3.0 POPULATION & HUMAN HEALTH

3.1 Introduction

This chapter of the remedial Environmental Impact Assessment Report (rEIAR) presents a retrospective assessment of the potential effects that may have occurred, and may continue to occur, on the surrounding human environment, as a result of activities at the existing quarry site at, Ballinabarny North and Bolagh Lower, Redcross,, Co. Wicklow ('the Site') between 1990 and the present day. It also records remedial mitigation measures undertaken or proposed to be undertaken.

Effects of a development on the environment can impinge upon the surrounding human environment, directly and indirectly, positively and negatively. Direct effects may include such matters as safety, air and water quality, noise, landscape quality and road traffic. Indirect effects pertain to such matters as ecology and biodiversity, heritage and archaeology. These matters form discreet sections of this rEIAR in their own right and corresponding mitigation measures are comprehensively provided in those sections.

This rEIAR has been prepared to accompany a substitute consent application for an existing quarry at Ballinabarny North and Bolagh Lower, Redcross, Co. Wicklow.

The lands comprising the subject of this rEIAR extend to ca. 23.7 ha and reflect the historic operational site area, including the extractable area declared under S.261 quarry registration in 2005. The quarry extraction area that makes up the application for the substitute consent planning unit, currently extends to ca. 20.16 ha., and lies centrally within the Site. The lands adjacent to the Site are used for agricultural purposes (including pasture and tillage), with plantations of trees located along the western, and eastern edges of the Site. An area of 'heath' and scrub occurs immediately adjacent to the south of the Site. Farmyards and one-off residential properties also occur in the vicinity of the Site.

The current quarry void is centrally located within the EIA unit and is roughly square in shape. The existing administration, maintenance, storage and welfare facilities are located at the southern edge of the Site, with the aggregate processing plant area located towards the centre of the Site. At baseline, in 1990, the quarried area has been determined to have extended to approximately 0.75 ha and to have expanded laterally to approximately 20.16 ha in 2022.

A detailed description of the Site and the activities that have been undertaken ('the Development') can be found in Chapter 2 of this rEIAR (Project Description).

3.2 Methodology

3.2.1 Technical Scope

This assessment has been made with reference to the 'Guidelines on the information to be contained in environmental impact assessment reports', published by the EPA in May 2022 (EPA, 2022 Guidelines). These guidelines were drafted by the EPA with a view to facilitating compliance with the EIA Directive (Directive 2011/92/EU, as amended by Directive 2014/52/EU, together the 'EIA Directive').

The EPA's 2022 'Guidelines on the information to be contained in environmental impact assessment reports' suggest the following sub-headings under which to arrange issues; "*Employment, Human Health (considered with reference to other headings such as water and air), Amenity (e.g. effects on amenity uses of a site or of other areas in the vicinity – may be addressed under the factor of Landscape)*."

With regard to the 2022 EPA guidance on the information to be contained in EIAR; the characteristics and context of the lands that are the subject of this rEIAR; and the retrospective nature of the development, this rEIAR chapter aims to identify the likely significant impacts that the development has and may have had on the 'quality of life' and are discussed under the following headings:

- Populations;
- Employment;
- Amenity;
- Land Use and Development Patterns;
- Human Health; and
- Health and Safety.

3.2.2 Prediction of Impacts and Effects Prior to Mitigation

Prediction methods are required to identify and assess the significant effects of the development on the environment. The predictive method used for this assessment is a common framework of assessment criteria and terminology based on the EPA's 'Guidelines on the information to be contained in environmental impact assessment reports', with some adjustments to improve clarity.

This common framework follows a 'matrix approach' to environmental assessment, which is based on the characteristics of the impact (magnitude and nature) and the value (sensitivity) of the receptor. The terms used in the common framework are described below. Details of how these specifically relate to the human environment are based on the UK's Design Manual for Roads and Bridges (Volume 11, Section 3, LA112, Revision 1, Sustainability and environment. Appraisal. Population and human health). The sensitivity of communities and populations has been included and has been conservatively attributed a 'High' sensitivity. These descriptions for value (sensitivity) of receptors are provided in Tables 3.1 and 3.2.

Table 3.1: Environmental Value (sensitivity) and Descriptions

Value (sensitivity) of Receptor / Resource	Typical Description
High	High importance and rarity, national scale, and limited potential for substitution.
Medium	Medium or high importance and rarity, regional scale, limited potential for substitution.
Low	Low or medium importance and rarity, local scale.
Negligible	Very low importance and rarity, local scale.

The environmental sensitivity descriptions have been assigned to receptor groups as appropriate for the assessment on the human environment. These descriptions and rankings have been provided below in Table 3.2.

Table 3.2: Environmental Value (sensitivity) and Descriptions for Assessment Groups

Group	Receptor / Resource	Designated Value (sensitivity) of Receptor / Resource
Populations / Communities	All individuals located in a particular location (this can be local, regional or at a national scale), and groups of people living in the same place or having a particular characteristic in common.	High
Private Dwellings	Residential property.	High

Group	Receptor / Resource	Designated Value (sensitivity) of Receptor / Resource
Community land and facilities, and other lands	Designated local green space / valued community facility.	High
	Undesignated local green space / non-essential community facility.	Low
	Derelict or unoccupied buildings or lands.	Low
Local Businesses	Businesses where viability is likely to be permanently jeopardised by a short disruption or worsening of trading conditions.	High
	Businesses where profitability may be harmed by a short or medium-term disruption or worsening of trading conditions.	Medium
	Businesses that could continue to operate without substantial harm if affected by a disruption or worsening of trading conditions.	Low
	Businesses that could continue to operate relatively unharmed if affected by a disruption or worsening of trading conditions.	Negligible
Non-motorised users	All non-motorised users utilising roads and networks, including pedestrians, cyclists, horse-riding, etc.	High
Human health	Health receptor that would be likely or expected to be directly affected. Receptor is well placed to take advantage of beneficial impacts, and/or is not well placed to deal with any adverse impacts.	High
	Health receptor that would be likely to be indirectly affected. Average ability to maximise beneficial impacts or cope with adverse impacts.	Medium
	Health receptor that would be unlikely to be affected. Receptor is not well placed to take advantage of beneficial impacts, and/or is well placed to deal with any adverse impacts.	Low
	Health receptor that would be unlikely to be affected or effects would be temporary in nature, or which would be anticipated to have a slight or no effect on human health.	Negligible
Vehicle travellers	Public transport, motor vehicles.	Low

The descriptions for magnitude of impact are provided in Table 3.3. The numerous descriptions for both the adverse and beneficial magnitudes of impact provided below reflects the diverse range of receptor groups which may be impacted.

Table 3.3: Magnitude of Impact and Typical Descriptions

Magnitude of Impact (change)		Typical Description
High	Adverse	■ Loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features or elements; ■ An impact that is expected to have considerable adverse socioeconomic effects. Such impacts will typically affect large numbers of businesses, workers or residents; ■ Very large damage to local business which may compromise its viability; ■ Adverse health impact to a large number of people and adverse impact affecting sensitive population groups.
	Beneficial	■ Large scale or major improvement of resource quality; extensive restoration; major improvement of attribute quality; ■ An impact that is expected to have considerable beneficial socioeconomic effects. Such impacts will typically affect large numbers of businesses, workers or residents; ■ Very large direct or indirect benefits for local business; ■ Beneficial health impact to a large number of people and beneficial impact affecting sensitive population groups.
Medium	Adverse	■ Loss of resource, but not adversely affecting the integrity; partial loss of/damage to key characteristics, features or elements; ■ Moderate magnitude impacts will typically be long-term in nature, resulting in the permanent change of the study area's baseline socio-economic conditions; ■ Moderate to large damage to local business, but with changes to management it should remain viable; ■ Adverse impact affecting moderate number of people. Adverse impact affecting some sensitive population group(s).
	Beneficial	■ Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality; ■ Moderate magnitude impacts will typically be long-term in nature, resulting in the permanent change of the study area's baseline socio-economic conditions; ■ Moderate to large benefits for local business; ■ Beneficial impact affecting moderate number of people. Beneficial impact affecting some sensitive population group(s).
Low	Adverse	■ Some measurable change in attributes, quality or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements; ■ An impact that is expected to have a minor socio-economic effect. Such impacts will typically have a noticeable effect on a limited number of businesses, workers or residents, and will lead to a permanent (but not drastic) change to the study area's baseline socio-economic conditions;

Magnitude of Impact (change)		Typical Description
		■ Slight to moderate damage to local business, but with minor changes to management it should remain viable; ■ Adverse impact affecting low-moderate number of people. Adverse impact affecting few sensitive population groups.
	Beneficial	■ Minor benefit to, or addition of, one (maybe more) key characteristics, features or elements; some beneficial impact on attribute or a reduced risk of negative impact occurring; ■ An impact that is expected to have a minor socio-economic effect. Such impacts will typically have a noticeable effect on a limited number of businesses, workers or residents, and will lead to a permanent (but not drastic) change to the study area's baseline socio-economic conditions; ■ Slight to moderate benefits for local business; ■ Beneficial impact affecting low-moderate number of people. Beneficial impact affecting few sensitive population groups.
Negligible	Adverse	■ Very minor loss or alteration to one or more characteristics, features or elements; ■ An impact that is expected to affect a small number of businesses, workers or residents. Or an impact that may affect a larger number of receptors but without materially changing the study area's baseline socio-economic conditions. Such impacts are likely to be temporary in nature; ■ The identified impacts are predicted to have little or no damage to local business; ■ No or non-perceptible impact to health, population or sensitive groups.
	Beneficial	■ Very minor benefit to or positive addition of one or more characteristics, features or elements; ■ An impact that is expected to affect a small number of businesses, workers or residents. Or an impact that may affect a larger number of receptors but without materially changing the study area's baseline socio-economic conditions. Such impacts are likely to be temporary in nature; ■ The identified impacts are predicted to have little or no benefit to local business; ■ No or non-perceptible impact to health, population or sensitive groups.

The approach followed to derive effects significance from receptor value and magnitude of impacts is shown in Table 3.3.4. Where Table 3.3.5 includes two significance categories, evidence is provided in the topic chapters to support the reporting of a single significance category.

Table 3.4: Significance Matrix

	Magnitude of Impact (Degree of Change)				
Environmental Value (sensitivity)		Negligible	Low	Medium	High
	High	Slight	Slight or moderate	Moderate or large	Profound
	Medium	Imperceptible or slight	Slight or moderate	Moderate	Large or profound
	Low	Imperceptible	Slight	Slight	Slight or moderate
	Negligible	Imperceptible	Imperceptible or slight	Imperceptible or slight	Slight

A description of the significance categories used is set out in Table 3.5.

Table 3.5: Significance Categories and Typical Descriptions

Significance Category	Typical Description
Profound	An effect which obliterates sensitive characteristics. Only adverse effects are usually assigned this level of significance. These factors are key issues in the decision-making and consent process. These effects are generally, but not exclusively, associated with sites or features of international, national or regional importance which are likely to suffer a most damaging impact and loss of resource integrity. However, a major change in a site or feature of local importance may also be included in this significance category.
Large	An effect which, by its character, magnitude, duration or intensity alters a significant proportion of a sensitive aspect of the environment. These can be beneficial or adverse effects and are considered to be very important issues which are likely to be substantial in the decision-making process.
Moderate	An effect that alters the character of the environment in a manner that is consistent with existing and emerging baseline trends. These are beneficial or adverse effects which may be important but are not likely to be central to decision-making or consent. The cumulative effects of these factors may influence consent or decision-making if they should lead to an increase in the overall adverse effect on a particular resource or receptor.
Slight	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities. These beneficial or adverse effects may be raised as local factors. They are unlikely to be critical in the decision-making process but are important in enhancing the subsequent design of the project.
Imperceptible	An effect capable of measurement but without significant consequences. No effects or those that are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error.

The approach to assigning significance of effect includes reasoned argument and the professional judgement of competent experts. The assessment of the significance of environmental effects covered the following factors:

1) The receptors/resources (natural and human) which would have been affected and the pathways for such effects;
2) The geographic importance, sensitivity or value of receptors/resources;
3) The duration (long or short term); permanence (permanent or temporary) and changes in significance (increase or decrease);
4) Reversibility - e.g. is the change reversible or irreversible, permanent or temporary;
5) Environmental and health standards (e.g. local air quality standards) being threatened; and
6) Feasibility and mechanisms for delivering mitigating measures, e.g. Is there evidence of the ability to legally deliver the environmental assumptions which are the basis for the assessment?

