Environmental Impact Assessment Report (EIAR)

Volume 3 Non – Technical Summary (NTS)

Large Scale Residential Development at Kilbride, Arklow, County Wicklow

Prepared by

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In association with

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1. Introduction

This Non-Technical Summary (NTS) of the Environmental Impact Assessment Report (EIAR) has been prepared on behalf of our client Certain Assets of Dawnhill and Windhill Limited to accompany a Large-Scale Residential Development (LRD) application to Wicklow County Council for a residential development on lands at a site in Kilbride, Arklow, Co. Wicklow. The application site is located within the townland of Kilbride and extends into Arklow No.1 Urban ED and Arklow No. 2 Urban ED. The main development site is located on agricultural lands in Kilbride located directly west of residential estates at Willow Grove, Murell Drive and Carrigmor, south west of St. Joseph's National School and properties along Monument Lane; south of the Kilbride Road (L 6179); and north of Arklow Marsh.

Each EIAR Chapter outlines the receiving environment; the potential impacts of the proposed development; the mitigation measures deemed necessary; and the predicted impacts once the mitigation measures are implemented. The purpose of this NTS is to summarise and explain in non-technical language, the likely and significant effects to the environments arising from this project.

Section 2 of this EIAR NTS provides a brief site context and Section 3 summarises the development description. Section 4 outlines the data required for each EIAR chapter and Section 5 outlines the predicted impacts relating to each chapter.

This NTS is prepared with direct input from the design team including McGill Planning, Altemar Limited, Donnachadh O'Brien & Associates Consulting Engineers, AWN Consulting, Traynor Environmental Ltd., Systra, Shanarc Archaeology Limited and Altemar Limited.

The EIAR has been prepared in accordance with the provisions of the Planning and Development Act (as amended) and the Planning & Development Regulations 2001(as amended), which give effect in national planning legislation to the EU Directives on EIA.

EIA requirements originate from Council Directive 85/337/EEC on the assessment of the effects of certain public and private projects on the environment, as amended by Directive 97/11/EC, 2003/35/EC and 2009/31/EC. The Directive and its amendments were subsequently codified and replaced by Directive 2011/92/EU, as amended in turn by Directive 2014/52/EU. This amending Directive was transposed into national planning consent procedures in September 2018 through the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296 of 2018).

The objective of the EIA Directive is to ensure a high level of protection of the environment and human health, through the establishment of minimum requirements for environmental impact assessment prior to development consent being given, of public and private developments that are likely to have significant effects on the environment.

An EIA is mandatory for certain projects and for other projects that meet or exceed a stated threshold as set out in Annex I and Annex II of the Directive (and Part 1 and Part 2 of Schedule 5 of the Planning and Development Regulations 2001, as amended). Projects that do not meet or exceed a stated threshold are subject to Screening for the requirement, or not, for 'sub-threshold' EIA.

The proposed development in this instance is for 666 no. units which is above the 500-no. unit threshold for automatic EIAR requirement. The site gross area is c.25.07ha, which is above the 10ha threshold for a built-up area (Schedule 5, Part 2 of the Planning & Development Regulations, 2001-2023, and therefore it is considered necessary to prepare an EIAR.

2. Site Context

The site is located in the area of Kilbride on the northern side of the Avoca River in Arklow, Co. Wicklow. It is located within the development boundary of Arklow Town in the townland of Kilbride. The site is primarily on lands zoned mixed use within a larger area designated as Area Action Plan 3 lands in the Arklow and Environs Local Area Plan 2018 – 2024. Wicklow County Council approved an Action Area Plan for Action Area 3 on the 2nd of April 2019.

There is a small portion of the site, across which a pedestrian boardwalk is proposed, which includes the marsh lands and Avoca River. These lands are zoned Arklow Town Marsh pNHA. As set out in the LAP Chapter 10 "*The marsh is the principal wetland habitat in the area, providing an important flood control role and supporting a variety of plant and animal life, in particular reed species and bird life.* The proposed pedestrian boardwalk and bridge that traverses the marsh, will sit atop of the permitted debris traps to be installed as part of the permitted Flood Alleviation Works (ABP Reg. Ref. 310368).

The wider development site, which is identified under AAP3 and for which a masterplan is included within this application, measures c. 75.4 ha. It is zoned for "*mixed use"* with the objective *"to provide for mixed use development"* including 1,500 residential units along with local shops, a school and services.

The current proposal is to bring forward the site in two phases. The first phase of development, the subject of this application, will complete the first part of the new distributor road and access into the site along with 666 residential units on the site, the neighbourhood centre and a new pedestrian / cyclist access through the Arklow Town Marsh to the Main Street, and public open spaces. Phase 2 will deliver the remaining 750 no. residential units along with the sports facilities and the remainder of the road.

It is worth noting that three development, outside of this application site, two of which are part of the overall masterplan for the areas has recently been granted planning permission. The first is for a new school campus in line with the requirements of the Action Area Plan. The new school is accessed off the Kilbride Road and will provide part of the new regional link road (WCC Reg. Ref. 22/213). This will deliver a primary and secondary school.

Planning permission has also been granted for 84 no. units in the south east corner of the masterplan site, and will form part of the Character Area 1A. This permitted phase includes the regional link road, and spine road through the site, a new pedestrian and cycle link past the Marsh Sports Center into Avondale Crescent, along with public open space adjacent to the marsh.

The third permitted development is for the Arklow Flood Relief Works which were granted under ABP Reg. Ref 310368. This permission includes the debris traps within the Avoca River which the proposed boardwalk will join and sit on top of.

This application has been cognisant of all three of these planning permissions, and has been designed to accommodate the applications, and integrate appropriately with them.

Subject Site

The site as a whole is currently in agricultural use and slopes in a broadly north / south direction to the town marsh and Avoca River.

The Pyramid of Arklow; national monument, and its associated graveyard are located to the north of the ownership area but at a significant distance outside of the application site and the proposed new road. This pyramid has been well maintained over the years. There is also a surrounding external wall around the graveyard which is in varying condition.

Figure 1: Site Location

There are hedgerows and trees on the site but there are no category A trees within the site and 10 category B trees. To the south of the site, there is an area within the Arklow Town Marsh pNHA (proposed Natural Heritage Area) across which the boardwalk is proposed. This pNHA is a non-statutory designation. There is also a small drainage ditch to the east of the subject site. The site is not located within a Conservation Area or an Architectural Conservation Area.

The site is located within close proximity to Wicklow town and is within the vicinity of 3 no. existing bus services which are operated by Bus Eireann. The routes include Wexford Town – Dublin Airport; Gorey – Dublin Airport and Redmond Square – Dublin Airport. Arklow Train station is approximately 2.5km from the development and allows users to commute towards Dundalk, via Dublin City Centre and also down to Rosslare Europort to the south of the river. It is also worth noting that Wexford Bus has received planning permission WCC Reg. Ref. 141234 for a Park and Ride facility (170 space car park) at the M11 interchange to the north of the site.

As set out in the Chapter 4 of the EIAR, which addresses social and community facilities in the area, there are 5 no. primary and 4 no. post primary schools within Arklow Town, of which St Joseph's National School is within the 10 to 15 minute walk of this site. There are also 11 no. creches within a 30-minute walk of the subject site and a further 5 no. creches outside of this radius.

The site is also within 20 minutes' walk/ 10-minute cycle of the Bridgewater Centre, and the associated facilities in that area which include the cinema, restaurants, shops as well as a skate park, while Arklow Bay Hotel is within 15 minutes' walk/ 5-minute cycle of the site. Arklow Main Street is about 25 minutes' walk/ 10-minute cycle from the site using existing and permitted routes via Avondale Crescent, and will be c. 10 minutes walk once the boardwalk is constructed. The main street has a

wide range of shops, restaurants, and community amenities including library, HSE services, and GP and other services.

3. Project Description

Certain Assets of Dawnhill and Windhill Limited intend to apply for a 7-year planning permission for a Large-Scale Residential Development (LRD) at this site of c.25.07ha located principally at "Kilbride", Arklow, Co. Wicklow. The application site is located within the townland of Kilbride and extends into Arklow No.1 Urban ED and Arklow No. 2 Urban ED. The main development site is located on agricultural lands in Kilbride located directly west of residential estates at Willow Grove, Murell Drive and Carrigmor, south west of St. Joseph's National School and properties along Monument Lane; south of the Kilbride Road (L 6179); and north of Arklow Marsh.

The application site also extends to provide for road and water infrastructure works/upgrades along the Kilbride Road (L-6179), Beech Road (L-2810), Dublin Road (R772); and for sustainable transport (pedestrian/cyclist) infrastructure across Arklow Marsh, the Avoca River and at Arklow Riverwalk adjacent Arklow Town Centre. It is noted that the part of the distributor road planned through the lands along with associated upgrade works to the Kilbride Road (L-6179) were also previously permitted as part of the Phase 1/Character 1A permission (WCC Reg. Ref.:23/756) / ABP Reg. Ref.: ABP-319604-24)

The development will consist of the demolition of 3 no. structures on site including a 2-storey habitable house (total GFA 207 sq.m) and 2 no. sheds/outbuildings (c.580 sq.m). Closures of 2 no. existing entrances onto the Kilbride Road (L-6179). Construction of a new residential development and local centre comprising: 666 no. units (578 no. semi-detached and terraced housing (100 no. 2 beds, 317 no. 3 beds, 161 no. 4 beds) and 88 no. apartments and duplex apartments (24 no. 1 beds, 51 no. 2 beds and 13 no. 3 beds)). All residential units will have associated private open space facing north/ south/ east/ west. The proposal will also include a local centre (c. 2335 sq.m) comprising a creche (c.1,095sqm) with outdoor play area, 3 no. community/medical units (c.450 sq.m), and 3 no. retail units (c.790sq.m). Building heights within the development will range from one to five storeys.

The development will include streets, pedestrian/cycle links, open spaces/parks (with play areas) and will include amendments to the permitted open spaces and access road granted as part of the Phase 1/Character Area 1a development (WCC Reg. Ref.: 23/756 on the subject lands.

The development will also include a public boardwalk/bridge for pedestrians and cyclists from the development across Arklow Town Marsh and the Avoca River to the Arklow Riverwalk north of Arklow Town Car Park and the Town Centre, with the bridge element (and associated works) across the Avoca River constructed atop the concrete columns (debris traps) permitted as part of the Arklow Flood Relief Scheme (Planning Ref. ABP-310368-21).

All associated site development works, site reprofiling, infrastructural and drainage works, surface water attenuation and natural attenuation areas, connection to public services and utilities (including undergrounding of ESB lines), provision of substations, bin stores, bicycle stores, car and cycle parking at surface and undercroft levels, public lighting, landscaping and planting, public/communal/private open spaces and boundary treatment works. This development will form part of the designated Kilbride Action Area Plan AAP3.

An Environmental Impact Assessment Report (EIAR) has been prepared in respect of the proposed development.

4. Data Required to Identify and Assess the Main Effects which the Proposed Development is Likely to have on the Environment

Data is required to identify and assess the main impacts which the proposed development is likely to have on the environment. The following is a synopsis of the data and information available and sourced for this Environmental Impact Assessment. This is in line with the following regulations and guidelines which were considered:

- The EU Directives and Irish regulations regarding Environmental Impact Assessment.
- Environmental Impact Assessment of Projects Guidance on the preparation of the Environmental Impact Assessment Report (European Commission, 2017).
- Guidelines on the Information to be Contained in the Environmental Impact Assessment Reports (Environmental Protection Agency,2022).
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Planning and Local Government, 2018).

Population and Human Health

Population

To establish the existing receiving environment/baseline for the subject site, the methodology included site visits to evaluate the location and likely significant potential impact upon the human population in the area.

Desk based study included an analysis of the Central Statistics Office Census (CSO) data, the ESRI Quarterly Economic Commentary, and national, regional and local planning policy, and school and creche enrolment figures.

Different local catchment areas were established for analysing population data, creche demand and capacity, and school demand and capacity. These areas were chosen to gather the most relevant data for each factor. A general local catchment area of 2km from the subject site forms the basis of most areas of analysis.

The following datasets were used during the survey:

- 2022 CSO Statistics
- 2016 CSO Statistics
- 2024 Google Maps
- Wicklow County Council website
- Department of Education
- HSE Facilities
- Pobal
- Information from schools in the area

Human Health

To establish an existing baseline of the human health of the area, desk-based study including an analysis of the Central Statistics Office Census (CSO) data was undertaken. As referenced in the Department of Housing, Planning and Local Government (2018) Guidelines for Planning Authorities and An Bord Pleanála, (taken from the European Commission's Environmental Impact Assessment of

Projects: Guidance on the Preparation of the Environmental Impact Assessment Report (2017)), human health is:

> *"a very broad factor that would be highly Project dependent. The notion of human health should be considered in the context of the other factors in Article 3(1) of the EIA Directive and thus environmentally related health issues (such as health effects caused by the release of toxic substances to the environment, health risks arising from major hazards associated with the Project, effects caused by changes in disease vectors caused by the Project, changes in living conditions, effects on vulnerable groups, exposure to traffic noise or air pollutants) are obvious aspects to study. In addition, these would concern the commissioning, operation, and decommissioning of a Project in relation to workers on the Project and surrounding population."*

The WHO (World Health Organization) also define health as

> *"a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity."*

Biodiversity

Desk study

A desk study was undertaken to gather and assess ecological data prior to undertaking fieldwork elements. Sources of datasets and information included:

- The National Parks and Wildlife Service
- National Biological Data Centre
- Satellite, aerial and 6" map imagery

A pre-survey biodiversity data search was carried out. This included examining records and data from the National Parks and Wildlife Service (NPWS), National Biological Data Centre (NBDC) and the Environmental Protection Agency (EPA), in addition to aerial, 6-inch maps and satellite imagery. A Phase I habitat survey of the site was undertaken within the appropriate seasonal timeframe for terrestrial fieldwork. Field surveys were carried out as outlined in Table 5.1. All surveys were carried out in the appropriate seasons. No limitations are foreseen in relation to the surveys on site.

Field Surveys

Surveys on site were carried out by Bryan Deegan, Frank Spellman, Jack Doyle and Emma Peters of Altemar Ltd.

Bryan Deegan is the managing director of Altemar. Bryan is an environmental scientist, aquatic biologist and marine biologist with 30 years' experience of ecological survey in Irish terrestrial and aquatic environments, providing ecological services to the State, Semi-State and industry. Bryan Deegan (MCIEEM) holds a MSc in Environmental Science, BSc (Hons.) in Applied Marine Biology, NCEA National Diploma in Applied Aquatic Science and a NCEA National Certificate in Science (Aquaculture).

Frank (BSc. Zoology & MSc. Zoology) has extensive experience in carrying out a wide range of fauna surveys as both a sub-contractor and employee for environmental consultancies and organisations in Ireland and the US. These include both roving and static acoustic bat surveys, terrestrial non-avian mammal surveys, breeding/wintering bird surveys, and freshwater ecology surveys. Frank has been

lead ornithologist on numerous development projects within Ireland carrying out full wintering bird and breeding bird assessments.

