (Years)
Chapter 19: Material Assets: Resources and Waste Management	Simon Grennan	Arup	BA (Mod.), MSc	Simon Grennan is a Senior Environmental Consultant with Arup and has over 9 years' experience in the environmental sector. He holds an MSc in Environmental Sciences and has a wide range of experience in the environmental field, with specific experience in waste management consultancy work. Simon has significant experience working on construction and demolition resource and waste management plans, operational waste management plans and resource and waste management EIAR chapters for projects across a range of sectors.	9
Chapter 20: Archaeology and Cultural Heritage	Lisa Courtney	Courtney Deery	BA (Hons) MSc (Ag) Dipl. Bus. Mgt., Adv. Dipl. In Planning & Env. Law, MIAI. Lisa has obtained certificates from the University of Oxford in Condition Surveys of Historic Buildings (2017) and the assessment of setting of heritage assets (2013). World Heritage Certificate (2022) from UCD.	Lisa is a director of Courtney Deery Heritage Consultancy and has over 25 years of field and research experience in environmental impact assessment reporting. Lisa has carried out reports for large scale infrastructural projects and conservation initiatives, her experience demonstrates a capability of characterising the existing historic and archaeological environment and evaluating its significance. Lisa is a member of the Institute of Archaeologists of Ireland (IAI) and a member of the International Council of Monuments and Places (ICOMOS).	25
Chapter 21: Architectural Heritage	Cathal Crimmins	Cathal Crimmins	B.Arch, M.Arch.Sc., FRIAI, Grade 1 Conservation Architect	Architectural Conservation involved with historic buildings, protected structures of local, Regional, National and International Importance.	50
Chapter 22: Electromagnetic Compatibility & Stray Current	Sergio Rapino Carmona	Ardanuy	MSc Industrial (Electromechanical) Engineer, Member of Prof. Association of Industrial Engineers, Madrid	This chapter of the EIAR has been prepared by Sergio Rapino Carmona, holder of a master's degree of Industrial (Electromechanical) Engineering and a Member of the Professional Association of Industrial Engineers of Madrid. Sergio has worked in a variety of projects such as Signalling and Train Control System for the Red Line LRT project In Tel Aviv or Tenerife South railway Platform.	20

Topic	Specialist Contributors	Company	Qualifications	Responsibility and Relevant Experience	Experience (Years)
	Daniel Ernesto Nino	Ardanuy	MSc Energy and Sustainability with Electrical Power Engineering / BSc. Electrical Engineering	This chapter of the EIAR has been prepared by Daniel Ernesto Nino, holder of a Masters' Degree in Energy and Sustainability with Electrical Power Engineering. Daniel has worked in a variety of projects such as the Design of 500 kV transmission line Mantaro – Marcona – Socabaya – Montalvo in Peru or Feasibility study for extension and reconfiguration of substation Yopal 115/34,5/13,8 kV, in the Department of Meta, Colombia.	11
Chapter 23: Human Health	Dr Martin Hogan	Corporate Health Ireland	MB BAO BCh 1987 UCC, MICGP 1991, MRCGP 1991, FFOM RCPI 2000, FRCPI 2010, Accredited Specialist Irish Medical Council 1997	Assessment of impacts on Human Health and drafting the Human Health Chapter in the EIAR. Martin has worked in a variety of projects such as Metro North, M20, Dart Underground, Cork Port Terminal or Metrolink.	30
Chapter 24: Major Accidents & Disasters	Clodagh O'Donovan	Arup	As above	As above	As above
	Stephen Hyland	Arup	As above	As above	As above
Chapter 25: Interactions and cumulative impacts	Clodagh O'Donovan	Arup	As above	As above	As above
	Stephen Hyland	Arup	As above	As above	As above
Chapter 26: Cumulative Effects	Clodagh O'Donovan	Arup	As above	As above	As above
	Stephen Hyland	Arup	As above	As above	As above
	Clodagh O'Donovan	Arup	As above	As above	As above

Topic	Specialist Contributors	Company	Qualifications	Responsibility and Relevant Experience	Experience (Years)
Chapter 27: Mitigation and Monitoring Measures	Stephen Hyland	Arup	As above	As above	As above

1.12 Consultation

Consultation during the design and environmental impact assessment process is a key element as part of any project. An overview of the statutory, non-statutory and public consultations that have informed the design and environmental assessments throughout this EIAR is presented below.

The main consultation stages as part of the project development include the following:

- Pre-Application Consultation with the Board (January 2022 – February 2024);
- Consultation on the Emerging Preferred Option – Non-statutory Public Consultation no.1 (24th February – 8th April 2022);
- EIA Scoping Report – Informal Scoping Consultation (6th March – 18th April 2023);
- Consultation on the Preferred Option - Non-statutory Public Consultation no.2 (9th May 2023 – 23rd June 2023); and
- Statutory consultation as part of the EIA / Railway Order application process.