Using the described classification and professional judgement, **effects considered to be Profound or Large are deemed significant and those Moderate, Slight, or Imperceptible, to be not significant**, for the purposes of this assessment.

3.2.3 Information Sources

The description of the receiving environment for this retrospective EIAR is set out under the headings identified in Section 3.2.1 at the current time and at baseline in 1990.

With regard to Human Health, it should be noted that other chapters of this rEIAR assess effects and set down mitigation measures for other environmental factors that ultimately require emission regulation by national/internal standard or specific planning / licensing condition for reason of protection of human health and the environment. Those assessments are referenced in this chapter to address felt and potentialHuman Health impacts arising from activities at the Application Site in accordance with EPA guidance on the information to be contained in EIAR; "*In an EIAR, the assessment of impacts on population & human health should refer to the assessments of those factors under which human health effects might occur, as addressed elsewhere in the EIAR e.g. under the environmental factors of air, water, soil etc. The Advice Notes [Advice Notes on Current Practice (in the preparation of Environmental Impact Statements, Sept. 2003] provide further discussion of how this can be addressed*."

Sources of information for the assessment of potential impacts on populations and human health included the following sources:

- Census Returns (Central Statistics Office (CSO), 1991, 1996, 2002, 2006, 2011 and 2016 Census);
- Wicklow County Council Development Plans, 1998 – 2004, 2004 -2010, 2016-2022;
- Wicklow County Council Development Plan, 2016-2022, Variation Number 1, 2018;
- Wicklow County Council Development Plan, 2022-2028, Issues paper: Draft Wicklow County Development Plan 2021-2027;
- Department of Health, Key Trends in Ireland, 2018;
- Field surveys of the Application Site and inspection of the surrounding area;
- Correspondence with the Developer/Site Owner;
- Desktop reviews of previous assessment from historic planning applications;
- Review of available Ordnance Survey of Ireland Aerials (1993, 1995, 2000, 2004, 2011, 2015, 2017 and 2021); and
- Department of Communication, Climate Action and Environment (DCCAE) Eircode maps.

The EPA's 2022 'Guidelines on the information to be contained in environmental impact assessment reports' identify that the legislation does not generally require assessment of Land Use planning, demographic issues or detailed socio-economic analysis, which should be avoided in an EIAR, unless issues such as economic or settlement patterns give rise directly to specific new developments and associated effects. As such, assessments of these topics have not been conducted as the development is not considered likely to have impacts on the land use planning within the locality, nor is it likely to affect the local demographics or socio-economic dynamics of the area. However, baseline information on the local area has been provided to show its context to, and comparison with, the region (county) and national average. In addition, information on industrial land use in proximity to the Site has been included. The land-uses identified include: similar industry to the Proposed Development, EPA regulated and licenced facilities (such as waste or IPC/IE sites); and upper or lower tier SEVESO sites.

3.2.4 Temporal Scope

This rEIAR arises as a result of an application for substitute consent which is retrospective. Therefore, the rEIAR is also retrospective as it requires a description and assessment of the impact of development already undertaken to inform an environmental impact assessment for substitute consent determination. As identified in Chapter 1.0, the original EIA Directive (85/337/EEC) was transposed into Irish Law through the Planning and Development Act, 2000 as amended (P&D Act), and the appointed day at which the requirement for the same arose is 01 February 1990. Therefore, the baseline for this rEIAR has been set to 01 February 1990, and the rEIA process has assessed environmental impacts from that date to the present.

This assessment period equates to 32 years and is identified in the EPA's 2022 'Guidelines on the information to be contained in environmental impact assessment reports' as 'long-term' duration (those lasting fifteen to sixty years).

3.2.5 Geographical Scope

The rEIA directly covers the physical extent of the Site as shown in Figure 3.1. As predicted impacts on the human environment can extend beyond the immediate Site boundary, a wider 'zone of influence' has been considered.

The geographical study area for the assessment covers the development area and a buffer zone of 500 m from the development boundary. The buffer area has been identified based on the UK's Design Manual for Roads and Bridges (Volume 11, Section 3, LA112, Revision 1, Sustainability and environment. Appraisal. Population and human health). An assessment of residential receptors has been made in relation to a 500 m offset to the planning application boundary. Aerial photography of the surrounding environment has been an important source of information for identifying receptors and determining changes in the areas and the Development during the assessment period

The study area defined for the population and demographic trends is the Electoral Division (ED) of Cronebane.

In the assessment of cumulative impacts, the geographical extent of the rEIAR has been extended as appropriate to include relevant related or unrelated development activities that have the potential to create significant negative impacts with the Development.

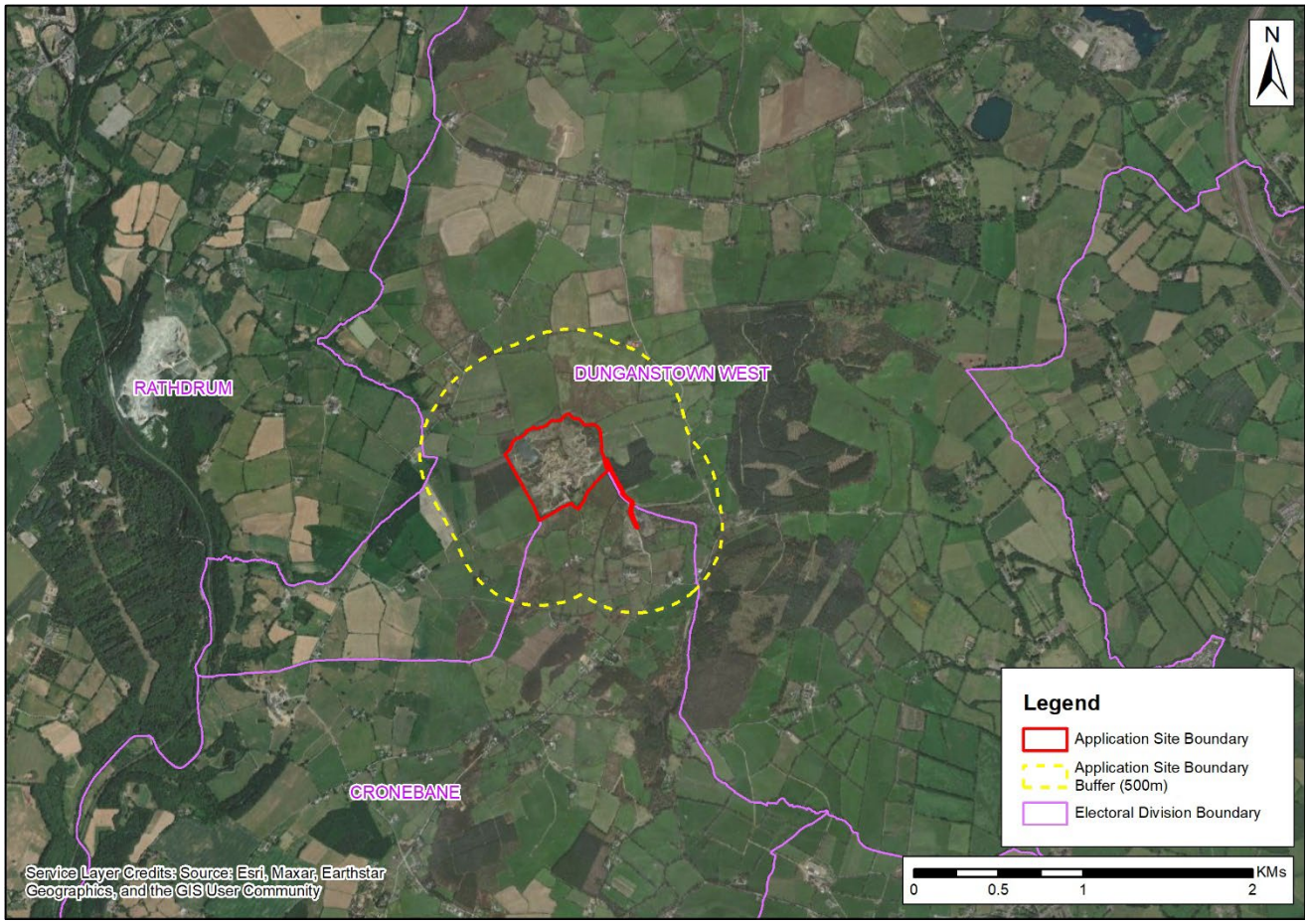


Figure 3.1: The Application Site within the Cronebane ED

3.2.6 Planning and Development Objectives

In order to determine precited impact on human beings and human health, populations subcategory locations and sensitivities must be determined. Prediction generally requires determination of future scenarios that for the purposes of determining likely population locations is estimated using predicted development patterns. Development patterns are set in planning and development policy at national, regional and local level in Ireland. The EIA project area is located outside of designated urban settlements and as such, its intended development profile is discerned from local planning and development policy contained within the Wicklow County Development Plan, 2022-2028 that is currently realised in Draft form under 'Draft Wicklow County Development Plan 2021-2027'.

The Draft Plan includes land use zoning, specific, transport and conservation objectives/goals applicable for the Site. These can be reviewed in the Plan's Chapters.

The EIA project aligns well with a number of the goals set out in the Draft Wicklow County Development Plan 2021-2027, in Chapter 7 Community Development. Namely Goals 7, 8 and 10 in the Wicklow Local Economic & Community Plan:

- **Goal 7**: '*Sustain existing enterprise and develop quality employment and income opportunities for the wide range of employment needs in the County, with possibilities for reversing commuting patterns.'*
- **Goal 8**: '*Capitalise on Wicklow's unique attributes and proximity to the Dublin market, excellent quality of life, human capital, tourism, landscape, marine, agricultural and forestry resources.'*
- **Goal 10**: '*Harness efficiently the full resources of the County and promote interagency collaboration.'*

In Chapter 9: Economic Development of Draft Wicklow County Development Plan there is a section of specific objectives ('CRO') on the Extractive Industry. This includes the overall Strategic Objective, 'to support and facilitate the exploitation of County Wicklow's natural aggregate resources in a manner, which does not unduly impinge on the environmental quality, and the visual and residential amenity of an area.' below, with the uses of the existing quarry and proposed further quarrying proposal identified by underline. Given that aggregates are the most consumed global material after water, it is reasonable to posit that existing and proposed further extraction have and will add to Wicklow's economic and amenity growth.

With Specific objectives indicated in Table 3.6:

Table 3.6: Specific Objectives of the Extractive Industry.

Code	Specific Objective
CPO 9.51	To facilitate and encourage the exploration and exploitation of minerals in the County in a manner, which is consistent with the principle of sustainability and protection of residential, environmental and tourism amenities.
CPO 9.52	To encourage the use, development and diversification of the County's indigenous natural dimensional rock industry, particularly where it can be shown to benefit processing, craft or other related industries.
CPO 9.53	To support and facilitate the development of related and spin-off industries of the extractive industry such as craft and monumental stone industries and the development of the mining and industrial tourism heritage. Consideration will be given to the development of such related industries within or in association with existing operations of worked out mines or quarries, at locations such as the disused granite quarries at Ballyknockan, where this does not conflict with other objectives and objectives of the plan.
CPO 9.54	To have regard to the following guidance documents (as may be amended, replaced or supplemented) in the assessment of planning applications for quarries and ancillary facilities: • 'Quarries and Ancillary Activities: Guidelines for Planning Authorities' (2004, DoEHLG); • 'Environmental Management Guidelines – Environmental Management in the Extractive Industry (Non Scheduled Minerals)', EPA 2006; • 'Archaeological Code of Practice between the DoEHLG and the Irish Concrete Federation' 2009; • 'Geological Heritage Guidelines for the Extractive Industry', 2008; and • 'Wildlife, Habitats and the Extractive Industry – Guidelines for the protection of biodiversity within the extractive industry', NPWS 2009.

The application boundary for the Site does not/has not proposed any extension from the original boundary line. Thus, the Site has not impinged on or included any zoning, specific, transport and conservation objectives/goals.