Emma Peters (BSc (Hons.) Environmental Science) is a skilled ecological assessor with aptitude for flora identification, invasive species and bat detection through static detector surveys, dusk emergence, and dawn re-entry surveys. Emma has been the lead ecologist in 30+ projects responsible for mammal tracking, camera trapping, wintering bird, breeding bird, bat surveys, flora and habitat mapping.

Jack Doyle (MSc Sustainable Environments) has previous experience in carrying out a wide range of fauna surveys, including both roving and static acoustic bat surveys, terrestrial non-avian mammal surveys, and breeding/wintering bird surveys.

The 2020/2021 wintering bird assessment was carried out by Hugh Delaney. Hugh Delaney is a freelance ecologist (Birds primarily) with an experienced background in bird surveying on numerous sites with ecological consultancies over 10+ years. Hugh, a lifelong birder, is local to the Dun Laoghaire-Rathdown area in Dublin and is especially familiar with bird life and its ecology in the environs going back over 30 years.

Survey	Surveyor	Dates
Flora and Habitat	Bryan Deegan (MCIEEM) Emma Peters (Altemar)	1st September 2019, September 26th 2020, 10th August 2021, 19th May 2022 11th September 2023 & 10th September 2024 & 9th April 2025
Bat Survey	Bryan Deegan (MCIEEM) Emma Peters (Altemar) Jack Doyle (Altemar), Frank Spellman (Altemar) & Emma Peters Bryan Deegan (MCIEEM), Frank Spellman, Jack Doyle & Emma Peters	1st September 2019, 2nd October 2020, 22nd August 2021 (14th August 2020- 22nd August 2020 & 10th August 2021-14th August 2021 (Static Detector) 11th September 2023 10th and 12th September 2024 9th of April 2025 9th May 2025
Mammal	Bryan Deegan (MCIEEM) Dr Chris Smal (MCIEEM) Frank Spellman	27th March 2020 20th and 21st March 2021 10th March 2022 11th September 2023 24th June 2024, 10th September 2024 9th April 2025
Wintering Birds 2020/2021	Hugh Delaney (Ornithologist)	October 23rd 2020, October 30th 2020, November 10th 2020, November 27th 2020, December 11th 2020, December 19th 2020, January 11th 2021, January 25th 2021, February 6th 2021, February 26th 2021, March 9th 2021.
Wintering Birds 2024/2025	Emma Peters (Altemar) & Jack Doyle (Altemar)	17th, 24th + 25th of October 2024, 8th + 22nd of November 2024, 10th + 18th of December 2024, 9th + 30th of January 2025, 20th + 28th of February 2025 and the 25th of March 2025.

Survey	Surveyor	Dates
Breeding Birds	Frank Spellman (Altemar), Emma Peters (Altemar) & Jack Doyle (Altemar)	29th May, 10th June and 24th June 2024 23rd April and 9th May 2025

Table 1: Field survey dates

It should be noted that bat surveys were also carried out along the Avoca River Estuary and in the eastern portion of the Arklow Town Marsh in 2016 and 2017 by Brian Keeley of Wildlife Surveys Ireland, as part of the Arklow WwTP project and the Arklow Flood Relief Scheme.

Land, Soil & Geology

- This chapter has been prepared having regard to the following guidelines;
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (Department of Housing, Planning & Local Government, 2018)
- Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (European Commission, 2017)
- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports – (EPA, 2022)
- Guidelines on the Information to be contained in Environmental Impact Assessment Reports DRAFT (EPA, August 2017);
- Advice Notes for preparing Environmental Impact Statements DRAFT (EPA, September 2015);
- Guidelines on Information to be contained in Environmental Impact Statements (EPA, 2002);
- Advice Notes on Current Practice in the preparation of Environmental Impact Statements (EPA, 2003);
- Guidelines for the preparation of Soils Geology and Hydrogeology Chapters of Environmental Impact Statements (IGI, 2013);
- Geology in Environmental Impact Statements, A Guide (IGI, 2002);
- Guidelines on Procedures for the Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (NRA 2009);
- Control of Water Pollution from Construction Sites (CIRIA, 2001); and Environmental Handbook for Building and Civil Engineering Projects (CIRIA, 2000).
- The assessment followed a phased approach as outlined in Chapter 4.4 of the Advice Note (EPA, 2015) and the IGI Guidelines (IGI 2013).

Initial Assessment

An initial assessment was carried out which defined the Project in terms of location, type and scale, established the baseline conditions; established the type of soil/ geological environment; established the activities associated with the Project and; initial assessment and impact determination. These objectives were achieved by way of a geological desk study and baseline data collection. A full list of sources for the desk study together with relevant legislation are included in Section 6.3 and are briefly listed below:

- Ordnance Survey of Ireland maps;
- Geological Survey of Ireland Groundwater and Geotechnical map viewer;
- Environmental Protection Agency Envision Maps; and
- National Monuments Service maps.

Additional information has been compiled through consultation and feedback from the project/EIAR Team. The information obtained from the above listed sources were utilised to establish the baseline conditions for the site.

Geotechnical and Environmental Investigations

The second phase of the assessment includes the results from a geotechnical investigation which was commissioned by the Applicant and was undertaken in 2019 by IGSL (Report No.: 22153). The site conditions have not changed since the commissioning of this GI and the results are considered to continue to represent the existing conditions. Ground investigations consisted of a combination of: -

- Trial Pits
- Cable percussion (shell and auger) exploratory boreholes
- Plate Bearing Testing
- Soakaway Testing (to BRE365)
- Groundwater Monitoring
- Gas Monitoring
- Laboratory testing
- Standpipe water level readings

The geotechnical investigation was carried out in accordance with Eurocode 7 – Part 2: Ground Investigation & Testing (EN 1997-2:2007). This has been used together with complementary documents such as Engineers Ireland Specification for Ground Investigation (2nd Ed, 2016), BS 5930 (2015+A1:2020) and BS 1377 (Parts 1 to 9) and the following European Norms:

- EN 1997-2 Eurocode 7: 2007- Geotechnical Design – Part 2: Ground Investigation & Testing
- EN ISO 22475-1:2006 Geotechnical Investigation and Sampling – Sampling Methods & Groundwater Measurements
- EN ISO 14688-2:2017 Geotechnical Investigation and Testing – Identification and Classification of Soil, Part 1: Identification and Description
- EN ISO 14688-2:2017 Geotechnical Investigation and Testing – Identification and Classification of Soil, Part 2: Principles for a classification
- EN ISO 14689-1:2017 Geotechnical Investigation and Testing – Identification, description & classification of rock

The boreholes were carried out in December 2019 while the standpipe water level readings were obtained in January 2020.

The second phase also includes a Detailed Assessment and Impact Determination which was carried out and incorporates the full range of site investigations and studies and a full assessment of any potential impacts. The approach adopted is as per the IGI Guidelines (IGI, 2013) and each potential effect of the Project has been described in terms of Quality, Significance, Extent, Probability and Duration in Table 6.1 below refers to the potential impacts assessed. The classification of impacts/effects in this chapter follows the definitions provided in the Guidelines (EPA, 2017). Where the Initial Impact Determination concluded that the level of potential impact is capable of measurable and noticeable consequences it is carried into the next assessment phase.

The Site Investigation Report is provided in Appendix 6.1.

Table 2: Potential Impacts

Activity	Construction Element	Potential Impact Description
Earthworks	Pond/ Attenuation Excavation Pond/ Attenuation Construction Foundation Excavation Boardwalk Construction	Excavation of natural soils and subsoil for roads, foundations, ponds, swales, drainage, etc.
		Airbourne dust arising from soil stockpiles causing nuisance dust on public roads and neighbouring properties.
		Imported fill material shall be required as part of works.
		Excavation of top soil material.
		Excavation of subsoils can serve to reduce the local groundwater levels as the water table naturally lowers to a new equilibrium below the artificial ground level.
		Seepage of underlying groundwater.
		Discharge of contaminated groundwater to adjacent watercourse.
Groundwater Abstraction		Groundwater abstraction associated with temporary dewatering forcing changes in pore water pressures and potential settlement and/ or subsidence in downstream unconsolidated sediments.
Groundwater Flow Paths		Groundwater flow paths may be potentially altered due to the construction of sub-surface structures. Groundwater mounding can theoretically occur where large impermeable structures are placed perpendicular to groundwater flow paths.
Groundwater Quality		Potentially contaminated water generated within the excavation could impact the southern marsh.

Proposed Mitigation Measures

The third phase identifies mitigation measures to address the identified impacts. The development, including all identified mitigation measures (assumed implemented), is then subject to impact assessment, to identify any residual impacts. The Final Impact Assessment presented in Table 6.3 incorporates the outputs from the Detailed Assessment and Impact Determination, Mitigation Measures and Residual Impact Assessment.

The final phase of work was the completion of this chapter and associated figures and appendices which has followed the EPA Guidance Note and Design Team Template.

Hydrology and Hydrogeology

Criteria for Rating Effects

This section establishes the criteria, and guidance used to rate the significance of the potential impacts of the proposed development project on the land, soil and geological aspects of the site and surrounding area.

Alongside the legislation, policy, and guidance outlined in Chapter 1, this chapter is prepared in line with the 'Guidelines on the Information to be contained in Environmental Impact Assessment Reports' (EPA, 2022) and due consideration is also given to the guidelines provided by the Institute of Geologists of Ireland (IGI) in the document entitled 'Guidelines for the Preparation of Soils, Geology and Hydrogeology Chapters of Environmental Impact Statements' (IGI 2013).

The document entitled 'Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes' by the Transport Infrastructure Ireland (TII) formerly National Roads Authority (NRA) (TII, 2009) is referenced where the methodology for assessment of impact is appropriate. Furthermore, in line with the TII Guidelines, an assessment of the attribute importance has been undertaken in order to provide a basis for the assessment of impact provided. The attribute importance considers the potential as well as the existing use of the surface water features as a water resource i.e., water supply, fisheries and other uses, as well as ecological habitat requirements.

The quality, significance, and duration of the potential impacts, residual effects, and cumulative effects are described using standard EIA descriptive terminology, included in Chapter 1 of this EIAR.

The principal attributes (and effects) to be assessed include the following:

- Water Framework Directive (WFD) Status and potential for increased risk of deterioration of this status due to the activities of the site.
- River and stream water quality in the vicinity of the site (where available).
- Surface, transitional and coastal watercourses near the site and potential impact on surface water quality arising from Proposed Development related works including any discharge of surface water run-off.
- Localised flooding (potential increase or reduction) and floodplains including benefitting lands and drainage districts (if any); and
- Surface water features within the area of the site.
- High-yielding water supply wells/ springs in the vicinity of/ within the site boundary to within a 2km radius and the potential for increased risk presented by the Proposed Development;
- Classification (regionally important, locally important etc.) and extent of aquifers underlying the site boundary area;
- Increased risks presented to the groundwater bodies by the Proposed Development associated with aspects such as, for example, the removal of subsoil cover, removal of aquifer (in whole or part thereof), spatial drawdown in water levels, alteration in established flow regimes, and changes in local/ regional groundwater quality;
- Natural hydrogeological/ karst features in the area and potential for increased risk presented by the activities at the site; and
- Groundwater-fed ecosystems and the increased risk presented by operations both spatially and temporally.

Relevant Legislation & Guidance

This impact assessment was undertaken having regard to the following legislation and guidance:

- EPA Guidelines on the Information to be contained in Environmental Impact Assessment Reports (2022).
- Guidelines on Procedures for Assessment and Treatment of Geology, Hydrology and Hydrogeology for National Road Schemes (TII, 2009, previously NRA). The TII criteria for rating the hydrogeological and hydrological related attributes are presented in Appendix 9.12.1, 9.12.2 and 9.12.3 of this EIAR.
- Water Framework Directive 2000/60/EC.

The strategies and objectives of the WFD in Ireland have influenced a range of national legislation, regulations and guidelines. These include the following:

- European Communities (Water Policy) Regulations, 2003 (S.I. No. 722 of 2003);
- European Communities (Drinking Water) Regulations 2014 (S.I. 122 of 2014);
- European Communities Environmental Objectives (Surface Waters); Regulations, 2009 (S.I. No. 272 of 2009 as amended SI No. 77 of 2019)
- European Communities Environmental Objectives (Groundwater) Regulations, 2010 (S.I. No. 9 of 2010 S.I. No. 366 of 2016);
- European Communities (Good Agricultural Practice for Protection of Waters) Regulations, 2010 (S.I. No. 610 of 2010); and
- European Communities (Technical Specifications for the Chemical Analysis and Monitoring of Water Status) Regulations, 2011 (S.I. No. 489 of 2011);
- Statutory Instrument (SI) No. 293 of 1988 European Communities (Quality of Salmonid Waters) Regulations 1988
- Local Government (Water Pollution) Acts 1977-1990
- SI No. 258 of 1988 Water Quality Standards for Phosphorus Regulations 1998
- Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites (Eastern Regional Fisheries Board);
- Central Fisheries Board Channels and Challenges – The enhancement of Salmonid Rivers;
- CIRIA C532 Control of Water Pollution from Construction Sites Guidance for Consultants and Contractors;
- CIRIA C648 Control of Water Pollution from Constructional Sites; and
- Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes (NRA/TII, 2006).

Sources of Information

- Environmental Protection Agency (EPA) – website mapping and database information. Envision water quality monitoring data for watercourses in the area;
- Geological Survey of Ireland (GSI) - on-line mapping, Geo-hazard Database, Geological Heritage Sites & Sites of Special Scientific Interest, Bedrock Memoirs and 1:100,000 mapping;
- River Basin Management Plan for Ireland 2018-2021.
- Water Action Plan 2024 - A River Basin Management Plan for Ireland, (Department of Housing Local Government & Heritage, Sept 2024).
- Cork County Council Development Plan 2022-2028.

- The Planning System and Flood Risk Management, Guidelines for Planning Authorities (Department of the Environment, Heritage and Local Government (DoEHLG) and the Office of Public Works (OPW);
- Office of Public Works (OPW) flood mapping data (www.floodmaps.ie)
- Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors' (CIRIA 532, 2001); and
- National Parks and Wildlife Services (NPWS) – Protected Site Register.
- Hydrometric data (www.floodinfo.ie/map/floodmaps/), OPW CFRAM Flood Risk Mapping, www.epa.ie/hydronet.

Site specific data was derived from the following sources:

- Site plans and drawings submitted with the planning application pack
- Consultation with the engineering team.
- Greenway Boardwalk: Outline Construction Methodology (DOBA, 2025).
- Infrastructure Design Report (LRD Application Submission). Lands at Kilbride, Arklow, Co.
- Wicklow (DOBA, 2025).
- Site Specific Flood Risk Assessment (Section 32B Submission) (DOBA, 2024).