A summary of the pre-application consultation held with the Board can be found in Appendix A1.3 (Summary of ABP Meetings) in Volume 4 of this EIAR.

The non-statutory consultation and feedback received during the consultation phases is addressed in greater detail in Appendix A3.1 (Public Consultation No.1 Consultation Findings Report) and Appendix A3.2 (Public Consultation No.2 Consultation Findings Report) and Appendix A3.3 (Scoping Response Report) in Volume 4 of this EIAR.

1.12.1 RO Statutory Consultation

Section 40 of the 2001 Act details the notification and publication process which is carried out before an application is made by CIÉ for a railway order. This includes:

- Depositing – and keeping deposited – at places which are accessible to the public as directed by the Board, a copy of the draft railway order and all documents accompanying the application, for not less than six weeks following the publication of the notice referred to in Section 40(1)(b) of the 2001 Act.
- Publishing a notice in one or more newspapers circulating in the area to which the RO relates:
    - indicating that an application will be made for an order;
    - indicating the time and the place or places at which, and the period (which shall be 6 weeks) during which, a copy of the draft order and accompanying documents deposited under Section 40 may be inspected;
    - stating that An Bord Pleanála will consider any submissions in relation to the proposed order or in relation to the likely effects on the environment of the proposed railway works which are submitted in writing to it by any person within the six week consultation period;
    - stating that a copy of or extract from the draft order and accompanying documents may be purchased on payment of a fee not exceeding the reasonable cost of making such copy or extract stating, if it be the case, that the proposed railway works are likely to have significant effects on the environment in Northern Ireland;

- stating that a person may question the validity of a decision of the Board by way of an application for judicial review, under Order 84 of the Rules of the Superior Courts (S.I. No. 15 of 1986); and
- identifying where practical information on the review mechanism can be found.

- Serve on the planning authority/planning authorities in whose functional area(s) (or any part thereof) the proposed railway works are proposed to be carried out, on the Minister for Transport and on such other persons (if any) as the Board may direct, a copy of the draft order and accompanying documents and the notice referred to in Section 40(1)(b) of the 2001 Act.
- Serve a copy of the newspaper notice together with relevant extracts from the documents referred to in Section 40(1)(a) of the 2001 Act on every occupier and every owner of a land referred to in the draft order.
- Members of the public and any other body can make a submission or observation in writing in relation to the RO application, including the EIAR and the compulsory purchase order and supporting documents.
- The Board may request further information. If the response to the further information contains significant data in relation to the likely effects on the environment of the Proposed Development, the Board must direct CIÉ to put the information on a further public consultation for at least three weeks.
- Valid submissions received will be considered by the Board as part of the decision-making process.
- It is at the discretion of the Board whether or not an oral hearing will be held.
- If it is decided to hold an oral hearing, the Board will prepare an assessment of the Proposed Development and will decide whether to grant, grant in part or refuse the RO.
- If granted, in whole or in part, the railway order may be subject to such conditions, modifications, restrictions and requirements (and on such other terms) as the Board thinks proper and specifies in the order.

An approved railway order is required to construct and operate the Proposed Development and for the necessary compulsory purchase order arrangements.

1.13 References

Department of Housing, Planning and Local Government (DHPLG) (2018). *Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment*.

Environmental Protection Agency (EPA) (2015). *Revised Guidelines on the Information to be contained in Environmental Impact Statements* (draft September 2015).

Environmental Protection Agency (EPA) (2015a). *Advice Notes for Preparing Environmental Impact Statements* (draft September 2015).

Environmental Protection Agency (EPA) (2022). *Guidelines of the Information to be contained in Environmental Impact Assessment Reports.*

European Commission (EC) (2012). *Interpretation suggested by the Commission as regards the application of the EIA Directive to ancillary/associated works.*

European Commission (EC) (2017). *Guidance on the preparation of the Environmental Impact Assessment Report (Directive 2011/92/EU as amended by 2014/52/EU*.

European Commission (EC) (1999). *Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions.*

European Commission (EC) (2006). *Clarification of the application of Article 2(3) of the EIA Directive.*

European Union (2011) Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment

European Union (EU) (2013). *Guidance on Integrating Climate Change and Biodiversity into Environmental Impact Assessment.*

European Union (EU) (2014). Directive 2014/52/EU of 16 April 2014 on the assessment of the effects of certain public and private projects on the environment

Government of Ireland (2001). Transport (Railway Infrastructure) Act 2001

Government of Ireland (2006). Planning and Development (Strategic Infrastructure) Act 2006

Government of Ireland (2015). Roads Act 2015

Transport Infrastructure Ireland (TII) (formerly National Roads Authority) (2008). *Environmental Impact Assessment of National Road Schemes – A Practical Guide.*

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