Several chapters of the Draft Wicklow County Development Plan (DWCDP) 2021 - 2027, provide policies and objectives related to Infrastructure, Water and Environmental Quality. In this draft plan relevant policies which are related to the development and bio-physical factors (air, noise and water) which could affect human health are set out. In particular, the Water Services chapter includes policy objectives:

- **CPO 13.1:** To ensure and support the implementation of the EU Groundwater Directive and the EU Water Framework Directive and associated River Basin and Sub-Basin Management Plans and Blue Dot Catchment Programme, to ensure the protection, improvement and sustainable use of all waters in the County, including rivers, lakes, ground water, coastal and estuarine waters, and to restrict development likely to lead to a deterioration in water quality. The Council will also have cognisance of, where relevant, the EU's Common Implementation Strategy Guidance Document No. 20 and 36 which provide guidance on exemptions to the environmental objectives of the Water Framework Directive.
- **CPO 13.4:** To ensure that any development or activity with the potential to impact on ground water has regard to the GSI Groundwater Protection Scheme.

Chapter 15 Waste and Environmental Emissions outlines a number of relevant policy objectives. These are presented in Table 3.7 below.

Table 3.7: Specific Policy Objectives of Waste and Environmental Emissions (DWCDP) Chapter

Code	Specific Objective
Air Pollution	
CPO 15.9	To regulate and control activities likely to give rise to emissions to air (other than those activities which are regulated by the EPA).
CPO 15.10	To require proposals for new developments with the potential for the accidental release of chemicals or dust generation, to submit and have approved by the Local Authority construction and/or operation management plans to control such emissions.
CPO 15.11	To require activities likely to give rise to air emissions to implement measures to control such emissions, to undertake air quality monitoring and to provide an annual air quality audit.
Noise Pollution	
CPO 15.12	To implement the Wicklow County Council Noise Action Plan 2018-2023 (and any subsequent Plan) in order to avoid, prevent and reduce the harmful effects, including annoyance, due to environmental noise exposure
CPO 15.13	To enforce, where applicable, the provisions of the Environmental Protection Agency (EPA) Acts 1992 and 2003, and EPA Noise Regulations 2006.
CPO 15.14	To regulate and control activities likely to give rise to excessive noise (other than those activities which are regulated by the EPA).
CPO 15.15	To regulate and control activities likely to give rise to excessive noise (other than those activities which are regulated by the EPA).
CPO 15.16	To require activities likely to give rise to excessive noise to install noise mitigation measures to undertake noise monitoring and to provide an annual monitoring audit.

Code	Specific Objective
Light Pollution	
CPO 15.17	To ensure that all external lighting whether free standing or attached to a building shall be designed and constructed so as not to cause excessive light spillage, glare, or dazzle motorists, and thereby limiting light pollution into the surrounding environment and protecting the amenities of nearby properties, traffic and wildlife
CPO 15.18	To require proposals for new developments with the potential to create light pollution or light impacts on adjacent residences to mitigate impacts, in accordance with the Development & Design Standards set out in this plan.
CPO 15.19	To promote the use of low energy LED (or equivalent) lighting.
CPO 15.20	To require the design and implementation of a hierarchy of light intensity zones in development schemes to ensure that environmental impact is minimised as far as possible particularly in areas proximate to ecological corridors.

In addition, there is also a related objective on the DWCDP's chapter 17 Natural Heritage and Biodiversity:

- **CPO 17.29:** To consult with the Geological Survey of Ireland as is deemed necessary, when dealing with any proposals for major developments, which will entail 'significant' ground excavation, such as quarrying, road cuttings, tunnels, major drainage works, and foundations for industrial or large buildings and complexes.

The current Draft Development Plan is scheduled for review in order for it to be replaced imminently for the period 2022 -2028 Plan. That review is statutorily prescribed consisting of 3 no. public consultation periods ahead of final adoption: pre-draft, draft Plan, and material amendments to that Plan. The pre-draft phase of the new Plan has passed and the Draft Plan, the one in use here, has passed. The Pre-Draft stage was informed by local authority issues papers that do not specifically refer to the Site or the proposed quarrying land use. Pre-Draft Plan issues papers, in common with the Plan itself, defers to higher order policy documents. The Site is not identified for large-scale redevelopment in the higher order spatial planning policies primarily consisting of the National Planning Framework (NPF) and the Regional Spatial and Economic Strategy (RSES) for the Eastern and Midland Region.

3.2.6.1 Superseded Planning and Development Objectives

As noted, the rEIAR is retrospective in description of development and context and therefore a review of previous Development Plans from baseline has been undertaken.

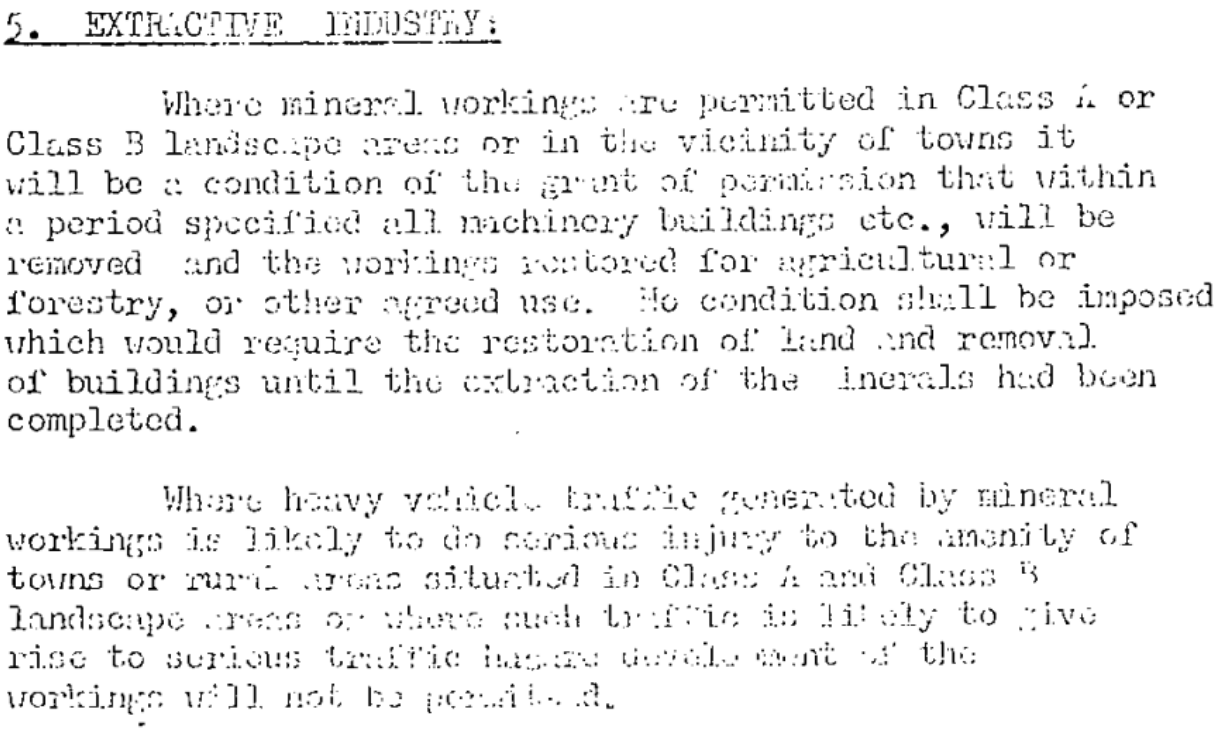
As county Wicklow has been an integral county still within its historical boundaries and has not been partitioned into subsections like county Dublin (Dublin City, Fingal, South Dublin, DLR), previous County Development Plans have encompassed the entire county:

- Wicklow County Development Plan 1970;
- Wicklow County Development Plan 1989;
- Wicklow County Development Plan 1999;
- Wicklow County Development Plan 2004 -2010;
- Wicklow County Development Plan 2010 – 2016; and
- Wicklow County Development Plan 2016 – 2022.

The inaugural Wicklow County Development Plan was 1970 and was replaced by the 1989 Plan. Over time, the Plans have become more detailed in policy and objective setting in accordance with statutory requirements and more sophisticated in respect of mapping.

In order to present an assessment of predicted and intended development for the project area, Extractive Industry specific objectives in the WCDPs' are compared and contrasted in the below section:

The **1970 WCDP** states on the Extractive Industry (Figure 3.2):



5. EXTRACTIVE INDUSTRY:

Where mineral workings are permitted in Class A or Class B landscape areas or in the vicinity of towns it will be a condition of the grant of permission that within a period specified all machinery buildings etc., will be removed and the workings restored for agricultural or forestry, or other agreed use. No condition shall be imposed which would require the restoration of land and removal of buildings until the extraction of the inerals had been completed.

Where heavy vehicle traffic generated by mineral workings is likely to do serious injury to the amenity of towns or rural areas situated in Class A and Class B landscape areas or where such traffic is likely to give rise to serious traffic [illegible] of the workings will not be permitted.

Figure 3.2: 1970 WCDP Objectives on Extractive Industry

Although Figure 3.2 is difficult to decode due to photocopied images, on closer scrutiny, the text reads (without 3 undecipherable words in the last sentence):

- *'5. Extractive Industry*

  Where mineral workings are permitted in Class A or Class B landscape areas or in the vicinity of towns or will a condition of the grant of permission that within a period specified all machinery buildings, etc., will ne removed and workings restored for agricultural or forestry, or other agreed use. No condition shall be imposed which would require the restoration of land and removal of buildings until the extraction of the minerals has been completed.

  Where heavy vehicle traffic generated by mineral workings is likely to do serious injury to the amenity of towns or rural areas situated in Class A and Class B landscape areas or where such traffic is likely to give rise to serious traffic … … … of the workings will not be permitted.'

The following **1989 Plan**, shown in Figure 3.3, sets out more detail in its policy objectives:

It is an objective of this Plan:-

(a) To have areas which were rendered derelict in the past restored to beneficial use and landscaped to conform to the surrounding areas.

(b) To exhort existing operators, who are not controlled at present, to so order the work of extraction and/or deposition of waste so that final reinstatement and restoration to a beneficial use can be achieved with the minimum of effort and expenditure.

(c) To ensure that new workings will cause the least possible disturbance to the neighbourhood during the working period and that they will be reinstated to some beneficial use when returned, in a manner consistent with the appearance of the surrounding landscape.

Figure 3.3: 1989 WCDP Policy Objectives on Extractive Industry

The **1999 Plans**, align further with present policy objectives as seen in Figure 3.4 below.

2.8.12 Exploration and Exploitation of Minerals

The Council will facilitate and encourage the exploration and exploitation of minerals in the county in a manner which is consistent with environmental protection and sustainable development.

2.8.13 Operations of the Extractive Aggregates Industry

The Council will facilitate the operations of the extractive aggregates industry where they conform to the principle of sustainability and do not adversely affect residential, environmental or tourism amenities.

2.8.14 Natural Rock Industry

The Council will encourage the use, development and diversification of the county's indigenous natural rock industry, particularly where it can be shown to benefit processing, craft or other related industries.

2.8.15 Related and Spin-Off Industries of the Extractive Industry

The Council will support and facilitate the development of related and spin-off industries of the extractive industry such as craft and monumental stone industries and the development of the mining and industrial tourism heritage. Consideration will be given to the development of such related industries within or in association with existing operations or worked out mines or quarries where this does not conflict with other policies and objectives of the plan.

Figure 3.4: 1999 WCDP Policy Objectives on Extractive Industry

Wicklow County Development Plan 2004 – 2010 largely mirror much of the material stated in the previous Plan. With its Extractive Industry being the following:

- **Policy EM 14**: The Council will facilitate and encourage the exploration and exploitation of minerals in the County in a manner, which is consistent with environmental protection and sustainable development.
- **Policy EM 15**: The Council will facilitate the operations of the extractive aggregates industry where they conform to the principle of sustainability and do not significantly affect residential, environmental or tourism amenities.
- **Policy EM 16:** The Council will encourage the use, development and diversification of the County's indigenous natural rock industry, particularly where it can be shown to benefit processing, craft or other related industries.
- **Policy EM 17**: The Council will support and facilitate the development of related and spin-off industries of the extractive industry such as craft and monumental stone industries and the development of the mining and industrial tourism heritage. Consideration will be given to the development of such related industries within or in association with existing operations of worked out mines or quarries where this does not conflict with other policies and objectives of the Plan.