Noise and Vibration

The study has been undertaken using the following methodology:

- A review of the most applicable standards and guidelines has been conducted in order to set a range of acceptable noise and vibration criteria for the construction/demolition and operational phases of the proposed development; this is summarised in the following sections.
- Predictive calculations have been performed to estimate the likely noise emissions during the construction/demolition phase of the project at the nearest sensitive locations (NSL) to the site.
- Predictive calculations have been performed to assess the potential impacts associated with the operation of the development at the most sensitive locations surrounding the development site; and,
- A schedule of mitigation measures has been proposed, where relevant, to control the noise and vibration emissions associated with both the construction/demolition and operational phases of the proposed development.

Desktop Research – Principal Data Sources

This assessment meets the requirements for an EIAR, as outlined in the relevant National and EU legislation, and has been prepared in accordance with guidance documents.

- BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites - Part 1 – Noise.
- BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites - Part 2 -Vibration.

- BS 7385-2:1993 *Guide for measurement of vibrations and evaluation of their effects on buildings*.
- *BS 4142: 2014: Methods for Rating and Assessing Industrial and Commercial Sound.*
- BS 8233:2014 Guidance on Sound Insulation and Noise Reduction for Buildings.
- BS 6841 (1987): Measurement and evaluation of human exposure to whole-body mechanical vibration and repeated shock.
- *ISO 1996: 2017: Acoustics - Description, Measurement and Assessment of Environmental Noise.*
- Wicklow County Council Noise Action Plan 2024 – 2028.
- ProPG: Planning & Noise.
- European Commission Guidance on the preparation of the Environmental Impact Assessment Report
- Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (August 2018)
- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (May 2022).

The study has been undertaken using the following methodology:

- Baseline Noise monitoring and an Environmental Noise Survey has been undertaken across the development area to determine the range of noise levels at varying locations across the site.
    - The equipment used was a Larson Davis Sound Expert LxT and a Larson Davis Expert 831.
    - The Baseline monitoring period was carried out between the 24th of March and 26th of March 2025, at Locations A-C.
    - The Environmental Noise Survey monitoring period was carried out at five noise sensitive locations around the proposed development on the 23rd of March 2025.

- A review of the most applicable standards and guidelines has been conducted in order to set a range of acceptable noise and vibration criteria for the construction/demolition and operational phases of the proposed development; this is summarised in the following sections.
- Predictive calculations have been performed to estimate the likely noise emissions during the construction/demolition phase of the project at the nearest sensitive locations (NSL) to the site.
- Predictive calculations have been performed to assess the potential impacts associated with the operation of the development at the most sensitive locations surrounding the development site; and,
- A schedule of mitigation measures has been proposed, where relevant, to control the noise and vibration emissions associated with both the construction/demolition and operational phases of the proposed development.

Construction/Demolition Phase – Noise Assessment Criteria

There is no published statutory Irish guidance relating to the maximum permissible noise level that may be generated during the construction/demolition phase of a project. Wicklow County Council (WCC) typically controls construction activities by imposing limits on the hours of operation and consider noise limits at their discretion.

In order to set appropriate construction noise limits for the development site, reference has been made to *BS 5228 -1:2009 +A1 2014 Code of practice for noise and vibration control on construction and open sites- Noise*. Part 1 of this document Noise provides guidance on selecting appropriate noise criteria relating to construction works.

BS 5228-1:2009+A 1:2014 gives several examples of acceptable limits of construction and demolition noise, the most simplistic being based on upon the exceedance of fixed noise limits. For example, paragraph E.2 states:

'Noise from construction and demolition sites should not exceed the level at which conversation in the nearest building would be difficult with windows shut.'

Paragraph E.2 goes on to state:

'Noise levels, between 07:00 and 19:00 hours; outside the nearest window of the occupied room closest to the site boundary should not exceed:

70 decibels (dBA) in rural, suburban areas away from the main road traffic and industrial noise.
75 decibels (dBA) in urban areas near main roads in heavy industrial areas.'

Note that a typical planning condition in relation to construction noise issued by Local Authorities refer also to the compliance with BS 5228 part 1 as a means of controlling impacts to the surrounding environment. BS 5228 has therefore been used to inform the assessment approach for construction noise in line with Local Authorities requirements.

For this development it is considered appropriate to adopt the 65dB(A) during daytime. The construction noise limits, which are presented in Table 8.1 represent a reasonable compromise between the practical limitations in a construction project, and the need to ensure an acceptable noise level for the nearby residents and their sensitive receptors including amenity space. Table 8.1 specifies the recommended Project Noise Limit Criteria in accordance NRA Maximum Permissible Construction Phase Noise Levels at the Façade of Dwellings during road developments.

Construction Phase Noise Limit Criteria		
Days & Times	**L_{Aeq}, (1hr) dB**	**$L_{pA(max)}$ slow dB**
Monday to Friday - 07:00 to 19:00	**70**	**80**
Monday to Friday - 19:00 to 22:00	**60**	**65**
Saturday - 08:00 to 16:30	**65**	**75**

Sundays and Bank Holidays - 08:00 to 16:30	**60**	**65**

Table 3: NRA Maximum Permissible Construction Phase Noise Levels at the Façade of Dwellings during Road Developments.

Note 1: Construction activity at these times, other than that required in respect of emergency works, will normally require the explicit permission of the relevant local authority. For the appropriate assessment period (i.e., daytime in this instance) the ambient noise level is determined. If the construction noise exceeds, then a significant effect is deemed to occur.

Construction/Demolition Phase – Vibration Assessment Criteria

Guidance relevant to acceptable vibration in order to avoid damage to buildings is contained within *BS 7385-2 (1993*). The guidance values contained within *BS 7385* are reproduced also in *British Standard BS 5228-2 (2009).*

These standards differentiate between transient and continuous vibration. Surface construction activities are considered to be transient in nature as they occur for a limited period of time at a given location. The standards note that the risk of cosmetic damage to residential buildings starts at a Peak Particle Velocity (PPV) of 15mm/s at 4Hz. The standard also notes that below 12.5mm/s PPV the risk of damage tends to zero. Both standards note that important buildings that are difficult to repair might require special consideration on a case-by-case basis but building of historical importance should not (unless it is structurally unsound) be assumed to be more sensitive. If a building is in a very unstable state, then it will tend to be more vulnerable to the possibility of damage arising from vibration or any other ground borne disturbance.

Table 8.2 below summarises the proposed vibration criteria below which there is no risk of damage to buildings. These limits apply to vibration frequencies below 15Hz where the most conservative limits are required. If there are any protected buildings near the works, there is a greater potential for these to be more vulnerable than other adjacent modern structures. Therefore, on a precautionary basis, the guidance values for structurally sound buildings are reduced by 50% in line with the guidance documents referred to above.

Category of Building	Threshold of potential significant effect (Peak Particle Velocity - PPV - at building foundation) for Transient Vibration
Structurally sound and non-protected buildings	12 mm/s
Protected and / or potentially vulnerable buildings	6 mm/s

Table 4: Transient Vibration Impact Criteria for Buildings (Conservative Criteria below which there is No Risk of Cosmetic Damage). Source: "Guidelines for the Treatment of Noise & Vibration in National Road Schemes," NRA, 2004

Building Response

As previously mentioned in table 8.2 the standard notes that below 12 mm/s PPV the risk of damage tends to zero. It is therefore common, on a cautious basis to use this lower value. Taking this into consideration the vibration criteria in Table 8.3 is recommended.

Allowable vibration (in terms of peak particle velocity) at the closest part of sensitive property to the source of vibration, at a frequency of:		
Less than 15Hz	15 to 40Hz	40Hz and above
12 mm/s	20 mm/s	50 mm/s

Table 5: Recommended Vibration Criteria During Construction/Demolition Phase

Expected vibration levels from the construction works will be discussed further in *Section* 8.5.

Human Perception

It is acknowledged that humans are sensitive to vibration stimuli and that perception of vibration at high magnitudes may lead to concern. Vibration typically becomes perceptible at around 0.15 to 0.3 mm/s and may become disturbing or annoying at higher magnitudes. However, higher levels of vibration are typically tolerated for single events or events of short-term duration, particularly during construction projects and when the origin of vibration is known. For example, piling can typically be tolerated at vibration levels up to 6 mm/s respectively if adequate public relations are in place. These values refer to the day and evening time periods only.

Operational Phase -Noise Assessment Criteria

The operational phase of the development has been assessed with regard to Wicklow County Council in their role as designated Action Planning Authorities under Article 7 of the Environmental Noise Regulations 2006, Statutory Instrument Number 140 of 2006 (the Regulations). The Action Plan is aimed at managing Environmental Noise and excludes noise from domestic activities, noise created by neighbours, noise at workplaces or construction noise as these can be dealt with under existing legislation such as the Environmental Protection Agency Act 1992 and Health & Safety legislation.

Mechanical Plant

Due consideration must be given to the nature of the primary noise sources when setting criteria. Criteria for noise from these sources, with the exception of additional vehicular traffic on public roads, will be set in terms of the $L_{Aeq,T}$ parameter (the equivalent continuous sound level). In relation to day-to-day Operational Phase noise impacts on off-site residential locations Wicklow County Council would typically apply the following condition to a development of this nature:

Noise levels from the proposed development shall not be so loud, so continuous, so repeated, of such duration or pitch or occurring at such times as to give reasonable cause for annoyance to a person in any premises in the neighbourhood or to a person lawfully using any public place. In particular, the rated noise levels from the proposed development shall not constitute reasonable grounds for complaint as provided for in B.S. 4142. Method for rating industrial noise affecting mixed residential and industrial areas.

Reason: In order to ensure a satisfactory standard of development, in the interests of residential amenity.

This wording is most relevant to the noise emissions from mechanical plant serving the development and careful consideration will be given to this issue as part of the detailed assessment.

Guidance from WCC on noise emissions from mechanical plant items typically makes reference to the *British Standard BS 4142: 2014: Methods for Rating and Assessing Industrial and Commercial Sound.* This guidance is the industry standard method for analysing building services plant noise emissions to residential receptors and is the document typically used by WCC in their standard planning conditions and also in complaint investigations.

BS 4142 describes methods for rating and assessing sound of an industrial and / or commercial nature. The methods described in this British Standard use outdoor sound levels to assess the likely effects of sound on people who might be inside or outside a dwelling or premises used for residential purposes upon which sound is incident.

For an appropriate *BS 4142* assessment it is necessary to compare the measured external background noise level (i.e., the $L_{A90,T}$ level measured in the absence of plant items) to the rating level ($L_{Ar,T}$) of the various plant items, when operational. Where noise emissions are found to be tonal, impulsive in nature or irregular enough to attract attention, *BS 4142* also advises that a penalty be applied to the specific level to arrive at the rating level.

The subjective method for applying a penalty for tonal noise characteristics outlined in *BS 4142* recommends the application of a 2dB penalty for a tone which is just perceptible at the noise receptor, 4dB where it is clearly perceptible, and 6dB where it is highly perceptible.

The following definitions as discussed in BS 4142 as summarised in Table 8.4 below:

Noise	Description
ambient noise level, LAeq,T	is the noise level produced by all sources including the sources of concern, i.e., the residual noise level plus the specific noise of mechanical plant, in terms of the equivalent continuous A-weighted sound pressure level over the reference time interval [T]
residual noise level, LAeq,T	is the noise level produced by all sources excluding the sources of concern, i.e., the ambient sound remaining at the assessment location when the specific sound source is suppressed to such a degree that it does not contribute to the ambient sound, in terms of the equivalent continuous A-weighted sound pressure level over the reference time interval [T]
specific noise level, LAeq, T	is the sound level associated with the sources of concern, i.e. noise emissions solely from the mechanical plant, in terms of the equivalent continuous A-weighted sound pressure level over the reference time interval [T]
rating level, LAr,T	is the specific sound level plus any adjustments for the characteristic features of the sound (e.g., tonal, impulsive, or irregular components)

background noise level, LA_{90},T	is the sound pressure level of the residual noise that is exceeded for 90% of the time period T

Table 6: Tonal Noise Characteristics

If the rated plant noise level is +10dB or more above the pre-existing background noise level, then this indicates that complaints are likely to occur and that there will be a significant adverse impact. A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context. The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact.

Traffic Noise

Given that traffic to and from the development will make use of existing roads already carrying traffic volumes, it is appropriate to consider the increase in traffic noise level that arises as a result of vehicular movements associated with the development.

In order to assist with the interpretation of the noise associated with vehicular traffic on public roads, Table 8.5 offers guidance as to the likely impact associated with any particular change in traffic noise level (Source DMRB, 2011). It shows that small changes in noise levels are not normally noticeable, whereas an increase of 10dB would be described as a doubling of loudness. In summary the assessment looks at the impact with and without development at the nearest noise sensitive locations.

Change in Sound Level (dB)	Subjection Reaction	Magnitude of Impact	EPA Glossary of Effects[1]
0	None	No Change	Neutral
0.1 - 2.9	Imperceptible	Negligible	Imperceptible
3-4.9	Perceptible	Minor	Slight
5 - 9.9	Up to a doubling of loudness	Moderate	Moderate
10+	Over a doubling of loudness	Major	Significant

Table 7: Significance in Change of Noise Level

1EPA Guidelines on the Information to be contained in Environmental Impact Assessment Reports

Inward Noise Impact

The Professional Guidance on Planning & Noise (ProPG) report was published in May 2017. This guidance was prepared by a working group comprising members of the Association of Noise Consultants (ANC), the Institute of Acoustics (IOA) and the Chartered Institute of Environmental Health (CIEH). Although not a government document, since its adoption it has been generally considered as a best practice guidance and has been widely adopted in the absence of equivalent Irish guidance.

The ProPG outlines a systematic risk based 2 Stage approach for evaluating noise exposure on prospective sites for residential development. The two primary stages of the approach can be summarised as follows:

Stage 1 - Comprises a high-level initial noise risk assessment of the proposed site considering either measured and or predicted noise levels; and

Stage 2 - Involves a full detailed appraisal of the proposed development covering four '*key elements*' that include:

- **Element 1** - Good Acoustic Design Process.
- **Element 2** - Noise Level Guidelines.
- **Element 3** - External Amenity Area Noise Assessment; and
- **Element 4** - Other Relevant Issues.

The initial noise risk assessment is intended to provide an early indication of any acoustic issues that may be encountered. It calls for the categorisation of the Site as a *negligible, low, medium, or high risk* based on the pre-existing noise environment. Figure 8.2 presents the basis of the initial noise risk assessment; it provides appropriate risk categories for a range of continuous noise levels either measured and / or predicted onsite.