Wicklow County Development Plan 2010 – 2016 reflects what has been expressed in the previous Plans with the addition of a national policy documents to have regard to:

- **EX1**: To facilitate and encourage the exploration and exploitation of minerals in the County in a manner, which is consistent with the principle of sustainability and protection of residential, environmental and tourism amenities.
- **EX2**: To encourage the use, development and diversification of the County's indigenous natural rock industry, particularly where it can be shown to benefit processing, craft or other related industries.
- **EX3**: To support and facilitate the development of related and spin-off industries of the extractive industry such as craft and monumental stone industries and the development of the mining and industrial tourism heritage. Consideration will be given to the development of such related industries within or in association with existing operations of worked out mines or quarries where this does not conflict with other objectives and objectives of the plan.
- **EX4**: To have regard to the following guidance documents (as may be amended, replaced or supplemented) in the assessment of planning applications for quarries and ancillary facilities:
  - 'Quarries and Ancillary Activities: Guidelines for Planning Authorities' (2004, DoEHLG);
  - 'Environmental Management Guidelines – Environmental Management in the Extractive Industry (Non Scheduled Minerals)', EPA 2006;
  - 'Archaeological Code of Practice between the DoEHLG and the Irish Concrete Federation' 2009;
  - 'Geological Heritage Guidelines for the Extractive Industry', 2008; and
  - 'Wildlife, Habitats and the Extractive Industry – Guidelines for the protection of biodiversity within the extractive industry', NPWS 2009.

The most recent past WCDP spanned from **2016 – 2022**. Its updated Policy Objectives outlined:

- **EX1**: To facilitate and encourage the exploration and exploitation of minerals in the County in a manner, which is consistent with the principle of sustainability and protection of residential, environmental and tourism amenities.
- **EX2**: To encourage the use, development and diversification of the County's indigenous natural dimensional rock industry, particularly where it can be shown to benefit processing, craft or other related industries.
- **EX3**: To support and facilitate the development of related and spin-off industries of the extractive industry such as craft and monumental stone industries and the development of the mining and industrial tourism heritage. Consideration will be given to the development of such related industries within or in association with existing operations of worked out mines or quarries, at locations such as the disused granite quarries at Ballyknockan, where this does not conflict with other objectives and objectives of the plan.
- **EX4**: To have regard to the following guidance documents (as may be amended, replaced or supplemented) in the assessment of planning applications for quarries and ancillary facilities:
  - 'Quarries and Ancillary Activities: Guidelines for Planning Authorities' (2004, DoEHLG);
  - 'Environmental Management Guidelines – Environmental Management in the Extractive Industry (Non Scheduled Minerals)', EPA 2006;
  - 'Archaeological Code of Practice between the DoEHLG and the Irish Concrete Federation' 2009;
  - 'Geological Heritage Guidelines for the Extractive Industry', 2008; and
  - 'Wildlife, Habitats and the Extractive Industry – Guidelines for the protection of biodiversity within the extractive industry', NPWS 2009.

3.3 Baseline

3.3.1 Surrounding Environment

The Site is located in the east of County Wicklow, southeast of the town of Rathdrum and within the administrative area of Wicklow County Council. The Site is located within the townland of Ballinabarny North and Bolagh Lower and is located 4.4 km west of the M11 Dublin to Wexford Road, ca. 3.2 km of the southwest of Rathdrum. As noted, the Site is located with Cronebane ED, the boundary of which has been provided in Figure 3.1.

The lands surrounding the Site in all directions can be characterised as rural in nature, with land uses in the area being agricultural and single-house residential. Dry cattle, Dairying, sheep rearing, grazing of horses and Forestry are the main activities in the area, with further arable activities to the south-west. Town and suburban development are non-existent in the immediate surrounds of the Site with the nearest towns Rathdrum and Redcross (ca. 3.7km to southeast of Site).

The rural nature of the surrounding area with few suburban influences to the east was relatively consistent from the period of 1990 to the present. Population development towards the northwest in Rathdrum has increased by marginally from 2,448 (2011) to 2,529 (2016).

The number of local residential and non-residential receptors surrounding the Site over the assessment period have been identified in Table 3.8. These have also been displayed in Figure 3.5 to 3.10. From 2009 there are 17 receptors in total. These are all within the 250-500m buffer, no receptors are within the 0-250m buffer from the Site. It is assumed that the receptors which are identified in 1993 were also present at the start of the rEIAR assessment period (1990).

Table 3.8: Third-party Local Residential and Non-residential Receptors Surrounding the Site from 1993 to 2021

Distance (m)	Type of Receptor	2021	2015	2011	2009	2000	1993
250-500	Residential	Yes	Yes	Yes	Yes	No	No
250-500	Residential	Yes	Yes	Yes	Yes	Yes	?*
250-500	Residential	Yes	Yes	Yes	Yes	Yes	?*
250-500	Residential	Yes	Yes	Yes	Yes	Yes	?*
250-500	Residential	Yes	Yes	Yes	Yes	Yes	?*
250-500	Residential	Yes	Yes	Yes	Yes	Yes	Yes
250-500	Residential	Yes	Yes	Yes	Yes	Yes	Yes
250-500	Residential	Yes	Yes	Yes	Yes	Yes	Yes
250-500	Residential	Yes	Yes	Yes	Yes	Yes	Yes
250-500	Residential	Yes	Yes	Yes	Yes	Yes	Yes
250-500	Residential	Yes	Yes	Yes	Yes	?*	Yes
250-500	Residential	Yes	Yes	Yes	Yes	?*	Yes
250-500	Residential	Yes	Yes	Yes	Yes	Yes	Yes
250-500	Residential	Yes	Yes	Yes	Yes	Yes	Yes
250-500	Commercial	Yes	Yes	Yes	Yes	Yes	Yes
250-500	Residential	Yes	Yes	Yes	Yes	Yes	Yes
250-500	Residential	Yes	Yes	Yes	Yes	N	?*

***?** Signifies that this receptor is not visible because of the limited extent/range of the aerial photographs.*

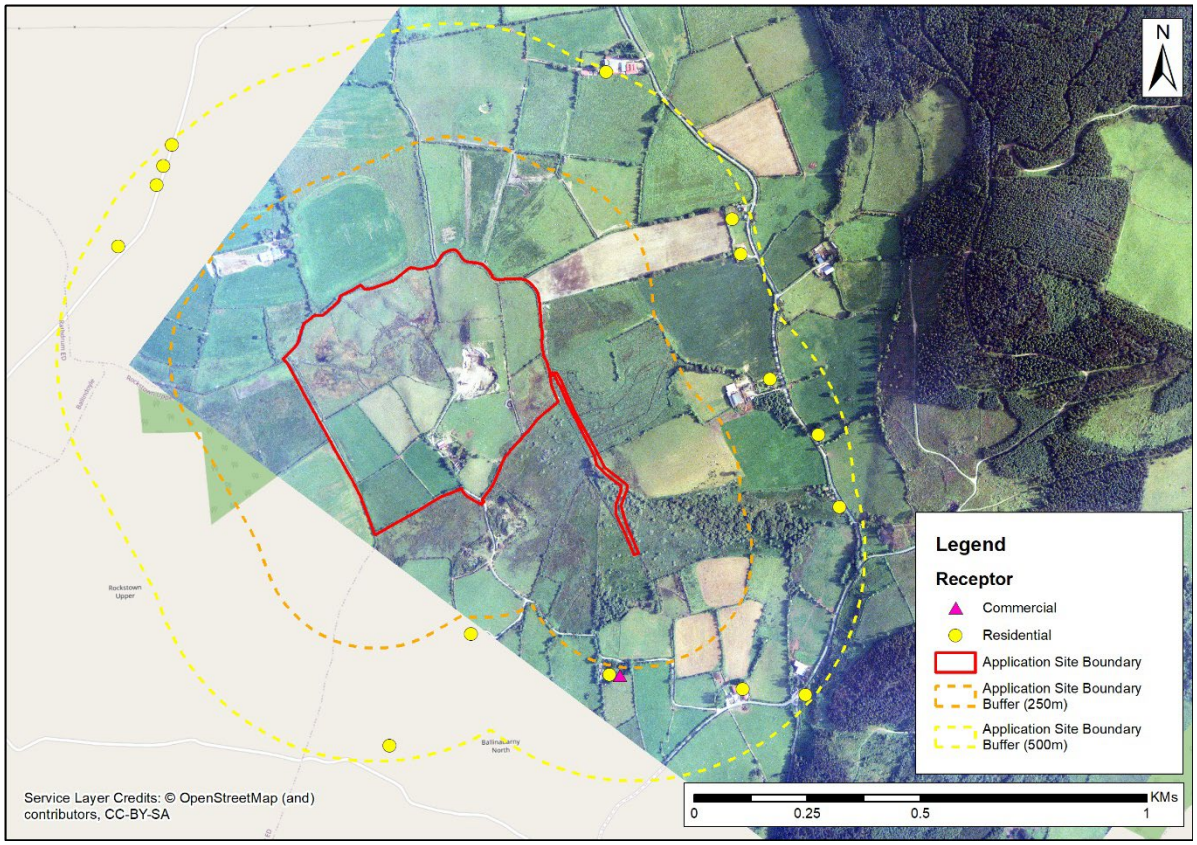


Figure 3.5: rEIAR Boundary with 1993 Aerial Image (underlying the Site) and Receptors within 250 m and 500m

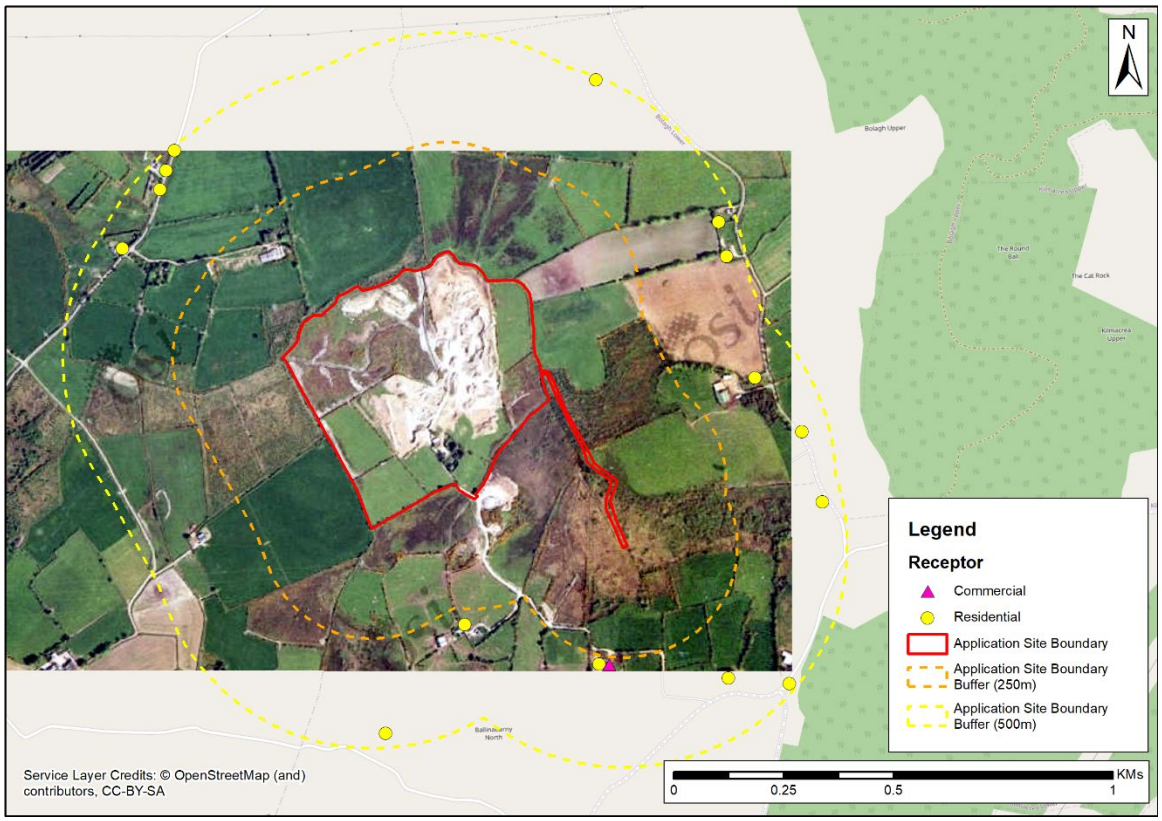


Figure 3.6: rEIAR Boundary with 2000 Aerial Image, and Receptors within 250 m and 500m.

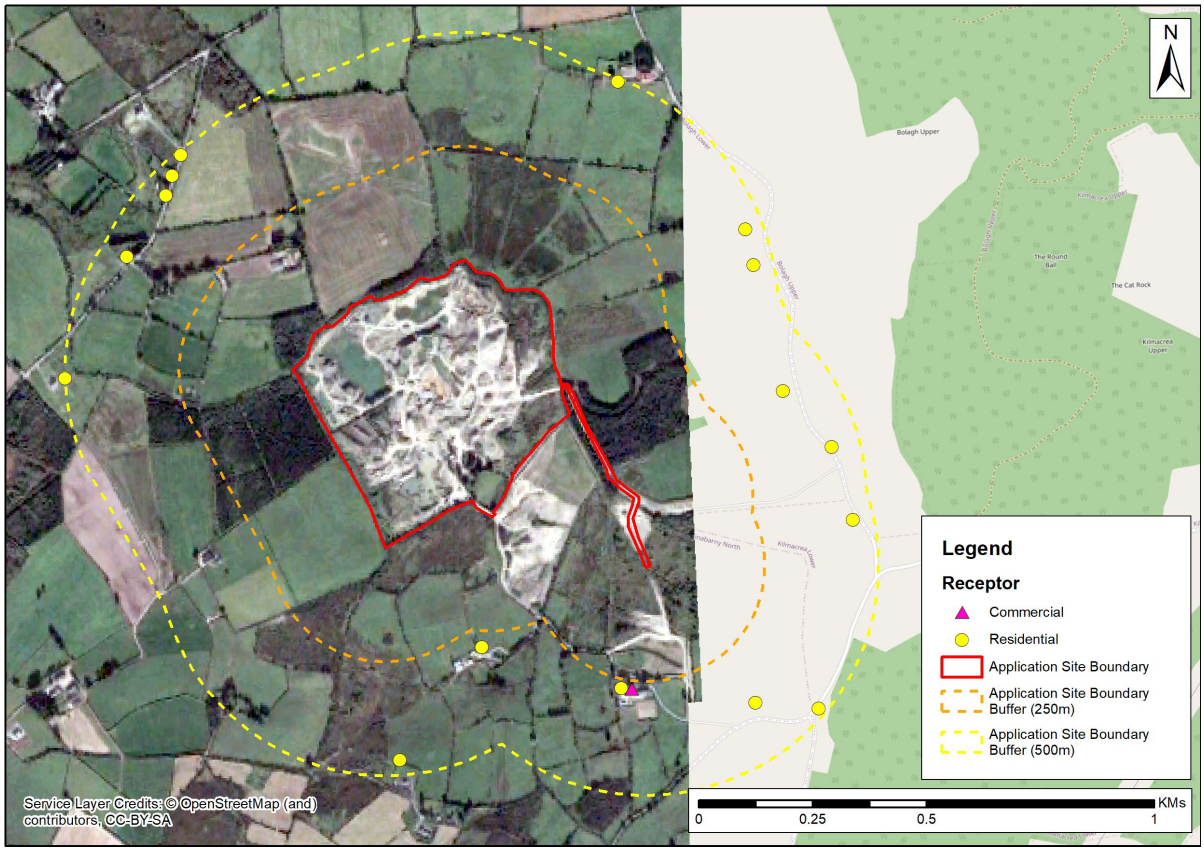


Figure 3.7: rEIAR Boundary with 2009 Aerial Image, and Receptors within 250 m and 500m.

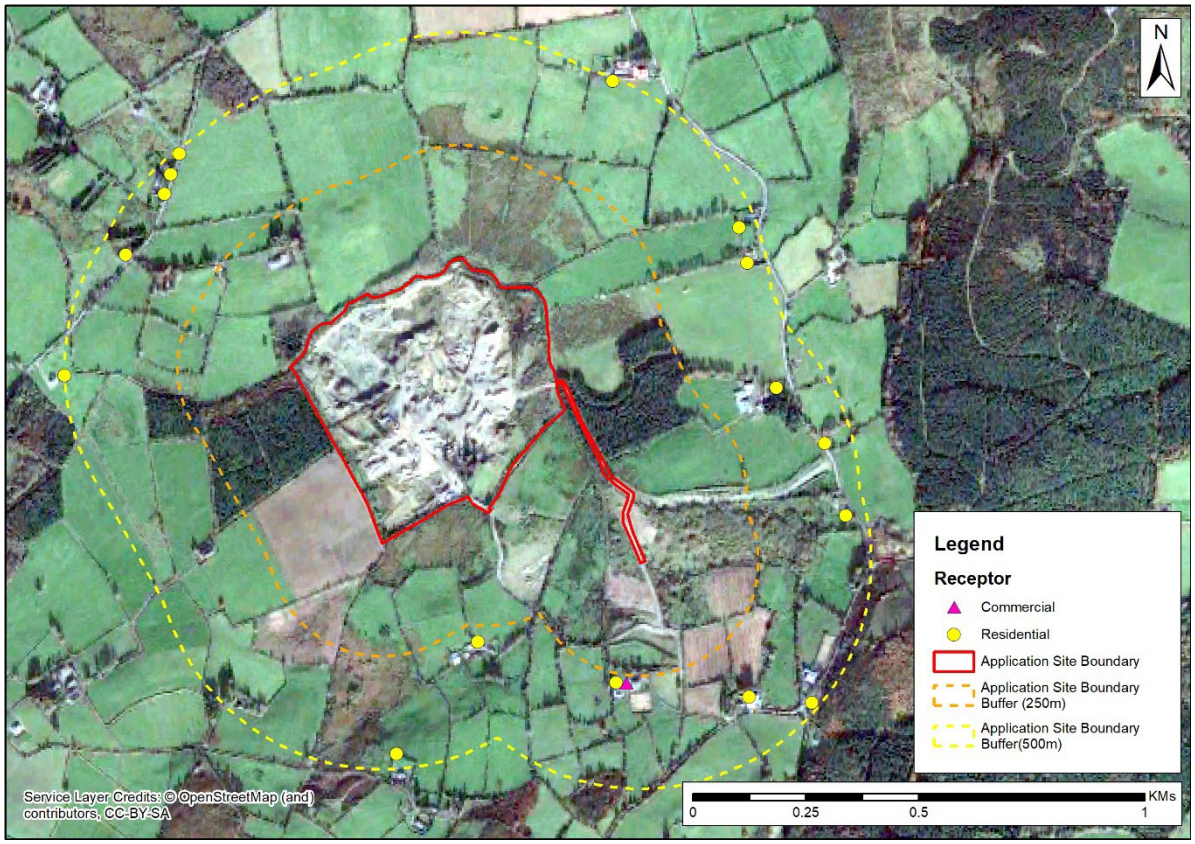


Figure 3.8: rEIAR Boundary with 2011 Aerial Image, and Receptors within 250 m and 500m.

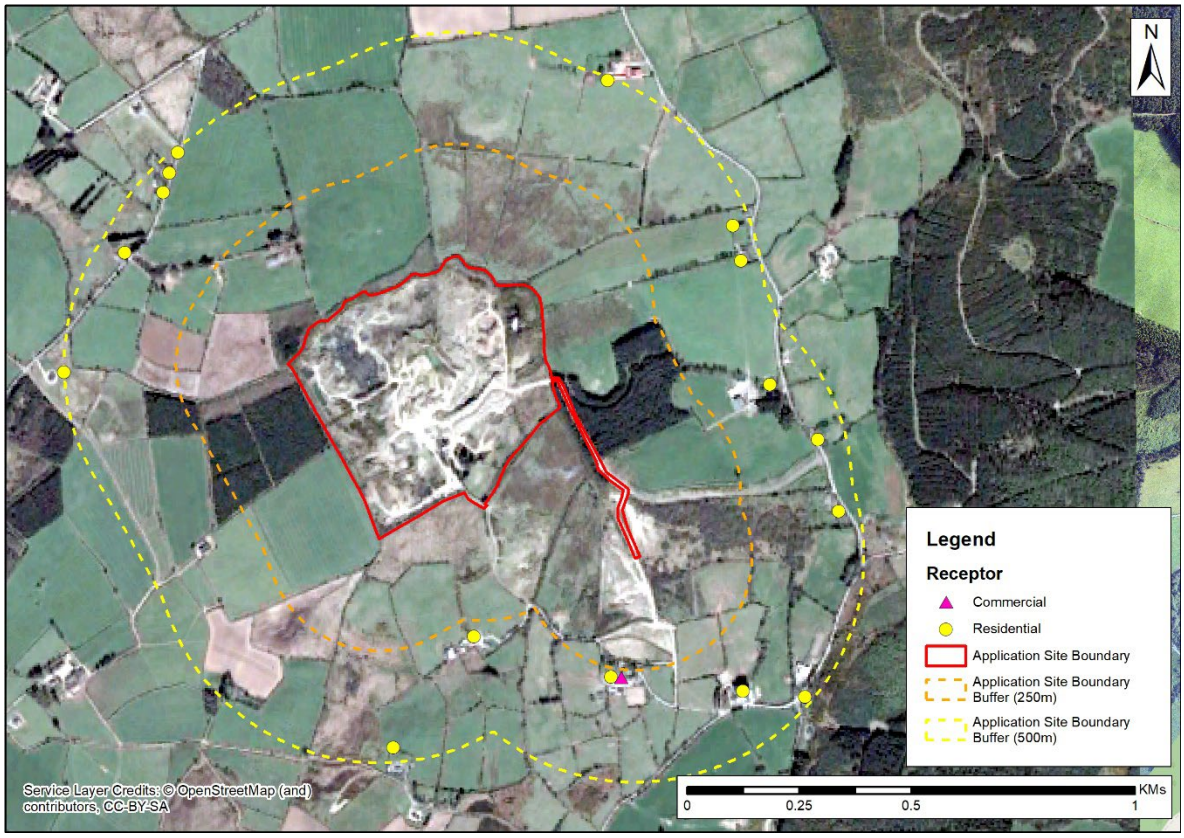


Figure 3.9: rEIAR Boundary with 2015 Aerial Image, and Receptors within 250 m and 500m

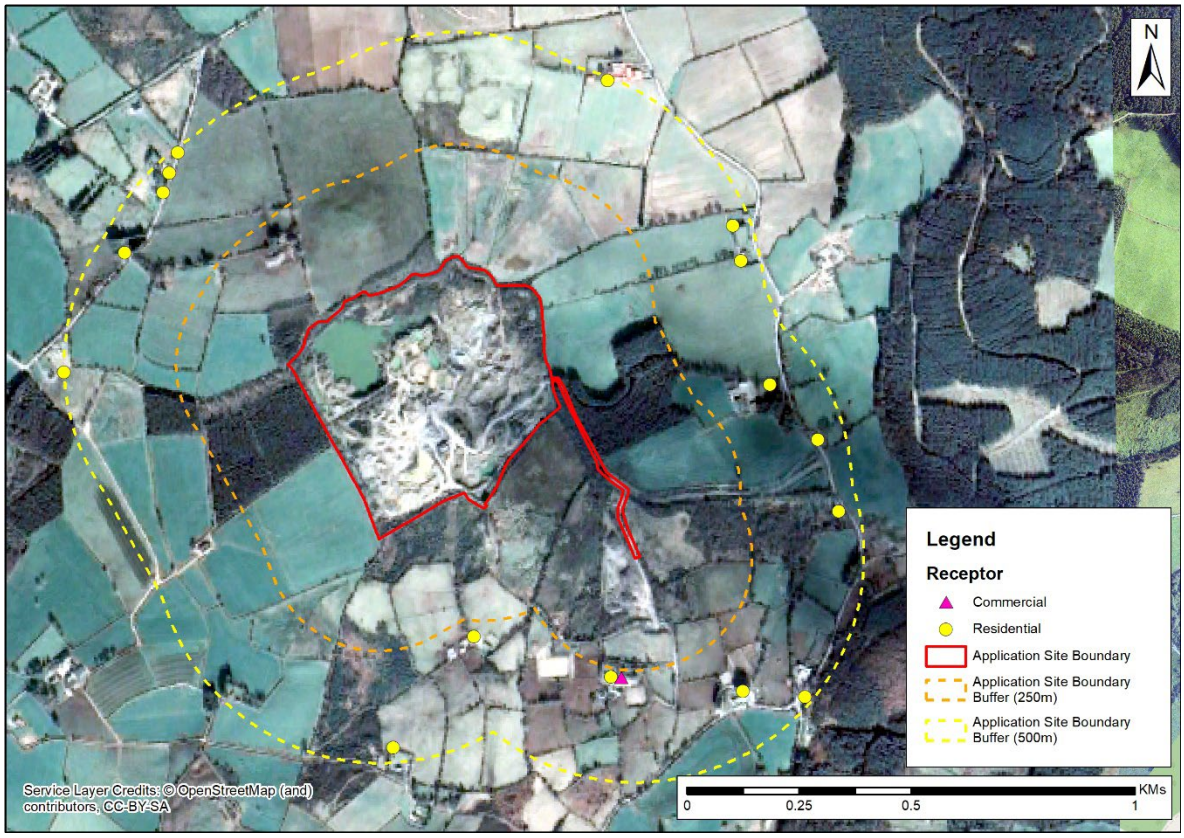


Figure 3.10: rEIAR Boundary with 2021 Aerial Image, and Receptors within 250 m and 500m.