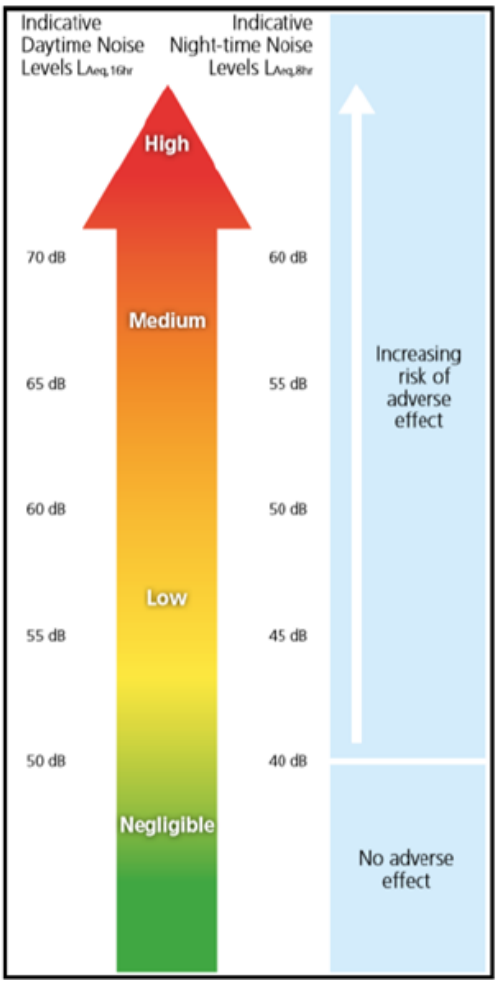

Figure 2: ProPG Stage 1- Initial Noise Risk Assessment

A site should not be considered a negligible risk if more than 10 L_{AFmax} events exceed 60dB during the night period and the site should be considered a high risk if the L_{AFmax} events exceed 80dB more than

20 times a night. *Element 2* of the ProPG document sets out recommended internal noise targets derived from *BS 8233 (2014).* The recommended indoor ambient noise levels are set out in Table 8.5 below and are based on annual average data, which is to say they omit occasional events where higher intermittent noisy events may occur.

Activity	Location	(07:00 to 23:00)	(23:00 to 07:00)
Resting	Living room	35 dB $L_{Aeq,16hr}$	-
Dining	Dining room / area	40 dB $L_{Aeq,16hr}$	-
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq,16hr}$	30 dB $L_{Aeq,8hr}$ 45 dB $L_{Amax,T*}$

Table 8: ProPG Internal Noise Levels

**Note The document comments that the internal LAFmax, T noise level may be exceeded no more than 10 times per night without a significant impact occurring.*

In addition to these absolute internal noise levels ProPG provides guidance on flexibility of these internal noise level targets. For instance, in cases where the development is considered necessary or desirable, and noise levels exceed the external noise guidelines, then a relaxation of the internal L_{Aeq} values by up to 5dB can still provide reasonable internal conditions.

The ProPG guidance provides the following advice with regards to external noise levels for amenity areas in the development:

'The acoustic environment of external amenity areas that are an intrinsic part of the overall design should always be assessed, and noise levels should ideally not be above the range 50-55dB LAeq,16hr.'

Operational Phase – Vibration Assessment Criteria

Taking into account the proposed development under consideration here, there are no vibration sources associated with the operational phase. Operational criteria relating to this issue are therefore not included.

Monitoring, Surveys etc

Baseline Noise monitoring and an Environmental Noise Survey has been undertaken across the development area to determine the range of noise levels at varying locations across the site. The equipment used was two Larson Davis Sound Expert LxT and a Larson Davis Expert 831.

The Baseline monitoring periods were from 24th March up to and including 26th March 2025

at Location A, B & C. The Environmental Noise Survey monitoring period was carried out at six noise sensitive locations around the proposed development on 23rd March 2025 between 09:00hrs to 18:30hrs.

Noise Monitoring Equipment

The equipment used during the baseline noise and environmental noise survey was installed and removed by Traynor Environmental. The noise measurements were carried out using the following equipment mentioned in Table 8.7 below. The instruments were checked and calibrated before and after the survey with no significant drift noted.

Instrumentation Details		
Manufacturer	**Instrument**	**Calibrated by**
Larson Davis Sound Expert LxT	(Serial No.5595)	Environmental Measurements, Unit 12, Tallaght Business Park, Dublin 24
Larson Davis Sound Expert 831	(Serial No.3913)	Environmental Measurements, Unit 12, Tallaght Business Park, Dublin 24
Larson Davis Sound Expert LxT	(Serial No.5901)	Environmental Measurements, Unit 12, Tallaght Business Park, Dublin 24

Table 9: Instrumentation Details Noise Monitoring Locations

Measurement Parameters

The noise survey results are presented in terms of the following parameters:

L_{Aeq} This is the equivalent continuous sound level. It is an average and is used to describe a fluctuating noise in terms of a single noise level over the sample period. The closer the Laeq value is to either the L_{A10} or L_{A90} value indicates the relative impact of the intermittent sources and their contribution. The relative spread between the values determines the impact of intermittent sources such as traffic on the background.

L_{A90} This is the sound that is exceeded for 90% of the sample period. It is typically used as a descriptor for traffic noise.

L_{A10} This is the sound that is exceeded for 10% of the sample period. It is typically used as a descriptor for traffic noise.

L_{AFMIN} is the instantaneous minimum sound level measured during the sample period using the 'F' time weighting.

L_{AFmax} is the instantaneous maximum sound level measured during the sample period using the 'F' time weighting.

The *"A:'* suffix denotes the fact that the sound levels have been "A-weighted" in order to account for the non-linear nature of human hearing. All sound levels in this report are expressed in terms of decibels (dB) relative to $2x10^{-5}$ Pa.

Meteorological Conditions

The weather during the baseline noise survey was showery and overcast with windspeeds at 8 mph and daytime temperature of 10˚C. (Weather information from Met Éireann Oak Park weather station).

The weather during the environmental noise survey was showery and overcast with windspeeds at 8 mph (3 Beaufort) and daytime temperature of 10˚C. (Weather information from Met Éireann Oak Park weather station).

Definition of Study area

Attended noise measurements was conducted at six noise sensitive locations around the proposed development. An unattended noise survey was conducted at 3 locations on the proposed site. The study area for the purposes of this chapter is shown in Figure 8.1.

Climate and Air Quality

The general assessment methodology of the potential impact of the proposed development on air quality and climate has been devised in accordance with:

The assessment includes:

- A comprehensive description of the existing air quality in the vicinity of the subject site.
- A description and assessment of how construction/demolition activities and the operation of the development may impact existing air quality.
- The mitigation measures that will be implemented to control and minimise the impact that the development may have on local ambient air quality and reduce the impact on the local micro climate.
- And, finally, a description as to how the development will be constructed and operated in an environmentally sustainable manner.

The general assessment methodology of the potential impact of the project on air quality and climate has been conducted in accordance with:

- Climate Action and Low Carbon Development Act 2015
- The Guidelines for the Treatment of Air Quality During the Planning and Construction of National Road Schemes (2011)
- Directive 2011/92/EU of the European Parliament and Council of the 13th of December 2011 on the assessment of the effects of certain public and private projects on the environment (codification) as amended by Directive 2014/52/EU of the European Parliament and Council of the 16th of April 2014
- EPA Guidelines on information to be contained in Environmental Impact Statements (2022) (EPA, 2022) (the EPA Guidelines)
- Guidance on the preparation of Environmental Impact Assessment Report (Directive 2011/92/EU as amended by 2014/52/EU) (European Commission, 2017) (the EU EIAR Guidance).

Landscape and Visual

Landscape and Visual Impact Assessment (LVIA) is a key tool used to identify and evaluate the significance of changes brought about by development, both in terms of the landscape as an environmental resource and the effects on people's views and visual amenity. The methodology applied in this LVIA follows the approach set out in the Guidelines for Landscape and Visual Impact

Assessment (3rd Edition, 2013), published by the Landscape Institute and the Institute of Environmental Management and Assessment, hereafter referred to as the GLVIA.

It is important to recognise that the definition of landscape adopted in the GLVIA encompasses not only rural, marine, and coastal landscapes (seascapes), but also the landscapes of villages, towns, and cities (Section 2.5, LI & IEMA, 2013).

Ireland is a signatory to the European Landscape Convention (ELC), which defines landscape as "an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors." This definition is significant as it broadens the understanding of landscape beyond aesthetics and visual amenity, positioning it as a shared resource that delivers a wide range of cultural, environmental, and economic benefits to individuals and society as a whole.

Guidance

The Guidelines for Landscape and Visual Impact Assessment highlight that, as a cultural resource, landscape serves as the backdrop to everyday life, offering opportunities for recreation, aesthetic enjoyment, and inspiration. It enhances the sense of place experienced by individuals and communities and acts as a record of historic socio-economic and environmental conditions, providing a tangible link to the past.

As an environmental resource, the landscape supports habitats for flora and fauna, plays a role in the water cycle by receiving, storing, conveying, and purifying water, and contributes to climate regulation through vegetation that stores carbon and produces oxygen.

Economically, the landscape underpins the provision of raw materials and space for activities such as food production, extraction of materials (e.g., timber, aggregates), energy generation (e.g., fossil fuels, wind, water, geothermal, solar), habitation, and recreational and tourism-related uses.

The concept of reversibility of change is also a key consideration. Where change is necessary to meet present needs, the potential to return the landscape (in this case, the suburban fringe) to its prior condition—thereby allowing for future development or management—should be considered. The proposed development may be regarded as reversible, as the removal of residential buildings and associated structures would allow the principal landscape and visual impacts to be undone.

Key Guidance Documents

Landscape and Visual Impact Assessment (LVIA) is a structured approach used to evaluate how proposed developments may alter the character of the landscape and affect visual experiences. It considers both the landscape as a valuable environmental asset and the impact on people's views and visual amenity.

The methodology for assessing landscape and visual effects draws upon established best practice and key guidance documents, including:

- *Guidelines for Landscape and Visual Impact Assessment*, 3rd Edition (2013), published by the Landscape Institute and the Institute of Environmental Management and Assessment (IEMA)
- *Guidelines on the Information to be Contained in Environmental Impact Statements*, Environmental Protection Agency (EPA), 2022

The GLVIA, developed jointly by the Landscape Institute (UK) and IEMA, reflects professional consensus across a broad network of practitioners in Ireland, the UK, and internationally. Originally

prepared in line with relevant EU directives, the guidance is periodically supplemented through updates issued by the Landscape Institute, including Technical Guidance Note 06/19 on the visual representation of development proposals. GLVIA has become widely adopted and is recognised as the standard reference for LVIA in Ireland.

The 2022 EPA guidelines also encourage the use of specialist topic-specific guidance and directly cite the GLVIA as a key reference for applying professional judgement in visual and landscape assessments. According to paragraph 3.72 of the GLVIA:

"Some uncertainty is unavoidable in EIA, especially about matters that involve an element of judgement, such as assigning a level of significance to an effect. Such judgements should be explicit and substantiated rather than presented as objective fact. This is best done using agreed referable approaches, e.g. the Guidelines on Landscape and Visual Impacts Assessment provide guidance on what constitutes a severe visual effect".

Policy Documents

This assessment also references the Landscape and Landscape Assessment – Consultation Draft of Guidelines for Planning Authorities, published in 2000 by the Department of the Environment, Heritage and Local Government.

Concepts such as sensitivity, magnitude of change, and the nature and duration of effects are informed by the Guidelines for Landscape and Visual Impact Assessment (GLVIA). While GLVIA does not provide rigid definitions for these terms, it presents well-established principles and illustrative case studies intended to guide professional judgement and methodological approach. These descriptions are designed to supplement and enhance the EPA's guidance, particularly in the context of topic-specific assessments.

Landscape and Visual Assessment Process

The GLVIA sets out a structured process for assessment, which involves evaluating both the sensitivity of the landscape or visual receptor and the magnitude of change brought about by the proposed development. These two factors are then considered together to determine the overall significance of the resulting effects.

A key aspect of the GLVIA approach is its clear distinction between landscape effects and visual effects.

Landscape is shaped by the interaction of physical, natural, and cultural elements in the environment. The unique combination and spatial arrangement of these components give rise to the specific character of a place. To assess this, LVIA applies landscape character assessment—a process used to describe and analyse the landscape as a resource. This includes not only its physical features, but also its aesthetic, perceptual, and experiential qualities, all of which contribute to the distinct identity of a location.

Views and visual amenity, on the other hand, focus on how people perceive and interact with the landscape. In accordance with the GLVIA, visual effects are assessed separately from landscape effects, despite the close relationship between the two. Visual assessment involves analysing changes in the composition of views, how people are likely to respond to these changes, and the overall impact on visual amenity in the area.

The assessment of landscape and visual effects, therefore, considers how the proposed development influences the landscape's structure, character, and value as a resource, as well as how it alters views experienced by various groups of people. This evaluation is informed by a review of the development proposals, desktop analysis, and multiple site visits to the site and its broader context.

This dual-focus approach ensures that landscape and visual effects—while interconnected—are considered as distinct elements within the methodology, which is outlined below:

Methodology for Landscape Assessment

In Sections 10.5 Potential Impacts and 10.6 Potential Cumulative Impacts of this report, the landscape effects of the proposed development are assessed. The nature and scale of changes to the landscape elements and characteristics are identified, and the consequential effects on landscape character are discussed. Trends of change in the landscape are taken into account. The assessment of the significance of effects takes account of the sensitivity of the landscape resource and the magnitude of change to the landscape, which will result from the proposed development.

Definitions and descriptions of sensitivity, magnitude of change, quality and longevity of effects are derived from the GLVIA. The GLVIA does not set out specific definitions of descriptions used, but contains key widely used principles and case studies / examples that are intended to inform a professional's methodology, supported by their experience and judgements in relation to landscape and landscape change. These descriptions expand and complement the EPA guidelines as intended, in relation to topic- specific guidance.

Sensitivity of the Landscape Resource

Sensitivity is a combination of Landscape Value and Landscape Susceptibility.

Landscape values can be identified by the presence of landscape designations or policies, which indicate particular values, either on a national or local level. In addition, a number of criteria are used to assess the value of a landscape. These are described further below, in Table 10.1.

Landscape susceptibility is defined in the GLVIA as, *"The ability of the landscape receptor to accommodate the proposed development without undue consequences for the maintenance of the baseline scenario and/or the achievement of landscape planning policies and strategies."* Susceptibility also relates to the type of development – a landscape may be highly susceptible to certain types of development but have a low susceptibility to other types of development.

Landscape susceptibility (in terms of its ability to accommodate the proposed development) in relation to residential developments can include consideration of:

- Topography and skyline – uplands can easier absorb residential development depending on siting and design
- Landscape pattern and landcover – a simple landscape pattern can be less susceptible than a complex pattern, including varying types of landcover
- Settlement pattern – this can influence susceptibility

It includes consideration of landscape values as well as the susceptibility of the landscape to change. Landscape sensitivity is a function of its land use, landscape patterns and scale, visual enclosure and distribution of visual receptors, scope for mitigation, and the value placed on the landscape. It also relates to the nature and scale of development proposed.

Landscape Sensitivity ranges from *Very High* to *Negligible* as outlined in Table 10.1 below.