3.3.2 Population

The lands subject to this rEIAR do not hold a resident population. The lands hold a sessional population in the form of workers at the Site. Impacts to such have been described in Section 3.3.3, Employment.

The Site is located within the ED of Cronebane, (CSO Area Code ED 15048), which has an area of 13.6 km^2.

Table 3.9 summarises population statistics for the State, Leinster, Wicklow and the Cronebane Electoral Division (ED). The percentage population increase has been calculated between the Census periods of 1991, 1996, 2002, 2006, 2011 and 2016.

Generally consistent increases in population were observed in the State, Leinster and Co. Wicklow over the Census periods, with Co. Wicklow having the largest growth from the periods 2002 – 2006 and 2006 – 2011. Subsequent lower rates of population increase were observed in the period of 2011 to 2016.

The population of Cronebane ED increased over the Census periods of 1991 to 2002. It outpaced the increase in county, provincial and national records as Tables 3.10 and 3.11 show. Again between 2002 and 2006 the population of Cronebane ED increased by greater proportions than was observed in the county, provincially and nationally, followed by a decline from 2006 to 2011. A decrease in population was observed between 2011 and 2016 within the Cronebane ED which was not consistent with increases in Co. Wicklow, Leinster and the State for that period.

The higher rates of population increase observed between 2002 and 2006 may be attributed to the economic growth of the mid 2000s and the consolidation of County Wicklow as a commuter region of Dublin.

Population data subsequent to 2016 is not available for the Cronebane ED. This will be released with publishment of the 2022 Census data.

Table 3.9: Populations Recorded during the 1991 to 2016 Census Period, (Central Statistics Office).

Area	1991	1996	2002	2006	2011	2016
State	3,525,719	3,626,087	3,917,203	4,239,848	4,588,252	4,761,865
Leinster	1,860,949	1,924,702	2,105,579	2,295,123	2,504,814	2,634,403
Co. Wicklow	97,265	102,683	114,676	126,194	136,640	142,425
Cronebane ED	354	423	444	494	478	469

Table 3.10: Population Dynamics (% change) from 1991 to 2016, (Central Statistics Office).

Area	1991 to 1996	1996 to 2002	2002 to 2006	2006 to 2011	2011 to 2016
State	2.85	8.03	8.24	8.22	3.78
Leinster	3.43	9.40	9.00	9.14	5.17
Co. Wicklow	5.57	11.04	9.56	7.95	4.15
Cronebane ED	17.76	4.84	10.66	-3.29	-1.9

A total of 16 No. existing third-party residential dwellings are found to be currently within 500 m of the Site boundary, none of these receptors are located within 250 m of the Site boundary. The number of residences is based on a field survey, a review of aerial photography during the assessment period, DCCAE Eircode mapping and a local authority planning permission search.

At baseline 1990 (assumed from 1993 aerial imagery Figure 3.5) there were 14 No. third-party residential dwellings found within 500 m of the Site boundary, the additional dwelling appears to have been built between 2000 and 2009 (Figures 3.6 & 3.7).

Population Age Distribution

Table 3.12 summarises the percentage population distribution by age for the State, Co Wicklow and Cronebane ED. The population age distribution percentages have been calculated for the available Census periods for the relevant population areas.

From a comparison of the increases in the age 0-14 and 30-44 demographics between 2011 and 2016 it is indicated that there was a decrease in younger families within the Cronebane ED as persons who were in the 0-14 group in 2011 are now in the 15-29 group; it is conceivable that some of these people have left the ED. Although the 30-44 age range was stable.

The size of the over 65 age group within the Cronebane ED decreased marginally, less than with those groups in Wicklow area and the State as a whole for the same period. Decreases in the proportional size of the 15-29 age group were also evident across the Cronebane ED, Co Wicklow and the State for the same period.

Table 3.11: Population Age Distribution, (Central Statistics Office)

Year	Area	% Aged 0-14	% Aged 15-29	% Aged 30-44	% Aged 45-64	% Aged 65+
2016	State	21.1	18.4	23.3	23.8	13.4
2011	State	21.3	20.5	23.7	22.7	11.7
2006	State	20.4	23.7	22.9	21.9	11.0
2002	State	21.1	24.4	22.1	21.2	11.1
1996	State	23.7	24.6	20.9	19.4	11.4
1991	State	26.7	24.0	20.2	17.6	11.4
2016	Wicklow	22.66	16.46	22.84	25.0	13.04
2011	Wicklow	22.81	18.66	23.88	23.67	10.98
2006	Wicklow	Not Available	Not Available	Not Available	Not Available	Not Available
2016	Cronebane ED	18.76	16.42	19.19	34.75	10.87
2011	Cronebane ED	15.48	24.9	19.87	30.13	9.62
2006	Cronebane ED	Not Available	Not Available	Not Available	Not Available	Not Available

Population Density

Table 3.12 summarises population densities for the State, Leinster, Co. Wicklow and the Cronebane ED. The population densities have been calculated between the Census periods of 1991, 1996, 2002, 2006, 2011 and 2016.

As expected from the increased populations, the population densities also increased in the State, province and county areas of the Census periods. Approximately corresponding increases were evident in Co Wicklow and the State owing to the influence of steady development of Wicklow in the past 30 years.

The population density of the Cronebane ED is still much lower than that observed in the State, Province and Co Wicklow which reflects the wholly rural nature of the area as it is located with no major towns in its vicinity.

Table 3.12: Population Density (persons per square kilometre) from 1991 to 2016, (Central Statistics Office)

Area	Size km²	1991	1996	2002	2006	2011	2016
State	70,273	50.2	51.6	55.7	60.3	65.3	67.8
Leinster	19,800	94.0	97.2	106.3	115.9	126.5	133.1
Co Wicklow	2,000	48.6	51.3	57.3	63.1	68.3	71.2
Cronebane ED	14	25.3	30.2	31.7	35.3	34.1	33.5

Households

Table 3.13 summarises the number of households and persons per household for the State, Co Wicklow and the Cronebane ED. The statistics have been calculated for the available Census periods of 2006 and 2016.

It can be noted that the increases and decreases in the average size of households are relatively consistent for the Cronebane ED, Wicklow, and the State for the same periods. Excluding for when Co Wicklow and the State gained a slight uptick in Average Number Persons per Household in the 2016 Census.

Table 3.13: Households from 2006 to 2016, (Central Statistics Office)

Area	2006			2011			2016		
	Household	People	Avg. No. Persons per Household	Household	People	Avg. No. Persons per Household	Household	People	Avg. No. Persons per Household
State	1,469,521	4,123,318	2.81	1,654,208	4,510,409	2.73	1,702,289	4,676,648	2.75
Co Wicklow	42,870	123,781	2.88	47,798	135,259	2.83	49,211	140,978	2.86
Cronebane ED	166	486	2.9	171	477	2.79	175	476	2.72

3.3.3 Employment / Local Economies

Employment at the Site

There is no consolidated methodology or practice for assessing the impact on employment in EPA guidance. The impacts of the Site on employment have therefore been assessed qualitatively based on the number of jobs which the Site has created. The Site has provided direct and indirect employment. Direct jobs include the workforce employed by the Applicant directly at the site during the assessment period. Indirect employment includes those created in the supply chain to provide input (e.g. fuels), specialist labour (e.g. contract drivers) and services (e.g. equipment maintenance) for the site and workforce.

The numbers of employees which the Site has directly employed over the assessment period has varied due to increases and decreases of demand for aggregate products from the construction industry. However, the Site has provided consistent employment for approximately 8 No. direct staff, with hauliers and other contractors and service employees generating secondary employment of a further 25 No. fulltime equivalents.

Principal Status

Table 3.14 summarises the employment status of the persons aged 15 years or older in Co Wicklow and the Cronebane ED. As identified in Table 3.11 this equates to 81.2% (2016) and 84.52% (2011) in the Cronebane ED and 77.3% (2016) and 77.2% (2011) in Co Wicklow. Similar and directly comparable data was unavailable for the period of 1990 to 2006, however it is considered that the cumulative employment status of the persons aged 15 years or older would be less than 2006 with a gradual rise exhibited in the data from 1990. The rise in the principal economic status would be owing to the economic growth up to that period and its peak in 2006/2007 prior to the economic downturn.

Between the periods of 2011 and 2016 it is evident that the percentage of those 'Unemployed having lost or given up previous job' has decreased within the respective populations, (Table 3.14). This is attributed to the rebound in the national economy following the banking crisis and recession prior to 2011. Cronebane ED has lower At Work population than the rest of Wicklow, however, recovery after 2011 is still observed. Though the unemployment rate has not yet returned to pre-recession levels.

Table 3.14: Principal Status of Persons 15 years and older in Co Wicklow and Cronebane ED, in 2006, 2011 and 2016, (Central Statistics Office)

Status	Co Wicklow 2006 (%)	Co Wicklow 2011 (%)	Co Wicklow 2016 (%)	Cronebane ED 2006 (%)	Cronebane ED 2011 (%)	Cronebane ED 2016 (%)
At work	57.87	50.16	53.68	47.52	47.78	51.97
Looking for first regular job	0.64	0.75	0.72	1.04	1.04	0.52
Unemployed having lost or given up previous job	4.45	11.27	7.09	9.4	12.53	11.02
Student	9.97	11.08	10.78	8.36	10.97	8.14
Looking after home/family	12.57	10.49	9.23	16.46	12.01	8.92
Retired	10.62	12.18	14.27	11.23	10.97	12.6
Unable to work due to permanent sickness or disability	3.51	3.85	3.85	6.01	4.7	6.82
Other	0.36	0.22	0.37	0	0	0

Employment Industry

Table 3.16 and Table 3.17 summarise the percentage of persons aged 15 years or older per employment industry in the State, Co Wicklow and the Cronebane ED. Given that Co Wicklow and the Cronebane ED are rural and not in the Greater Dublin Area (for the most part), it is expected that the percentage of the population involved in the 'agriculture, forestry and fishing' Census industry would be greater than the national averages. As seen from the data below, this is true for the Cronebane ED but not for Co Wicklow in general. The reasons for this situation may be because much of the county is unsuitable for agriculture and the northern section can be considered as part of the Dublin Commuter belt.

Employment industries where the percentage of persons in Cronebane ED are above the national average and that for Wicklow include; 'building and construction' within which the quarry land use would fall. Agriculture, forestry and fishing are more than double the state and county averages. Besides 'manufacturing industries', and 'Public Administration, which are in line with the national average, all other industries not mentioned are below the national average.