Sensitivity	Description
Very High	Areas where the landscape exhibits a very strong, positive character with valued elements, features and characteristics that combine to give an experience of unity, richness and harmony. The character of the landscape is such that its capacity for accommodating change in the form of development is very low. These attributes are recognised in landscape policy or designations as being of national or international value and the principal management objective for the area is protection of the existing character from change.
High	Areas where the landscape exhibits strong, positive character with valued elements, features and characteristics. The character of the landscape is such that it has limited/low capacity for accommodating change in the form of development. These attributes are recognised in landscape policy or designations as being of national, regional or county value and the principal management objective for the area is conservation of the existing character.
Medium	Areas where the landscape has certain valued elements, features or characteristics but where the character is mixed or not particularly strong. The character of the landscape is such that there is some capacity for change in the form of development. These areas may be recognised in landscape policy at local or county level and the principal management objective may be to consolidate landscape character or facilitate appropriate, necessary change.
Low	Areas where the landscape has few valued elements, features or characteristics and the character is weak. The character of the landscape is such that it has capacity for change; where development would make no significant change or would make a positive change. Such landscapes are generally unrecognised in policy and where the principal management objective is to facilitate change through development, repair, restoration or enhancement.
Negligible	Areas where the landscape exhibits negative character, with no valued elements, features or characteristics. The character of the landscape is such that its capacity for accommodating change is high; where development would make no significant change or would make a positive change. Such landscapes include derelict industrial lands or extraction sites, as well as sites or areas that are designated for a particular type of development. The principal management objective for the area is to facilitate change in the landscape through development, repair or restoration.

Table 10: Categories of Landscape Sensitivity

Magnitude of Landscape Change

The magnitude of change is a factor of the scale, extent and degree of change imposed on the landscape with reference to its key elements, features, and characteristics (also known as 'landscape receptors'). Five categories are used to classify Magnitude of Landscape Change.

For the purpose of assessment, five categories are used to classify the Magnitude of Landscape Change on the receiving environment, from *Very High* to *Negligible*. These categories are defined in Table 10.2 below.

Magnitude of Landscape Change	Description
Very High	Change that is large in extent, resulting in the loss of, or major alteration to key elements, features or characteristics of the landscape and/or introduction of large elements considered totally uncharacteristic in the context. Such development results in fundamental change in the character of the landscape.
High	Change that is moderate to large in extent, resulting in alteration or compromise to key elements, features or characteristics, and/or introduction of large elements considered uncharacteristic in the context. Such development results in a moderate to large change to the character of the landscape.
Medium	Change that is moderate in extent, resulting in partial loss or alteration to key elements, features or characteristics of the landscape, and/or introduction of elements that may be prominent but not necessarily uncharacteristic in the context. Such development results in moderate change to the character of the landscape.
Low	Change that is moderate or limited in scale, resulting in minor alteration to key elements, features or characteristics of the landscape, and/or introduction of elements that are not uncharacteristic in the context. Such development results in minor change to the character of the landscape.
Negligible	Change that is very limited in extent, resulting in no alteration to key elements, features, or characteristics of the landscape, and/or introduction of elements that are characteristic in the context. Such development results in minimal change to the character of the landscape.

Table 11: Magnitude of Landscape Change

Methodology for Visual Assessment

In Sections 10.5 Potential Impacts and 10.6 Potential Cumulative Impacts, the visual effects of the proposed development are assessed. Visual assessment considers the sensitivity of the viewers, (i.e. groups of people) and the magnitude of the changes to the composition and character of views. The assessment is made for a number of viewpoints selected to represent the range of visual receptors in the receiving environment. The significance of the visual effects experienced at these locations is assessed by measuring the visual receptor sensitivity against the magnitude of change to the view resulting from the proposed development.

Sensitivity of the Visual Receptor

Visual receptor sensitivity is a function of the following two main considerations:

1. Susceptibility of the visual receptor to change. This depends on the occupation or activity of the people experiencing the view, and the extent to which their attention or interest is focussed on the views or visual amenity they experience at that location. Visual receptors most susceptible to change include residents at home, people engaged in outdoor recreation focused on the landscape (e.g. trail users), and visitors to heritage or other attractions and places of community congregation where the setting contributes to the experience.

Visual receptors less susceptible to change include travellers on road, rail and other transport routes (unless on recognised scenic routes which would be more susceptible), people engaged in outdoor recreation or sports where the surrounding landscape does not influence the experience, and people in their place of work or shopping where the setting does not influence their experience.

2. Value attached to the view. This depends to a large extent on the subjective opinion of the visual receptor but also on factors such as policy and designations (e.g. scenic routes, protected views), or the view or setting being associated with a heritage asset, visitor attraction or having some other cultural status (e.g. by appearing in arts).

3.

For the purpose of assessment, five categories are used to classify Sensitivity of Visual Receptor. These categories range from *Very High* to *Negligible* and are described in Table 10.3 below.

Sensitivity	Description
Very High	Viewers at iconic viewpoints - towards or from a landscape feature or area that are recognised in policy or otherwise designated as being of high value or national value. This may also include residential viewers who are focussed to a large extent on the view.
High	Viewers at viewpoints that are recognised in policy or otherwise designated as being of value, or viewpoints that are highly valued by people that experience them regularly (such as views from houses or outdoor recreation features) and views which are highly valued by the local community. This may also include tourist attractions, and heritage features of regional or county value, and viewers travelling on scenic routes.
Medium	Viewers considered of medium susceptibility, such as locations where viewers are travelling at slow or moderate speeds through or past the affected landscape in cars or on public transport, where they are partly but not entirely focused on the landscape, or where the landscape has some valued views. The views are generally not designated, but include panoramic views or views judged to be of some scenic quality, which demonstrate some sense of naturalness, tranquillity or some rare element in the view.
Low	Viewers at viewpoints reflecting people involved in activities not focused on the landscape e.g. people at their place of work or engaged in similar activities such as shopping, etc. The view may present an attractive backdrop to these activities but there is no evidence that the view is valued, and not regarded as an important element of these activities. Viewers travelling at high speeds (e.g. motorways) may also be generally considered of low susceptibility.
Negligible	Viewpoints reflecting people involved in activities not focused on the landscape e.g. people at their place of work or engaged in similar activities such as shopping where the view has no relevance or is of poor quality and not valued.

Table 12: Categories of Sensitivity of Visual Receptor

Magnitude of Change to the View

Classification of the magnitude of change takes into account the size or scale of the intrusion of the proposed development into the view, (relative to the other elements and features in the composition) i.e. its relative visual dominance), the degree to which it contrasts or integrates with the other elements and the general character of the view, and the way in which the change will be experienced (e.g. in full view, partial or peripheral, or glimpses). It also takes into account the geographical extent of the change, the duration and the reversibility of the visual effects. It should be noted that the proposed turbines are considered a *'reversible'* element, as on decommissioning they can be removed.

Five categories are used to classify **Magnitude of Change to a View**. These range from ***Very High*** to ***Negligible*** and are defined in Table 10.4 below.

Magnitude of Change to the view	Description
Very High	Full or extensive intrusion of the development in the view, or partial intrusion that obstructs highly valued features or characteristics, or the introduction of elements that are completely out of character in the context, to the extent that the development becomes dominant in the composition and defines the character of the view and the visual amenity.
High	Extensive intrusion of the development in the view, or partial intrusion that obstructs valued features, or introduction of elements that may be considered uncharacteristic in the context, to the extent that the development becomes co-dominant with other elements in the composition and affects the character of the view and the visual amenity.
Medium	Partial intrusion of the development in the view, or introduction of elements that may be prominent but not necessarily uncharacteristic in the context, resulting in change to the composition but not necessarily the character of the view or the visual amenity.
Low	Minor intrusion of the development into the view, or introduction of elements that are not uncharacteristic in the context, resulting in minor alteration to the composition and character of the view but no change to visual amenity.
Negligible	Barely discernible intrusion of the development into the view, or introduction of elements that are characteristic in the context, resulting in slight change to the composition of the view and no change in visual amenity.

Table 13: Magnitude of Change to a View

In this case, a number of tools are used to assist in the assessment of visual effects. These include Photomontages, which are produced from selected viewpoints. Initial viewpoints for photomontages are selected during the desk study with the exact location confirmed in the field during the site visit. The completed photomontages are also used to assist in the assessment of visual effects.

Significance of Effect

In order to classify the significance of landscape and visual effects, the predicted magnitude of change is measured against the sensitivity of the landscape/viewpoint. The definitions used by the EPA (2022) provide a useful scale to describe the significance of the effects.

There are seven classifications of significance, namely: (1) imperceptible, (2) not significant, (3) slight, (4) moderate, (5) significant, (6) very significant, (7) profound. Please refer to Table 10.5, below.

	Sensitivity of Receptor

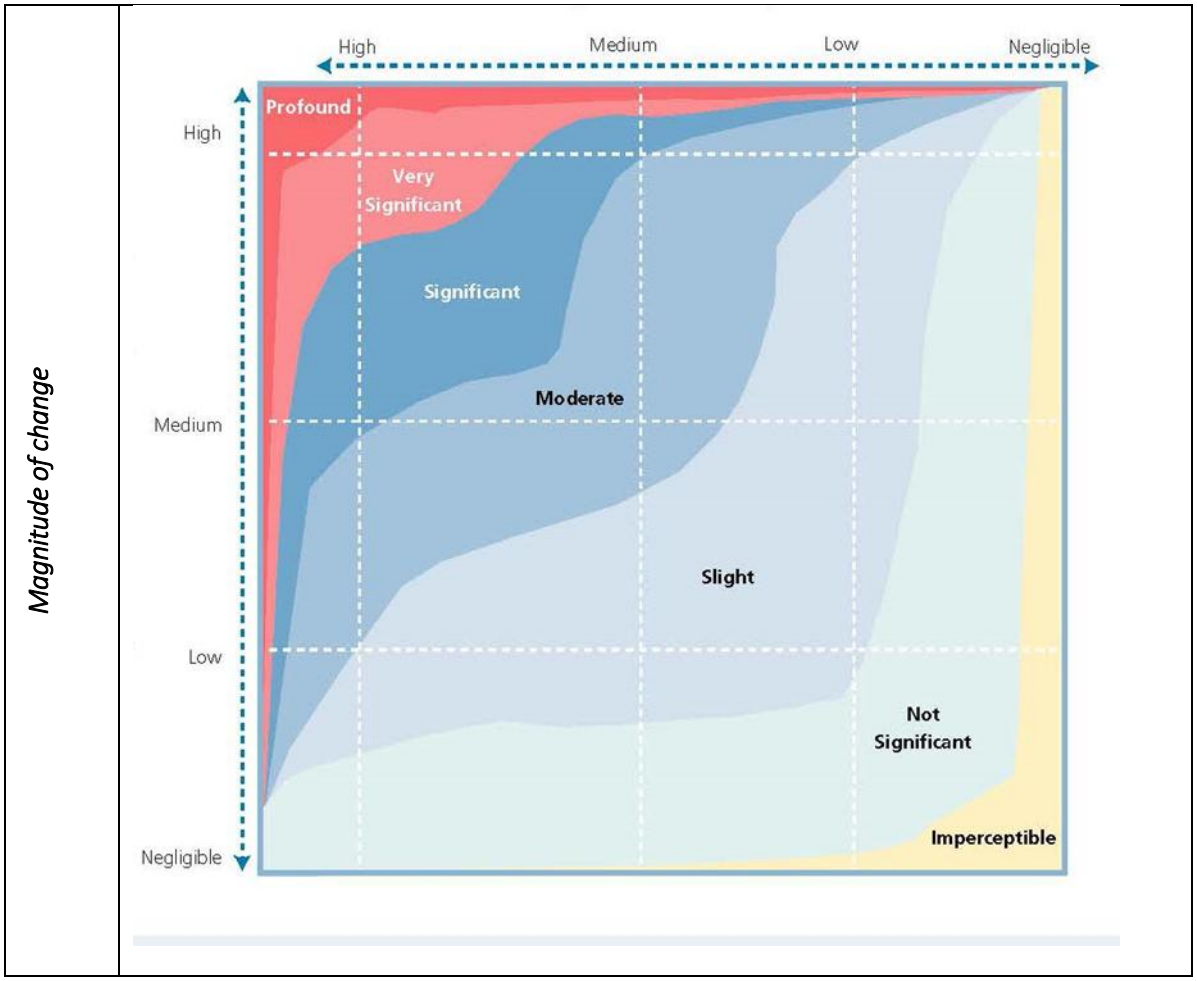

Table 14: Significance Matrix (based on EPA 2022 and GLVIA 2013)

Note: This table is a guideline only, but is useful in illustrating the way in which judgements are combined to arrive at a judgement regarding significance, while illustrating that an element of professional judgment is also applied. The assessor also uses professional judgement informed by their expertise, experience and common sense, to arrive at a classification of significance that is reasonable and justifiable. The GLVIA 3rd Edition recognises (at paragraph 2.23) that:

"Professional judgement is a very important part of LVIA. While there is scope for quantitative measurement of some relatively objective matters, much of the assessment must rely on qualitative judgements."

The predicted impacts are also classified as beneficial, neutral, or adverse. This is not an absolute exercise, in particular, visual receptors' attitudes to development, and thus their response to the impact of a proposed development, will vary. However, the methodology applied is designed to provide robust justification for the conclusions drawn. These qualitative definitions are included in Table 10.6 below.

Quality of Effect	Definition
Adverse	Scheme at variance with landform, scale, pattern. Would degrade, diminish or destroy the integrity of valued features, elements or their setting or cause the quality of the landscape(townscape)/view to be diminished.

Neutral	Scheme complements (or does not detract from) the scale, landform and pattern of the landscape(townscape)/view and maintains landscape quality.
Beneficial	Improves landscape(townscape)/view quality and character, fits with the scale, landform and pattern and enables the restoration of valued characteristic features or repairs / removes damage caused by existing land uses.

Table 15: Quality of Effect

Impacts / effects are also categorised according to their longevity or timescale as in Table 10.7 below.

Duration	Description
Temporary	Effects lasting one year or less
Short Term	Effects lasting one to seven years
Medium Term	Effects lasting seven to fifteen years
Long Term	Effects lasting fifteen to sixty years
Permanent	Effects lasting over sixty years

Table 16: Duration of Effect

Traffic and Transportation

Relevant Legislation & Guidance

This chapter has been prepared with cognisance of the following guidelines:

- Guidelines on the Information to be contained in Environmental Impact Assessment reports (EPA, 2022);
- PAG Unit 5. 3: Travel Demand Projections (TII, 2019);
- Project Ireland 2040 – National Planning Framework;
- Transport Infrastructure Ireland's (TII's) Traffic & Transport Assessment Guidelines (2014);
- Wicklow County Development Plan 2022-2028;
- Arklow Local Area Plan 2018-2024;

Site Surveys/Investigations

Traffic surveys for this project took place on Tuesday the 3rd of September 2024.

Waste Management

The assessment of the impacts of the proposed development arising from the consumption of resources and the generation of waste materials, was carried out taking into account the methodology specified in relevant guidance documents, along with an extensive document review to assist in identifying current and future requirements for waste management including national and regional waste policy, waste strategies, management plans, legislative requirements and relevant reports.