Wicklow County Development Plan 2010 [Chapter 7], states its Strategy, 'To promote the successful economic development and growth in employment of the County by' (inter alia):

- 'Providing the infrastructure and zoned land necessary to attract inward investment and growth in indigenous industry; and
- Supporting and facilitating to the highest degree possible (subject to environmental and other relevant planning considerations) all forms of employment generation.'

In terms of the ECT Sand & Gravel, it has played a role in fulfilling this Strategy, evidenced by the higher 'Building and construction' employment level as contrasted with the rest of the county.

Table 3.15: Percentage Persons in Work by Industry, 2016, (Central Statistics Office)

Industry	State (%)	Wicklow (%)	Cronebane ED (%)
Agriculture, forestry and fishing	4.4	3.49%	9.09%
Building and construction	5.1	5.89%	11.62%
Manufacturing industries	11.4	9.71%	11.11%
Commerce and trade	23.9	26.31%	20.71%
Transport and communications	8.5	8.60%	6.06%
Public administration	5.3	4.42%	5.56%
Professional services	23.5	23.39%	17.17%
Other	17.8	18.19%	18.69%

Table 3.16: Percentage Persons in Work by Industry, 2011, (Central Statistics Office)

Industry	State (%)	Wicklow (%)	Cronebane ED (%)
Agriculture, forestry and fishing	5.1	3.91%	7.10%
Building and construction	4.8	5.06%	8.74%
Manufacturing industries	11.6	10.75%	14.21%
Commerce and trade	25.2	28.24%	20.77%
Transport and communications	8.1	8.06%	5.46%
Public administration	6.3	5.45%	8.20%
Professional services	23.5	22.47%	18.03%
Other	15.3	16.06%	17.49%

Table 3.17: Percentage Persons in Work by Industry, 2006, (Central Statistics Office)

Industry	State (%)	Wicklow (%)	Cronebane ED (%)
Agriculture, forestry and fishing	4.6	3.25	Not Available
Building and construction	11.1	8.8	Not Available
Manufacturing industries	13.6	10.54	Not Available
Commerce and trade	27.1	14.07	Not Available
Transport and communications	5.5	4.72	Not Available
Public administration	5.2	19.92	Not Available
Professional services	16.5	16.57	Not Available
Other	16.3	22.12	Not Available

Local Employment Centres

As previously described, the Site is situated relatively close to the town of Rathdrum, west of the M11 Motorway. The Site is unambiguously rural in its setting with Rathdrum over 3km away. The area may be considered as moderately suitable for commuting to Dublin; Cronebane ED is approximately 75km in distance from the city centre – taking slightly over one hour to drive in non-rush hour traffic.

Public transport routes and the M11 motorway provide linkages and mildly strengthen the area's status as a commuter zone, though noting vehicular transport must be taken to a bus stop. The Bus stop is Barndarrig station ca. 10-minute drive from the Site. This Stop is served by privately owned Wexford Bus (No. 740 & 740a), therefore, over the decades that the Site has been in operation, little investment has been provided in public transport.

The Site is well positioned to serve the greater Dublin area and its location in a regional context has continued influence on the economic activity of the area. Such ease of access increases the attractiveness of the Site as a source of high value aggregate to meet the demands of the growing region. The ease of access also makes the area an ideal location for commuters with private cars.

There are no existing non-residential industrial/commercial premises found to be currently within 250 m of the Site boundary. One commercial premises (Oakwood Stables) was identified between 250 m and 500 m of the Site boundary. The number of these business premises are based on a field survey, a review of aerial photography during the assessment period, DCCAE Eircode mapping and a local authority planning permission search.

It is considered that given the nature of these businesses they could continue to operate without substantial harm if they were affected by a disruption from the Development.

3.3.4 Amenity

The subject lands do not offer amenity opportunities for the public being a private commercial enterprise. Please refer to Chapter 12.0 Landscape & Visual assessment for an assessment of the effect of the land use on the landscape of the area.

There are no community amenity lands or facilities within 500 m of the Site except for Oakwood Stables.

Infrastructure to the benefit of a wider population in the form of an upgraded N11/M11 has been in place since approximately 2015 and is described in Chapter 11 (Traffic).

Aerially, Avondale house and Forest Park are approximately 2.5km west of the Site.

Avondale House & Forest Park includes the Charles Stewart Parnell Museum. Over 500 acres of mature woodland with trees from all over the world including the tallest collection of Trees in Ireland. It has walking trails from an easy 1 hour walk to a tough 5 hour walks.

Other amenity areas surrounding the Site include the National Botanic Gardens at Kilmacurragh ca. 2.8 km to the north-east. This was once an arboretum and is now being replanted by the National Botanic Gardens, Glasnevin. A number of sport pitches exist within the townlands of Rathdrum and Balindarrig to the west and east, respectively (ca. >2.5 km from the Site).

Local clubs and amenity areas presented above are utilised by the wider Rathdrum and regional communities and not just limited to the local population of the Cronebane, indeed these amenities (notwithstanding Oakwood Stables) are not located in this ED.

There are no religious centres in the vicinity of the Site (i.e. within 1 km).

3.3.5 Land Use and Development Patterns

The rEIA boundary for the Site is approximately 23.7 ha in area. This comprises lands which are currently used for quarrying activities and agricultural lands are abutting the Site in all directions. The Corine Landcover classification for the area correctly bears the classification as 'Mineral Extraction Sites' which is typical of such sand & gravel quarries. The lands to the north, south, east and west are defined as 'Pastures', with a 'Coniferous forest' and 'Mixed forest' nearby to the east and northeast.

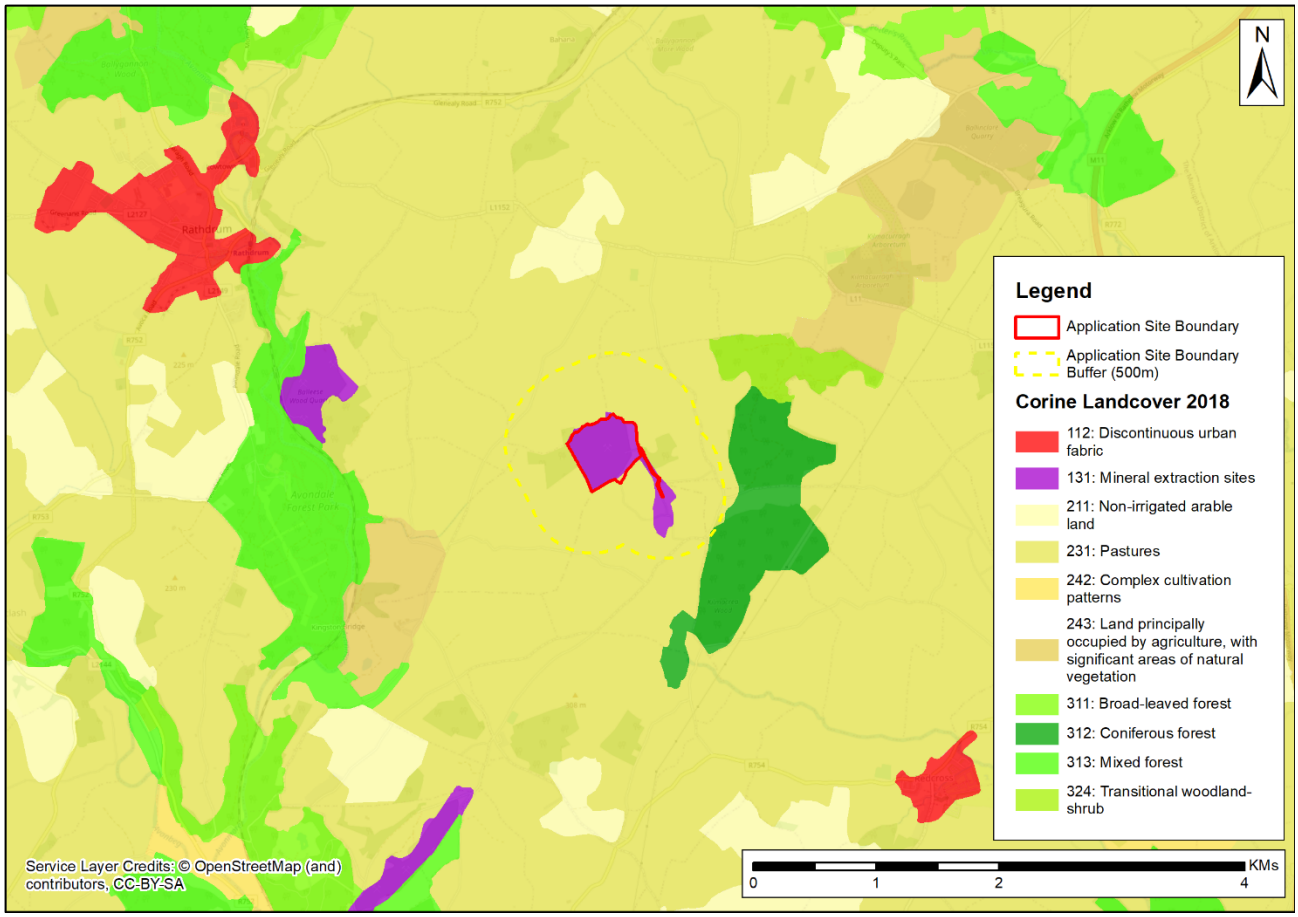


Figure 3.11: Corine Landcover Classification for the Site.

The lands surrounding the Site in all directions can be characterised as rural in nature, with land uses in the area being agricultural and single-house residential Dry cattle sheep rearing and grazing of horses are the main activities in the area, with further arable activities to the south-west. To the east of the Site is a Conifer Forest and a smaller mixed forest to its north. Ribbon residential development is present on the neighbouring unnamed Local roads.

The rural nature of the surrounding area with its agricultural influences was relatively consistent from the period of 1990 to the present. Since 1990 there has been no perceptible change in the Site's environs.

There are no waste licenced or IE/IPC Licenced facilities within 1 km of the Site. There are no waste licenced or IE/IPC Licenced facilities within a wider 5 km radius of the Site either.

Within 5 km of the Site, there is 1 No. consented Section 4 discharge:

- Avonmore Caravan Park, WPL/39, ca. 3.2 km northwest.

3.3.6 Human Health

Table 3.18 summarises the general health of persons by percentage for the State, Wicklow and the Cronebane ED for the 2016 and 2011 census periods. Similar and directly comparable data was unavailable for the period of 1990 to 2006 which presents as a difficulty in comparing Human Health earlier in the assessment period.

In the 2016 Census there was a greater percentage of persons in the Cronebane ED (87.86 %) who classified themselves as being in 'Good' or 'Very Good' health in comparison with the average for the State (87.0%), or Co Wicklow (89.08 %). In 2011, this figure was minutely lower in the Cronebane ED, however it should be noted that figures for 2016 and 2011 are generally consistent with 2016 displaying marginally more positive health outcomes as citizen's own perspectives.

The percentage of persons who classified themselves as being in 'Bad' or 'Very Bad' health in the Cronebane ED in 2016 (1.5%) was equal in comparison with the average for the State, or Co Wicklow (both 1.6 %). This figure was also on par for the State and Co Wicklow for the 2011 census period, (both from 1.4 – 1.5 %). Though Cronebane ED had lower 'Bad' health in 2011 (1.05%) with no 'Very Bad' health responses.

Table 3.18: General Health Percentage of the Population, (Central Statistics Office)

General Health	2016 State (%)	2016 Co Wicklow (%)	2016 Cronebane ED (%)
Very good	59.4	62.48%	57.57%
Good	27.6	26.20%	30.28%
Fair	8.0	7.44%	9.17%
Bad	1.3	1.15%	0.85%
Very bad	0.3	0.27%	0.64%
Not stated	3.3	2.47%	1.49%
General Health	**2011 State (%)**	**2011 Co Wicklow (%)**	**2011 Cronebane ED (%)**
Very good	60.3	63.08%	56.28%
Good	28.0	26.61%	29.92%
Fair	8.0	7.33%	10.88%
Bad	1.2	1.08%	1.05%
Very bad	0.3	0.22%	0.00%
Not stated	2.2	1.68%	1.88%

3.3.7 Health and Safety

ECT Sand & Gravel Ltd. are committed to health and safety at their operations. The Site Manager is and has been responsible for safety management on the Site, and this has been the management process for the assessment period. The Manager is also responsible for the working environment, traffic management, emergency procedures, first-aid arrangements and safe systems of work.