The primary legislative instruments that govern waste management in Ireland and applicable to the project are:

- Waste Management Act 1996 (No. 10 of 1996) as amended. Sub-ordinate legislation includes:
    - European Communities (Waste Directive) Regulations 2011 (SI 126 of 2011) as amended
    - Waste Management (Collection Permit) Regulations (S.I No. 820 of 2007) as amended

  - Waste Management (Facility Permit and Registration) Regulations 2007, (S.I No. 821 of 2007) as amended
  - Waste Management (Licensing) Regulations 2004 (S.I. No. 395 of 2004) as amended
  - Waste Management (Packaging) Regulations 2014 (S.I. 282 of 2014) as amended
  - Waste Management (Planning) Regulations 1997 (S.I. No. 137 of 1997)
  - Waste Management (Landfill Levy) Regulations 2015 (S.I. No. 189 of 2015) amended by S.I. 182 of 2019.
  - European Union (Waste Electrical and Electronic Equipment) Regulations 2014 (S.I. No. 149 of 2014)
  - European Union (Batteries and Accumulators) Regulations 2014(S.I. No. 283 of 2014) as amended
  - Waste Management (Food Waste) Regulations 2009 (S.I. 508 of 2009), as amended
  - European Union (Household Food Waste and Bio-waste) Regulation 2015 (S.I. No. 191 of2015)
  - Waste Management (Hazardous Waste) Regulations, 1998 (S.I. No. 163 of 1998) as amended
  - Waste Management (Shipments of Waste) Regulations, 2007 (S.I. No. 419 of 2007) as amended
  - Waste Management (Movement of Hazardous Waste) Regulations, 1998 (S.I. No. 147 of 1998)
  - European Communities (Transfrontier Shipment of Waste) Regulations 1994 (SI 121 of 1994)
  - European Union (Properties of Waste which Render it Hazardous) Regulations 2015 (S.I. No. 233 of 2015)
- Environmental Protection Act 1992 (No. 7 of 1992) as amended.
- Litter Pollution Act 1997 (No. 12 of 1997) as amended.
- Planning and Development Act 2000 (No. 30 of 2000) as amended.

This Chapter is based on the proposed development and considers the following aspects:

- Legislative context.
- Demolition phase.
- Construction phase (including site preparation, excavation, and levelling); and,
- Operational phase.

A desk study was carried out which included the following:

- Review of applicable policy and legislation which creates the legal framework for resource and waste management in Ireland.
- Description of the typical waste materials that will be generated during the demolition, construction, and operational phases; and
- Identification of mitigation measures to prevent waste generation and promote management of waste in accordance with the waste hierarchy.

Estimates of waste generation during the demolition, construction and operational phases of the proposed development have been calculated. The waste types and estimated quantities are based on published data by the EPA in *National Waste Reports*, data recorded from similar previous developments, Irish and US EPA waste generation research, other available research sources and waste collection data from the current facilities on site.

Mitigation measures are proposed to minimise the effect of the proposed development on the environment during the construction and operational phases, to promote efficient waste segregation and to reduce the quantity of waste requiring disposal.

Cultural Heritage

Alongside the legislation, policy, and guidance outlined in Chapter 1 of the EIAR, the following relevant legislation, policy, and guidance has informed the preparation of this Chapter:

Ireland has ratified and/or is guided by several international and European conventions, charters and directives on the protection of cultural heritage, principally:

- International Charter for the Conservation and Restoration of Monuments and Sites (Venice Charter) 1964;
- UNESCO Convention Concerning the Protection of the World Cultural and Natural Heritage (The World Heritage Convention) 1972;
- European Convention for the Protection of the Architectural Heritage of Europe (Granada Convention) 1985; and
- European Convention on the Protection of the Archaeological Heritage (Valetta Convention) 1992.

National legislation protecting archaeology and cultural heritage comprises:

- National Monuments Act 1930 (as amended);
- Heritage Act 1995;
- National Cultural Institutions Act 1997;
- Architectural Heritage (National Inventory) and Historic Monuments (Miscellaneous Provisions) Act 1999;
- Planning and Development Act 2000 (as amended); and
- Historic and Archaeological Heritage and Miscellaneous Act 2023 (enacted and partially commenced at date of writing, March 2025).

Principal policy and guidance documents relating to archaeology and cultural heritage are:

- Frameworks and Principles for the Protection of the Archaeological Heritage (1999), Department of Arts, Heritage, Gaeltacht & the Islands;
- Policy and Guidelines on Archaeological Excavation (1999), Department of Arts, Heritage, Gaeltacht & the Islands;
- Archaeology & Development: Guidelines for Good Practice for Developers (2000), The Heritage Council;
- Architectural Heritage Protection Guidelines for Planning Authorities (2011), Department of Arts, Heritage, Gaeltacht & the Islands; and
- Guidelines for Cultural Heritage Impact Assessment of TII National Road and Greenway Projects (2024), Transport Infrastructure Ireland.

The preparation of this chapter has also been informed by a desk-based study of relevant data sources including:

National Monuments

Under the National Monuments Act 1930 (as amended), archaeological sites in the ownership or guardianship of the State or a Local Authority and sites under Preservation Orders are designated as National Monuments. Such sites are offered the highest level of protection under Irish legislation. Lists of National Monuments in State care are managed by the National Monuments Service of the Department of Housing, Local Government and Heritage and those in the ownership of individual Local Authorities are managed by the relevant Local Authority. The list of National Monuments in State Care (Ownership and Guardianship) for County Wicklow is made available on the National Monuments Service website, archaeology.ie, and in the Wicklow County Development Plan 2022-2028, Chapter 8, Built Heritage.

Sites and Monuments Record and Record of Monuments and Places

The Record of Monuments and Places (RMP) was established under Section 12 of the 1994 National Monuments (Amendment) Act. The statutory RMP is a list of archaeological monuments known to the National Monuments Service, and records known upstanding monuments, their original location (in cases of destroyed monuments) and the position of possible sites identified as cropmarks on aerial photographs. The RMP is based on the Sites and Monuments Record (SMR) files housed at the National Monuments Service, with new sites identified being added to the SMR and then scheduled for inclusion in the statutory RMP. All sites recorded on the RMP receive statutory protection under the National Monuments (Amendment) Act 1994. Records of monuments are available in an on-line digital service (the Historic Environment Viewer, maps.archaeology.ie) provided by the Department of Housing, Local Government and Heritage.

Urban Archaeological Survey

The Urban Archaeology Survey, 1982-1995, was established to record archaeological monuments and information relating to Irish towns, in particular former medieval boroughs that developed into modern urban settings. One of the main objectives was to highlight the archaeological potential of Irish towns and the Survey produced maps and plans highlighting monuments and zones of archaeological potential (based on the available evidence) that could be used for planning purposes, as well as by archaeologists and other researchers. The Urban Archaeological Survey of County Wicklow (1989), including Arklow town, was commissioned by the Office of Public Works (OPW) and compiled by John Bradley and Heather A. King.

Topographical Files of the National Museum of Ireland

The topographical files of the National Museum of Ireland (NMI) are the national archive of all known antiquities recorded by the NMI, and are available for consultation at the NMI. These files relate primarily to artefacts but also include references to monuments and contain a unique archive of records of previous excavations. The find-spots of artefacts can be an important indication of the archaeological potential of an area. Any archaeological object found without a known owner at the time it was found is protected under National Monument's legislation and is deemed to be in the ownership of the State. The topographical files were consulted on 31 October 2024.

Excavations Bulletin and Excavations Database

The Excavations Bulletin and the Excavations Database (excavations.ie) provides summary accounts of archaeological investigations and excavations carried out in Ireland – north and south – from 1969. The Excavations Bulletin is a published annual directory for the years 1970-2010, substituted with an on-line database from 2011 onwards. The on-line database is updated on a constant basis. A review of the database identified previous investigations completed in relation to the construction of the M11 Arklow Bypass, relating to the Arklow Flood Relief Scheme, and relating to pre-existing geophysical survey and test-excavation undertaken to date at the Kilbride lands, associated with pre-development archaeological mitigation.

Wicklow County Development Plan 2022-2028

Each City and County Development Plan is compiled in accordance with the requirements of the Planning and Development Act 2000 (as amended) and contains lists of national monuments (both in State Ownership or Guardianship, and those vested in the care of a Local Authority), recorded monuments, registered historic monuments as well as monuments that are subject to a Preservation Order. The Wicklow County Development Plan 2022 – 2028 came into effect on 23rd October 2022 and sets out the Local Authorities' strategy, policies and objectives to protect, conserve and manage the archaeological and cultural heritage resource. Built Heritage, comprising archaeology, architecture and cultural heritage is addressed in Chapter 8 of the Plan. Built Heritage Objectives are laid out in Section 8.5. The Record of Protected Structures is provided in Appendix 4. The Arklow and Environs Local Area Plan 2018 – 2024 was also read in conjunction with the Wicklow County Development Plan.

Built and Natural Heritage is addressed in Chapter 10 of the Local Area Plan. Heritage Objective HT3 (pg. 51) aims to "*protect and enhance the character, setting and environmental quality of natural, architectural and archaeological heritage, and in particular those features of the natural landscape and built structures that contribute to its special interest. The natural, architectural and archaeological heritage of the area shall be protected in accordance with the objectives set out in the Wicklow County Development Plan.*"

National Inventory of Architectural Heritage

The National Inventory of Architectural Heritage (NIAH) is an ongoing survey within the Department of Housing, Local Government and Heritage. The work of the NIAH involves identifying and recording the architectural heritage of Ireland, from AD1700 to the present day and includes country houses, churches, mills, bridges and other structures of note. The NIAH survey of Wicklow is the largest survey of the post-1700 built heritage of the county. Structures rated as being of regional or above importance are included in the Minister's recommendations to the planning authorities for inclusion on the list of Record of Protected Structures.

Cartographic Sources

Information gathered from historic cartographic sources is fundamental to the identification of archaeological and cultural heritage sites, including cultural landscapes e.g. demesne landscapes, which, based on the level of landscape change, are now often identified from cartographic records alone. The earliest Ordnance Survey maps date to the late 1830s and early 1840s, but much change has occurred in the use and treatment of the landscape in the intervening years, particularly during the second half of the 20th century and into the 21st century, making these a valuable resource in tracing the development of a study area.

Aerial Photographs

Aerial photographs are a useful aid in identifying archaeological monuments which are not visible at ground level, and in accessing landscape change and use post-dating historic cartographic sources. Cropmarks of sub-surface archaeological features are revealed from the air by variations in plant growth. The successful detection of cropmarks through aerial photography varies, and is subject to a number of factors, including the position of the sun when the photograph was taken, the type of crop growing and the amount of rainfall in a growing season.

LiDAR Imagery

LiDAR is a scanning system that uses laser light emitted from equipment on low flying aircraft. The reflected light allows measurements to be taken of the earth's surface from which topographical maps are created. This data is available through Open Topographic Data Viewer hosted by the Geological Survey of Ireland (dcenr.maps.arcgis.com). The Kilbride lands are covered by LiDAR hillshade generated by Office of Public Works (OPW) & National Aerial Survey Contract (NASC) 2m data from 2011.

Toponomy Sources

A townland name may preserve information relating to its archaeology, history, folklore, ownership, topography or land use. Most placenames were anglicised by the Ordnance Survey. Despite some inaccuracies in translation, the Gaelic, Viking, Anglo-Norman and English origins of placenames are generally recognisable. The Placenames Database of Ireland website (wwww.logainm.ie) hosts online bi-lingual placename research and archival records for townlands.

Documentary Sources

Documentary sources are a valuable means of completing the written archaeological and cultural heritage record of an area, and of gaining insight into the history of the receiving environment. Sources included existing unpublished archaeological assessment and investigation reports available through the Archive Unit of the National Monuments Service.

On-site Inspection

On-site inspection offers the opportunity to examine a study area in light of desk-based research and evidence. Inspection is essential in determining the nature and extent of any surviving above-ground evidence, and in predicting the potential effects of a proposal on potential below-ground remains. A site inspection at the Kilbride lands was conducted by Shanarc Archaeology Ltd. on 13 November 2024.

Material Assets

Scoping

This chapter has been prepared having regard to the following guidelines;

- Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report (European Commission, 2017)
- Guidelines on the Information to be Contained in Environmental Impact Assessment Reports – Draft (EPA, 2017)

The following sources of information were used in the completion of this assessment:

- Wicklow County Council Drainage Maps (for Wastewater and Surface Water drainage);
- Wicklow County Council County Development Plan (2022 – 2028);
- Uisce Éireann (UE) Water and Wastewater Utility Plans;
- Submission of a Pre-Connection Enquiry to UE;
- Submission of a Statement of Design Acceptance request;
- Murphy Surveys Ground Penetrating Radar (GPR) drawings;
- Bord Gais/ Gas Networks Ireland service maps;
- ESB Service maps;
- Telecoms/ Eir Service Maps;

5. Predicted Impacts of the Proposed Development

Population and Human Health

Construction Phase

Any adverse likely and significant environmental impacts will be avoided by the implementation of the remedial and mitigation measures proposed throughout this EIAR.

Chapter 8 Noise and Vibration notes during the construction phase of the project there is the potential for short-term noise effects on nearby noise sensitive properties due to noise emissions from site activities. The application of binding noise limits and hours of operation, along with implementation of appropriate noise and vibration control measures, will ensure that noise and vibration impact is kept to a minimum as far as practicable. Likely noise and vibration effects during the construction phase will be local, negative, short-term and moderate.

Chapter 9 Climate and Air Quality notes that once the dust minimisation measures outlined in Chapter 9 and Appendix 9.2 are implemented, the impact of the proposed development in terms of dust soiling will be short-term, negative, localised and imperceptible at nearby receptors.

Chapter 11 Traffic and Transportation notes that provided the mitigation measures and management procedures outlined in the Construction Environmental Management Plan are incorporated during the Construction Phase, the residual impact upon the local receiving environment is predicted to be temporary in the nature and slight in terms of effect.

Positive impacts are likely to arise due to an increase in employment and economic activity associated with the construction of the proposed development.

The overall predicted likely and significant impact of the construction phase will be short-term, temporary and neutral.

Operational Phase

The proposed development will contribute to further growth and expansion of the existing neighbourhood to the west of the subject site and employment/community lands to the east contributing to the existing and future populations.

Chapter 8 Noise and Vibration notes that the predicted impact, once mitigation measures are implemented, of additional traffic, the mechanical plant, and the creche will be of neutral, imperceptible, and long-term impact.

Chapter 9 Climate and Air Quality notes that the air dispersion modelling has shown that emissions of air pollutants are significantly below the ambient air quality standards which are based on the protection of human health, impacts to human health are long-term, negative and imperceptible.

Overall, the predicted impacts of the Operational Phase are considered to be long term and positive to population and human health.

Biodiversity

Construction Phase

Based on the successful implementation of the construction phase controls and the works to be carried out in accordance with this EIAR, it is likely that there will be no significant ecological impact arising from construction works proposed for the proposed project. Natura 2000 sites will not be impacted by the proposed development during construction.

A series of standard construction phase control measures have been outlined to ensure that the proposed project does not impact on species or habitats of conservation importance, conservation areas or watercourses during construction. It is essential that these measures are complied with to ensure that the proposed works do not have downstream environmental impacts. These measures are to protect the Arklow Town Marsh pNHA, Avoca River and a tributary of the Avoca River along the southeastern boundary of the site, which are potentially the primary vector of impacts from the site, are not impacted during construction and operational phases of the proposed development.

No significant environmental impacts are likely in relation to the construction of the proposed development. Effects: moderate effects / National / Negative effect / Not significant /short term/likely. Standard mitigation will be in place on site.

Operational Phase

Based on the successful implementation of the operational phase controls and the works to be carried out in accordance with this EIAR and the accompanying AA Screening, it is likely that there will be no significant ecological impact arising from operation of the proposed project. Designated conservation sites will not be impacted by the proposed development.

Standard operational phase control measures have been outlined to ensure that the proposed project does not impact on species or habitats of conservation importance, conservation areas or watercourses. It is essential that these measures are complied with, to ensure that the proposed works do not have downstream environmental impacts. These measures are to protect the Arklow Town Marsh and Avoca River, which are potentially the primary vector of impacts from the site, is not impacted during operational phases of the proposed development. Light spill will be introduced into the area but these have been designed to have minimal impact on biodiversity. It would be expected that there would be no significant long term impact on the reedbed based on the mitigation and it would be expected that the reed bed in the vicinity of the bog matting would recover within 3 years. The operation of the boardwalk would not have a long term impact on the Arklow Marsh pNHA.

No significant environmental impacts are likely in relation to the operation of the proposed development.

Effects: Slight effects / site / Negative effect / Not significant / long term/likely. Standard mitigation will be in place on site.

Land, Soil & Geology

Construction Phase

The predicted impacts of the construction phase are described in Table 6.3 in terms of quality, significance, extent, probability and duration. The relevant mitigation measures are detailed and the residual impacts are determined which take account of the mitigation measures.

After the implementation of the mitigation measures outlined below, the proposed development will not give rise to any significant long-term adverse impact. Negative impacts during the construction phase will not be significant once the appropriate mitigation measures are adopted and will be only short term in duration.

Activity	Construction Element	Potential Impact Description	Quality	Significance	Extents	Probability	Duration	Type	Mitigation	Residual Impact
Earthworks	Pond/ Attenuation Excavation Pond/ Attenuation Construction Foundation Excavation Boardwalk Construction	Excavation of natural soils and subsoil for	Negative	Moderate	Local	Certain	Permanent	Irreversible	The minimum amount of space required in order to construct the works have been allowed for. Excavated material, where possible, shall be reused on the site	Moderate Negative
		Airbourne dust arising from soil stockpiles causing nuisance dust on public roads and neighbouring properties.	Negative	Slight	Local	Unlikely	Short	Worst Case	The contractor shall implement dust suppression measures to minimise the generation of dust during dry weather periods. Dust monitoring shall be carried out by the contractor throughout the excavation works. Construction vehicle wheel wash facilities shall be provided on all site exits and the contractor shall implement a road sweeping programme for the duration of the works.	Imperceptible Negative
		Imported fill material shall be required as	Negative	Slight	Local	Likely	Permanent	Irreversible	The contractor shall only source fill material with the requisite declarations of performance to ensure material supplied complies with the relevant project material specifications.	Imperceptible Negative
		Excavation of top soil material.	Positive	Slight	Local	Certain	Permanent	Irreversible	The Contractor shall implement environmental sampling and testing of top soil to assess its potential suitability for landfills in the Republic of Ireland via comparison aginst the Landfill Waste Acceptance Criteria .Limits	Slight Positive
		Excavation of subsoils can serve to reduce the local groundwater levels as the water tablenaturally lowers to a new equilibrium below the artificial ground level.	Negative	Moderate	Local	Unlikely	Permanent	Worst Case	The contractor shall install groundwater monitoring wells which shall be continously monitored during earthworks on site. The impact of lowering the groundwater levels shall be minimum	Imperceptible Negative
		Seepage of underlying groundwater.	Negative	Slight	Local	Likely	Short	Worst Case	The contractor shall implement the localised lowering of the water table through pumping of wells	Imperceptible Negative
		Discharge of contaminated groundwater to adjacent watercourse.	Negative	Slight	Local	Unlikely	Short	Worst Case	The contractor shall design on site pre- treatment of groundwater prior to its discharge to the adjacent watercourse/ Marsh	Imperceptible Negative
Groundwater Abstraction		Groundwater abstraction associated with temporary dewatering forcing changes in pore water pressures and potential	Negative	Significant	Local & Regional	Unlikely	Short	Worst Case	Condition Surveys should be completed on adjacent properites and neighbourin sites and should be monitored during the construction works	Imperceptible Negative
Groundwater Flow Paths		Groundwater flow paths may be potentially altered due to the construction of sub-surface structures. Groundwater mounding can theoretically occur where large impermeable structures are placed perpendicular to groundwater flow paths.	Negative	Significant	Local & Regional	Unlikely	Permanent	Worst Case	Local dewatering will be required as the excavations remove overlying low permeability clays which act as a confining layer	Imperceptible Negative
Groundwater Quality		Potentially contaminated water generated within the excavation could impact the southern marsh.	Negative	Significant	Local & Regional	Unlikely	Short	Worst Case	In order to avoid the inadvertant pollution of Surface and groundwater resoirces, all runoff should be prevented from directly entering watercourses. Best practices and correct handling and storgae of potentially polluting substance should be adhered	Imperceptible Negative

Figure 3: Construction Phase Impact Determination

Operational Phase

During the Operational Phase of the Project there is a neutral, permanent, imperceptible impact on the local and regional geological environment

Hydrology and Water Services

Construction Phase

Following the implementation of mitigation measures detailed in Section 8.7.1, the predicted impact on the Water environment during the Construction Phase (in accordance with EPA Draft Guidelines) is considered to be likely, neutral, imperceptible, and short-term. This is due to the control and mitigation measures highlighted in Section 7.7 above.

Operational Phase

Following implementation of the mitigation measures proposed in Section 7.7, the predicted impact on the surface water environment once the development is constructed and operational (in accordance with EPA Draft Guidelines) is considered to be likely, neutral, imperceptible, and long-term. This is due to the mitigation measures highlighted in Section 7.7. Overall, the attenuation proposed for the development and installation of interceptors will improve flood management and water quality.

Noise and Vibration

Construction/Demolition Phase

During the construction/demolition phase of the project there is the potential for significant and moderate impacts on nearby noise sensitive properties due to noise emissions from site activities.

The demolition phase of the re-development of site shall be conducted utilising standard demolition techniques in accordance with industry standards.

This stage of demolition will generate medium levels of noise generated principally as a result of manual works involving handheld power tools. As these works will occur generally within the structures of the buildings, there will not be a significant noise impact from these activities.

The application of binding noise limits, hours of operation, along with implementation of appropriate noise and vibration control measures, will ensure that noise and vibration impact will have a negative, moderate, and short-term impact on the surrounding environment.

Operational Phase

Additional Vehicular Traffic

The predicted change in noise levels associated with additional traffic is predicted to be of imperceptible impact along the existing road network. In the context of the existing noise environment, the overall contribution of induced traffic is considered to be of neutral, imperceptible, and long-term impact to nearby residential locations.

<u>Mechanical Plant, Retail units & Creche</u>

Noise levels associated with operational plant are expected to be well within the adopted day and night-time noise limits at the nearest noise sensitive properties taking into account the site layout, the nature and type of units proposed and distances to nearest residences. Assuming the operational noise levels do not exceed the adopted design goals, the resultant residual noise impact from this source will be of neutral, Imperceptible, long-term impact.

Climate and Air Quality

Construction Phase

Air Quality

When the dust minimisation measures detailed in Appendix 9.2 are implemented, fugitive emissions of dust from the site will be short-term, negative, localised and imperceptible at nearby receptors.

Climate

According to the IAQM guidance (2014) site traffic, plant and machinery are unlikely to have a significant impact on climate. Best practice mitigation measures are proposed for the construction phase of the proposed development which will focus on the pro-active control of dust and other air pollutants to minimise generation of emissions at source. The mitigation measures that will be put in place during construction of the proposed development will ensure that the impact of the development complies with all EU ambient air quality legislative limit values which are based on the protection of human health.

Therefore, the impact of construction of the proposed development is likely to be negative, short-term and imperceptible with respect to human health.

Human Health

Best practice mitigation measures are proposed for the construction phase of the proposed development which will focus on the pro-active control of dust and other air pollutants to minimise generation of emissions at source. The mitigation measures that will be put in place during construction of the proposed development will ensure that the impact of the development complies with all EU ambient air quality legislative limit values which are based on the protection of human health. Therefore, the impact of construction of the proposed development is likely to be negative, short-term and imperceptible with respect to human health.

Operational Phase

It is predicted that the operational phase with the implementation of mitigation measures will likely to be negative, long-term and imperceptible impact on air quality and climate.

Landscape and Visual

Construction Phase

The existing landscape and visual character will change during the construction stage due to site clearance, various construction activities including transport to and from the construction site. Form and appearance will change, mostly due to site boundary treatment such as hoardings and gates, further site facility management for machinery and equipment. These impacts are considered temporary and short term, with partly adverse effects.

Operational Phase

The landscape and built form design incorporates avoidance and mitigation measures to reduce adverse impacts, and where possible, to enhance the natural elements of the existing landscape, contributing to new placemaking and reflecting local policy objectives.

In assessing the landscape and visual effects of the proposed development regard must be had to the Action Area Plan for the lands (AAP3, as previously agreed in writing with WCC) and the associated Masterplan for the overall lands (also permitted as part of the Phase 1 permission (WCC Reg. Ref.:23/756) / ABP Reg. Ref.: ABP-319604-24) which provide detailed guidance for the proposed development layout and, reflects an appropriate analysis of site opportunities and best practice, that has fully informed the proposed layout and design.

Landscape Effects

The changes to the physical landscape of the main development site will result in a *Medium* to *Low* landscape effect overall. This reflects the relatively few sensitive landscape receptors on/adjoining the main development site, and the significant enhancement provided in the comprehensive landscape plans and careful siting and scaling of the development.

The more pronounced effects are on the overall character of the main development site as it changes from rural to urban, and the effect of the new buildings (where visible) on the immediate surrounds of the site.

The quality of the effect on the physical landscape features is, in the main, considered *Beneficial*, as these spaces are enhanced, and opened up with greater permeability between the site and its surrounds, and an increase in passive surveillance. The removal of field boundaries within the development site can be seen as an initially *Adverse* effect, however, this is mitigated by the proposed significant tree and landscape planting as this establishes over time.

A *High* landscape effect will result from the proposed pedestrian/cyclist bridge/boardwalk in the context of the Avoca River and Arklow Marsh. However, having regard to the elegant design of the structures and when considered within the urban context, in conjunction with the Arklow Flood Relief Scheme works, the impact will ultimately be *Positive* and *Beneficial* with this new sustainable transport infrastructure adding significant amenity value and connectivity for the town.

Visual Effects

Visual Effects of the main residential and local center development as illustrated by the Photomontages above, show no Adverse effects, with the development being *Neutral* to *Beneficial.*

Views of the pedestrian/cyclist bridge across the Avoca River, in conjunction with the permitted Arklow Flood Relief infrastructure are likely to be perceived initially as *Adverse* from proximate viewpoints and *Adverse-Neutra*l from more distant locations. However, the impact is considered will change over time and will become *Beneficial* as the new bridge settles into the urban context and provides significant amenity value and connectivity for the town.

Traffic and Transportation

Construction Phase Impact Significance and Duration

The proposed development construction phasing (scheduling of working hours) will result in a minimal increase in traffic volumes during the local network traffic peaks. It is seen in the analysis that the Dublin Road/Beech Road junction has sufficient residual capacity to accommodate the additional construction traffic flows associated with the development.

On the basis of the EPA EIAR Guidelines, the construction impact of the proposed development will be **slight to moderate** and **short-term**.

Operational Phase Impact Significance and Duration

The proposed development operational phase will result in a moderate increase in traffic volumes during the local network traffic peaks. However, the numerous measures proposed as part of the development (the proposed Local Centre, Boardwalk connection to Arklow Town and extensive high-quality walking and cycling facilities within the site) and co-location adjacent to the School Campus will mean that walking and cycling trips will be encouraged and facilitated, which will see a reduced car mode share.

It is seen in the analysis that the junctions assessed have sufficient residual capacity to accommodate the additional operational traffic flows associated with the development, with the proposed mitigation measures at the Dublin Road/Beech Road junction (implementation of signal control) seen to be capable of accommodating both the proposed development, the permitted 84-unit scheme and the adjacent School Campus development in all scenarios assessed.

On the basis of the EPA EIAR Guidelines, the operational impact of the proposed development will be **moderate** and **long-term**.

Waste Management

The implementation of the mitigation measures outlined in Section 12.7 will ensure that a high rate of reuse, recovery and recycling is achieved at the development during the construction phases as well as during the operational phase. It will also ensure that European, National and Regional legislative waste requirements with regard to waste are met and that associated targets for the management of waste are achieved.

Construction Phase

A carefully planned approach to waste management as set out in Section 12.7 and adherence to the RWMP during the construction phase will ensure that the impact on the environment will be *short-term, neutral,* and *imperceptible.*

Operational Phase

During the operational phase, a structured approach to waste management as set out in Section 12.7 will promote resource efficiency and waste minimisation. Provided the mitigation measures are implemented, and a high rate of reuse, recycling and recovery is achieved, the predicted impact of the operational phase on the environment will be *long-term, neutral,* and *imperceptible*.

Cultural Heritage

Pre-construction archaeological mitigation shall identify the nature and extent of potential sub-surface archaeological remains at the proposed Phase 1 development lands. Confirmed archaeology shall be avoided where possible, or resolved via excavation at this stage. Archaeological mitigation undertaken to date in relation to the Phase 1 lands has identified one archaeological pit, additional potential archaeological anomalies have been identified in geophysical survey results and a stray prehistoric bronze axehead has been recovered. The current archaeological record in the surrounding landscape, revealed in advance of the construction of the M11 Arklow by-pass on similarly rising ground above marshland on the floodplain of the Avoca River, highlights the potential for the

discovery of similar sites in what is a similar topographic environment within the Phase 1 Kilbride lands.

Construction Phase

Groundworks across the whole of the Phase 1 Kilbride lands will directly impact sub-surface archaeological remains that may be exposed during monitoring of topsoil stripping or other required groundworks at the construction phase. Pre-construction archaeological mitigation may not be practicable in the Town Marsh due to wet ground conditions or natural heritage constraints, and mitigation will need to be addressed during the construction phase.

Operational Phase

The proposed development will directly impact the rural and visual setting of Kilbride Graveyard and the pyramidal Howard Mausoleum sited in Kilbride Graveyard. The establishment of a sufficiently sized green buffer to maintain the graveyard and Howard Mausoleum's visual dominance in the landscape, the sites elevation above proposed development heights, and open views southwards and south-eastwards will reduce the severity of the impact.

Material Assets

Construction Phase

Surface Water Drainage

surface water from the existing site shall continue to flow generally south / southeast towards the existing Avoca marsh. There are also existing dry drainage ditches to which surface water discharges. This is a neutral, imperceptible and temporary effect.

Wastewater Drainage

Temporary dewatering measures will be necessary to manage water within excavations. Water collected in temporary excavations shall be pumped to tanks on site and treated before discharge to the public wastewater network at a flow rate and location subject to the discharge license from Uisce Eireann.

The Contractor's welfare facilities for construction personnel will be located on site in the contractor's compound and temporary wastewater effluent from these facilities shall be discharged to the sewerage system at a location and at a flow rate subject to the conditions of a discharge license from Uisce Eireann. Details of the wastewater effluent disposal shall be confirmed prior to the commencement of construction as part of the contractor's construction management plan

This is a neutral, imperceptible and temporary effect.

Water Supply

During the Demolition and Construction phase, the Contractor shall install temporary facilities on site for construction personnel. The water demands during the Demolition and Construction Phase arising from the Contractors

Welfare facilities on the existing water supply networks are considered to have a neutral and imperceptible effect with a short-term duration.

Electricity

Electricity will be required for the construction activities for temporary lighting, equipment use etc. It is anticipated that a temporary connection will be taken from the existing LV supply which will facilitate electricity supply to the site during construction, subject to the appropriate agreements. The power demands during the construction phase on the existing electricity network are considered to be imperceptible, neutral and have a short-term effect.

Where the excavation strategy or temporary works require any temporary diversion of services or utilities on the site perimeter, this would be undertaken with prior agreement of the relevant service provider.

A negative, moderate, short-term effect is identified where utility diversions are required.

Telecommunications

There are no existing telecommunications infrastructure within the subject site of the proposed development and all existing telecommunication cables in adjacent developments in close proximity to the subject site are located in underground ducts within the adjacent roads. As such, there will be no likely significant effects on telecommunications infrastructure during the demolition and construction phase of the proposed development.

Where the excavation strategy or temporary works require any temporary diversion of local telecommunication services or utilities on the site perimeter, this would be undertaken with prior agreement of the relevant service provider.

These works are considered as neutral, imperceptible and with a short- term duration

Gas

There is no gas infrastructure on the subject site and it is not proposed to provide gas as a utility within the proposed development. Where the excavation strategy or temporary works require any temporary diversion of local gas services on the site perimeter, this would be undertaken with prior agreement of the relevant service provider. These works are considered as neutral with an imperceptible effect and with a short-term duration.

Operational Phase

Surface Water Drainage

The provision of a Sustainable Urban Drainage System (SuDS) for the proposed development will ultimately limit Surface Water run-off to 173.91 l/s from the existing subject site which is the allowable green-field run-off rate.

This is a neutral, imperceptible and permanent effect.

Wastewater Drainage

Wastewater flows from the proposed development will be conveyed south east to the upgraded PWSA Wastewater network; delivered by others, which will ultimately discharge to the upgraded Arklow WWTP. Therefore, the proposed 7-year permission provides adequate time for this infrastructure to be completed in advance of construction of the 666 No. residential units.

This is a neutral, significant and permanent effect.

Water Supply

It is considered that the residual effects on the proposed watermain network, additionally with the upgraded infrastructure which forms part of the Uisce Eireann CDS Confirmation of Feasibility will be positive, significant and permanent.

Electricity

The proposed development will increase the demand on the electricity supply system. However, it is expected that infrastructural requirements for future development will be accommodated by ESB Networks.

This is a neutral, moderate and long-term effect.

Telecommunications

The proposed development will increase the demand on the telecommunications systems. However, it is expected that infrastructural requirements for future development will be accommodated by utility service providers.

This is a neutral, moderate and long-term effect.

Gas

There is no gas infrastructure on the subject site and it is not proposed to provide gas as a utility within the proposed development. Therefore, it is considered the impact of the proposed development on the existing gas network is neutral, imperceptible and permanent.

6. Interactions

Where an interaction is likely, it is given a reference number in the matrix and detail of the interaction is recorded below. The significance, quality – whether it is positive, negative or neutral – and the duration of the interaction is assessed. The interactions are listed in numerical sequence, purely for referencing purposes. Each of these interactions have been addressed in the relevant EIAR chapters.

	Population	Biodiversity	Soil	Hydrology	Noise	Air and Climate	Landscape	Traffic	Waste	Cultural Heritage	Material Assets
Population											
Biodiversity											
Soil	1	10									
Hydrology	2	11	16								
Noise	3	12									
Air and Climate	4	13	17								
Landscape	5	14	18								
Traffic	6										
Waste	7										
Cultural Heritage	8										
Material Assets	9	15									

Table 17: Table of interactions (Below Table)

1. Population & Human Health / Soils

There is potential for dust generation during construction works, which under dry and windy conditions could lead to localised dust impacts for the small number of properties proximate to the development site. However, the implementation of dust management and dust control measures as highlighted within the dust minimisation plan in Appendix 9.2 will ensure that the proposed development will not give rise to the generation of any significant quantities of dust. As a result, the impact will be **temporary, imperceptible and neutral/ negative**.

2. Population & Human Health / Hydrology

Failure or mismanagement of the potable water supply could lead to its contamination during the construction phase. A range of mitigation measures, as outlined in Chapter 7, will be put in place during the construction phase of the development to ensure this does not occur. The correct implementation of these mitigation measures will ensure that the potential impacts on hydrology and water services during the construction phase will be **imperceptible and short term**.

3. Population & Human Health / Noise

Increased noise levels during the construction phase will be temporary and are not expected to have a long-term significant adverse effect upon the local population. The application of binding noise limits, hours of operation, along with implementation of the mitigation measures, as identified in Chapter 8 and the CEMP, will ensure that noise and vibration impact will have a **negative, moderate, and short-term** impact on the surrounding environment.

The impact due to the increased traffic associated with the operational development is expected to be **neutral, imperceptible, and long-term.**

4. Population & Human Health / Air

The completed development will generate additional emissions to the atmosphere due to traffic associated with the development. However, air quality in the vicinity of the site is expected to remain within air quality standards, and the impact is expected to be **imperceptible**.

During construction, there may be potential for slight dust nuisance in the immediate vicinity of the site. However, dust control measures, such as wheel washes, covering of fine material etc. will minimise the impacts on air quality. As a result, the impact will be **temporary, imperceptible and neutral/ negative.**

5. Population & Human Health / Landscape

Existing residents and visitors to the Kilbride area interact with the landscape, such that they will be aware of a significant change at this site from a vacant greenfield site to a new residential development with a mix of unit types, building heights, open spaces etc.

The landscaping proposals set out in this scheme will bring positive benefits in terms of recreational amenity provision including the amenity value of the proposed Boardwalk and the opening up of access to the Boardwalk as proposed as part of this development which will contribute to public open space provision available to the people of Arklow. This will bring **positive, significant impacts** in terms of local recreation amenity and provision.

6. Population & Human Health / Traffic

Chapter 11 notes that, provided the mitigation measures and management procedures outlined in the Construction Environmental Management Plan are incorporated during the Construction Phase, the residual impact upon the local receiving environment is predicted to be **slight to moderate** in the nature and **short-term.**

Once complete, the proposed development will operate well within capacity during the AM and PM peak hours in the 2026 + Proposed Development (Opening Year) scenario and would continue to do so for the future assessments.

The pedestrian and cyclist infrastructure proposed will greatly enhance connectivity of surrounding neighbourhoods to Arklow town via the Boardwalk as proposed as part of this development which will result in a **positive, significant impact**. Positive impacts on population and human health will include health benefits associated with the provision of a significant quantity of open space, as well as the provision of walking and cycling facilities.

7. Population & Human Health / Waste

As noted in Chapter 12, a carefully planned approach to waste management as set out in the mitigation measure, and adherence to the Resource Waste Management Plan (which include mitigation) during the construction phase will ensure that the effect on the environment will be **short-term, imperceptible and neutral.**

During the operational phase, a structured approach to waste management as set out in Chapter 12 and adherence to the OWRMP (which include mitigation) will promote resource efficiency and waste

minimisation. Provided the mitigation measures are implemented, and a high rate of reuse, recycling and recovery is achieved, the predicted effect of the operational phase on the environment will be **long-term, imperceptible and neutral.**

8. Population & Human Health / Archaeological, Architectural & Cultural Heritage

Groundworks across the whole of the Phase 1 Kilbride lands will directly impact sub-surface archaeological remains that may be exposed during monitoring of topsoil stripping or other required groundworks at the construction phase. Pre-construction archaeological mitigation may not be practicable in the Town Marsh due to wet ground conditions or natural heritage constraints, and mitigation will need to be addressed during the construction phase.

During the operation phase, the development will directly impact the rural and visual setting of Kilbride Graveyard and the pyramidal Howard Mausoleum sited in Kilbride Graveyard. The establishment of a sufficiently sized green buffer to maintain the graveyard and Howard Mausoleum's visual dominance in the landscape, the sites elevation above proposed development heights, and open views southwards and south-eastwards will reduce the severity of the impact. The predicted effect of the operational phase on the cultural heritage will be **long-term and insignificant.**

9. Population & Human Health / Materials Assets

There is the potential for contamination of potable water supply, gas leaks or explosions, loss of supply of services. With the implementation of the mitigation measures in Chapter 14 the impact of the proposed built services on human health is likely to be **imperceptible**.

10. Biodiversity / Soils

With the protective measures noted in Chapter 5 in place during Construction Phase and for excavation works, any potential impacts on soils and geology at the Site and surrounding area will be avoided and there will be **no significant adverse impacts** on the land, soils and geology of the subject lands are envisaged. There are no predicted significant adverse impacts are predicted on land, soils or geology associated with the Operational Phase of the Proposed Development.

11. Biodiversity / Hydrology

Based on the successful implementation of the construction phase controls and the works to be carried out in accordance with this EIAR, it is likely that there will be no significant ecological impact arising from construction works proposed for the proposed project. Natura 2000 sites will not be impacted by the proposed development during construction.

A series of standard construction phase control measures have been outlined to ensure that the proposed project does not impact on species or habitats of conservation importance, conservation areas or watercourses during construction. It is essential that these measures are complied with to ensure that the proposed works do not have downstream environmental impacts. These measures are to protect the Arklow Town Marsh pNHA, Avoca River and a tributary of the Avoca River along the southeastern boundary of the site, which are potentially the primary vector of impacts from the site, are not impacted during construction and operational phases of the proposed development.

No significant environmental impacts are likely in relation to the construction of the proposed development. Effects: **moderate effects / National / Negative effect / Not significant /short term/likely.** Standard mitigation will be in place on site.

Standard operational phase control measures have been outlined to ensure that the proposed project does not impact on species or habitats of conservation importance, conservation areas or watercourses. It is essential that these measures are complied with, to ensure that the proposed works do not have downstream environmental impacts. These measures are to protect the Arklow Town Marsh and Avoca River, which are potentially the primary vector of impacts from the site, is not impacted during operational phases of the proposed development. Light spill will be introduced into the area but these have been designed to have minimal impact on biodiversity. It would be expected that there would be no significant long term impact on the reedbed based on the mitigation and it would be expected that the reed bed in the vicinity of the bog matting would recover within 3 years. The operation of the boardwalk would not have a long term impact on the Arklow Marsh pNHA.
No significant environmental impacts are likely in relation to the operation of the proposed development.
Effects: **Slight effects / site / Negative effect / Not significant / long term/likely.** Standard mitigation will be in place on site.

12. Biodiversity / Noise

During the construction phase, noise may be generated due to increased vehicle movements and the operation of construction plant. It is anticipated that there would be a moderate impact, for a limited period of time, on any fauna within the vicinity of the development. Control and mitigation measures would be implemented to reduce noise, including measures relating to equipment operation and maintenance and timing of activities. Given the transient nature of construction works, and provided mitigation measures are implemented, noise from construction would not be considered to pose a significant impact upon fauna.

During the operational phase noise would be typical of an urban residential development. There would be would no significant impact on fauna within the vicinity of the proposed development.

13. Biodiversity / Air

An adverse impact on air quality has the potential to cause dust nuisance and cause disturbance to fauna. The risk to air quality as a result of the proposed development would not be considered significant, both at the local community level and on a broader national / global scale. Air emissions would be typical of residential buildings, being primarily from heating and therefore low impact in-and-of-itself. In-combination residential impacts would be controlled by national energy policies and grant schemes. While there would be increased dust emissions during the construction phase, these would not be considered to pose a significant risk owing to the transient nature of construction works and the construction timeframe.

During the construction phase of the development, there would be potential for dust emissions, which could impact upon flora and fauna in the surrounding area. The potential impact of dust would be temporary, given the transient nature of construction works. Dust control would be an integral part of construction management practices, with mitigation measures implemented where required,

including sweeping of roads and hardstand areas, appropriate storage and transport of material and dust suppression measures where required.

14. Biodiversity / Landscape

No negative significant impacts on habitats are anticipated during the Operational Phase of the Proposed Development. Pollinator-friendly native wildflower, ornamental, and tree planting is proposed, with the tree species selected to maximise resources for wildlife, particularly forage for birds and invertebrates. Light spill will be introduced into the area but these have been designed to have minimal impact on biodiversity.

15. Biodiversity / Material Assets

The proposed development would alter flora cover and the species of fauna supported due to land take and soil disturbance works. This impact would be minor due to the low ecological value of the habitats present at the proposed development. The habitats of note at the development site are hedgerows and treelines with the majority of hedgerows to be maintained and trees removed will be replanted. The landscape plan includes areas that are less intensively managed such as meadows that will provide a more diverse range of habitats within the proposed development.

16. Soils / Hydrology

The predicted impacts of the construction phase are described in Table 6.3 of Chapter 6 in terms of quality, significance, extent, probability and duration. The relevant mitigation measures are detailed and the residual impacts are determined which take account of the mitigation measures.

After the implementation of the mitigation measures outlined below, the proposed development will not give rise to any significant long-term adverse impact. Negative impacts during the construction phase will not be significant once the appropriate mitigation measures are adopted and will be only **short term** in duration.

During the Operational Phase of the Project there is a **neutral, permanent, imperceptible impact** on the local and regional geological environment

17. Soils / Air

Exposed soil during the construction phase of the proposed scheme will give rise to increased dust emissions. Chapter 9 notes that when the dust minimisation measures, as outlined in Chapter 9, are implemented, fugitive emissions of dust from the site will be neutral effects that are **imperceptible**, within normal bounds of variation or within the margin of forecasting error.

18. Soils/Landscape

Residual soils arising as a result of excavation at the development site will be used in landscaping works in the proposed public open spaces as much as possible rather than transporting off-site. This impact will be **imperceptible and long-term**.

Conclusion

In conclusion, the subject site exceeds the thresholds set out in set out in Annex I and Annex II of the EIA, Directive and therefore an EIAR is required for the proposed development. The methodology is informed by the available guidance, legislation and directives.

An Appropriate Assessment Screening Report has also been submitted as part of this application, following the implementation of the mitigation measures outlined, the construction and presence of this development would not be deemed to have a significant impact on the integrity of European sites.

The implementation of the mitigation measures outlined in each EIAR chapter will reduce the potential negative impacts of the proposed development in both the construction and operational phases of the development.