The Site is required to meet conditions of existing consents and certain statues. In particular, the relevant Health & Safety legislation (Safety, Health & Welfare at Work Act, 2005, the Mines and Quarries Act, 1965) and subsequent Health and Safety Regulations and Quarries Regulations relating to safety health and safety, training, appropriate site management.

The Site has operated in accordance with a site-specific safety statement and associated risk assessments. The operator maintains a Health and Safety File and facilitates site inspections by the Health and Safety Authority (HSA).

The Site is fully fenced with any agricultural entrance permanently closed and locked. Boundaries have been inspected at regular intervals over the life of the quarry and the quarry manager would action repairs as appropriate.

The only vehicular entrance in operation is that from the unnamed Local Road to the south of the Site. The lands are remotely secured via CCTV cameras with 24-hour monitoring. The site has alarm systems installed on the office, workshop and other enclosed buildings. The entrance to the Site is secured by a steel gate. There is no requirement for lighting outside of the subject lands but within the lands, certain working hours (after dark in winter periods) necessitate lighting that is extinguished when the site is closed thus causing no external light pollution.

3.4 Characteristics of the Development

The lands the subject of this rEIAR extend to approximately 23.7 ha. of a landholding in the control of the applicant. This Remedial Environmental Impact Assessment Report (rEIAR) has been prepared to accompany a substitute consent application for an existing quarry at Ballinabarny North and Bolagh Lower, Redcross, Co. Wicklow.

As stated above, the lands the subject of this rEIAR extend to 23.7 ha. that reflect historic operational site information including the extractable area declared under S.261 quarry registration in 2005. The quarry area that makes up the application for substitute consent planning unit currently extends to approximately 20.16 ha. at the centre of the EIA project area that is generally bounded by agricultural/forestry land in all directions. The northern EIA project boundary is demarcated by the as northern border of the Cronebane Electoral Division of which the Site is wholly part of.

The current quarry site is accessed from its southern boundary from the L5155 Local Road and has been accessed from that road. The current quarry void is centrally located in the northern section within the EIA unit and roughly square in shape. At the centre of the current quarry area is the processing plant area.

At baseline in 1990 the quarried area has been determined in the Land, Soils and Geology Section of this rEIAR to extend to 0.75 ha. and by 2022 to have expanded laterally to 20.16 ha.

3.4.1 Embedded Mitigation

The initial assessment of the significance of potential effects resulting from the Development takes into consideration any embedded design and implemented Site management practices undertaken during the assessment period of 1990 to 2022. These elements of the Development design and good working practices that reduce the potential for impacts to the surrounding human environment include the following:

- Site operations are managed in accordance with relevant health and safety legislation (Safety, Health & Welfare at Work Act (2005, as amended)); and the Mines and Quarries Act (1965, as amended)) and subsequent Quarries Regulations relating to safety health and safety, training, appropriate site management.
- Fencing is actively maintained at the Site to ensure that the risk of injury to civilians and livestock is minimised. The entrance gate is locked and controlled by the sites' management.
- Exposed edges in the quarry are fenced or protected with safety berms.
- The implementation of Site management practices to mitigate the impact to air quality, as identified in Chapter 7 of this rEIAR, including:
  - Use of wet suppression of dust during dry period, and the maintenance of physical screening of activities;
  - The design and nature of the Development is such that the floor of the quarry has gradually lowered during the assessment period which has resulted in the quarry face and benches providing natural screening; and
  - Use of wheel wash to minimise dust transmission from HGVs, and the covering of loads during drier periods.

- The implementation of Site management practices to mitigate the impact to noise, as identified in Chapter 8 of this rEIAR, including:
  - The design of internal haul roads is such as to have as low a gradient as possible so as to minimise excessive revving of vehicle engines on-site;
  - Reflecting normal practice and as declared on the S.261 registration form for the Site ref. QY39, operational hours for the Site are 07.30 to 18.00 hours Monday to Friday, and 07.30 to 14:00 hours on Saturday. There is no working on Sundays or Bank/Public Holidays;
  - The maintenance of bunds, as appropriate, to mitigate noise impacts at surrounding sensitive receptors;
  - Plant and equipment is shut down when not in use; and
  - The imposition of speed limits on site and the access road to reduce noise from moving plant and HGVs.
- The implementation of Site management practices to mitigate the impact to the water environment, as identified in Chapter 6 of this rEIAR, including:
  - Safe storage and handling of hazardous substances; and
  - Maintenance of equipment and plan to ensure there are no leakages of fuels, oils and potentially contaminating substances.
- The removal of soils was conducted in phases and remain on site as formed berms over the period of 1990 to 2022 to reduce the overall potential impact on the land use and underlying groundwater.

3.5 Potential Effects

The main potential impacts and associated effects that will be considered in the assessment relate to the following:

- Activities or events that might impact size, density and composition of the local population or community.
- Activities or events which may impact or disrupt local employment and businesses surrounding the Site.
- Activities or events which may impact local amenity including: tourism attractions, local sport and recreation areas, designated and undesignated community lands, and religious centres.
- Activities or events which could impact local land use including agriculture and other industry.
- Activities or events which could impact local populations or at-risk members of the local community. As identified in guidance documents from the European Commission and the Department of Housing, Planning and Local Government (DHPLG) the assessment of impacts on population and human health should focus on health issues and environmental hazards resulting from other environmental factors (those identified in Article 3(1) of the EIA Directive (2014/52/EU)), and does not require a wider consideration of human health effects which do not relate to those factors. The EPA's 2022 'Guidelines on the information to be contained in environmental impact assessment reports' also identify that *'the assessment of impacts on population & human health should refer to the assessments of those factors under which human health effects might occur, as addressed elsewhere in the EIAR e.g. under the environmental factors of air, water, soil etc'*;
- Activities or events which could impact persons employed at the site (direct staff and contractors) and members of the community, including non-motorised road users.

These potential impacts during the assessment period of 1990 to 2022 are considered and assessed in the following sections.

Given the nature of the rEIAR and the Substitute Consent process the potential impacts of a 'Do Nothing' scenario if the development were not operating during this period has not been considered.

The occurrence of major accidents and disasters has been considered in the Chapter 2 of this rEIAR.

3.5.1 Population

Potential impacts from the Site which may have affected local populations during the assessment period include nuisance from noise, vibration, dusts, landscape and visuals impacts, and impacts to groundwater. The potential extent of these will be limited to the local community surrounding the Site. However, the sensitivity of the local population is high. As identified in Section 3.2.5. a buffer zone of 500 m has been set from the rEIAR study boundary. Assessment of potential impacts to the population of this local community will be based on residents living closest to the Site and within this 500 m buffer area. These potential impacts have been assessed in the respective chapters of: Soils and Geology (Chapter 5), Water (Chapter 6), Air Quality and Climate (Chapter 7), Noise and Vibration (Chapter 8); and Landscape and Visual (Chapter 10).

A total of 16 No. existing residential dwellings are found to be currently within 500 m of the Site boundary, compared with 15 No. dwellings on the 1993 aerial for the Site. Of those identified in 2022, no residential receptors are located within 250 m of the Site boundary, none were also identified in 1993. It is noted that residential development and population in the Cronebane ED has increased and subsequently decreased during the assessment period, and is not in line with the State's or Wicklow's consistently growing population.

These receptors are valued with a 'High' sensitivity. Based on the assessment of environmental impacts (identified above) in other chapters of this rEIAR it is considered that the magnitude of impact on the population dynamics of the local community has been **low and adverse**.

The populations within the surrounding area have increased during the assessment period and it is considered that the Site has had a slight (adverse) direct or indirect impact on the population size, age distribution, density and household composition in the study area or in the Cronebane ED during the same period.

Employment levels at the Site have increased during the assessment period, however the potential direct impact on local population growth due to workers migrating to the area was **slight**.

3.5.2 Employment

Employment at the Site

The receptor which has potential to experience employment effects is the workforce at the Site and the surrounding area. This includes the construction industry and the local supply chain. No sensitivity values are assigned to receptors with potential to experience employment effects.

The numbers of employees which the Site has directly employed over the assessment period has varied due to increases and decrease of demand for aggregate products from the construction industry. In 1990 there were approximately 8 people employed directly and indirectly at the Site. Through the assessment period the Site has provided consistent employment for staff and during years of economic prosperity and this figure increased in line with strategic demand. Currently the Site continues to support approximately 8 employees direct and 25 indirect, including direct, staff, contractors and truck drivers.

There is also indirect employment in the supply chain to provide material, specialist labour and services for the workforce. In conclusion, given the size, nature and duration of the Site during the assessment period, and the creation of long-term employment in the surrounding area. The Site is considered to have a **low and beneficial** impact on employment.

Local Businesses

A total of just 1 commercial premises was identified within 500 m of the Site boundary in 1993 - 2022.

The commercial enterprise identified in the current surrounds of the Site is:

- Oakwood Stables Equestrian Facility

The Wicklow County Council Planning Map confirmed accuracy in compiling an accurate list of businesses in the locality of the Site over the assessment period. The rural nature of the surrounding area remained similar in terms of enterprises to its nature in 1990.

Given the distance from the Site and the nature of the one local business within the surrounding study area, it is considered that this business could continue to operate without substantial harm if affected by a disruption, thereby classifying them with a 'Low' environmental sensitivity value. During the assessment period it is considered that the magnitude of impact from the Site on this local business is negligible, leading to an overall impact of imperceptible significance.

Rural Enterprise

As there is no prescriptive guidance, a qualitative assessment of the potential impact of the Site on rural enterprises has been undertaken using professional judgement. The area is designated for rural development under its land use zoning objective. One agricultural land holding that operates as a rural enterprise has been identified within the study area. The main potential impact is likely to be from noise, vibration and dust and potential disruption of field drainage systems. It is considered that these practices have a low sensitivity and are of a nature which could continue to operate without substantial harmed if affected by disruption from the Development.

The Site has not created permanent changes to the spatial relationship of rural enterprises to any key infrastructure which could have result in damage to the enterprises and compromised its viability, therefore it is considered that the Development has had an impact of imperceptible significance during the assessment period of 1990 to 2022.

3.5.3 Amenity

As noted, factors such as air quality, noise nuisance, vibration, traffic and landscape and visual impacts can impact the amenity of an area. These issues have been assessed separately in the respective chapters of this rEIAR. Specific impacts on surrounding Material Assets have also been assessed in Chapter 12.

There are no community amenity lands or facilities within 500 m of the Site excluding Oakwood Stables. Community and amenity areas have been identified outside the study area. These lands include a number of sport pitches, a botanical garden and a historical house and forest park. Some of these areas have been enjoyed prior to the assessment period (pre-1990) while others have been developed and improved as the wider development of the Rathdrum area has progressed between 1990 and 2022.

These areas (which include local designated green space / community facilities) are considered valuable to the local communities and have been valued with a high environmental sensitivity. Given the distance of the amenity areas from the Site it is considered that they would have perceived a negligible and adverse magnitude of impact during the assessment period resulting in the slight significance of impact.

3.5.4 Land Use and Development Patterns

The subject quarry at Ballinabarny North and Bolagh Lower was first developed in the ca. 1940. Quarrying activities at the Site have gradually increased in the subsequent years. With respect to social considerations, there has been little or no change to local activities in the vicinity of the Site during the assessment period as a result of quarrying activities, with the mainstay of local activities being agriculturally based.

It is important to acknowledge that aggregate resources can only be worked where they naturally occur. The operation of the Site incorporated land take from surrounding agricultural lands for extractive use. The CSO's Census of Agriculture 2020 identifies that the Utilised Agricultural Area (UAA) in the county of Wicklow (excluding commonage) was ca. 103,225 ha.

These adjacent farmlands were compatible with grazing of livestock for dairy practices, thereby having a 'Medium' environmental sensitivity. The loss of ca. 19.42 ha of agricultural lands represents less than ca. 0.019% of the UAA in Wicklow – this figure may be further reduced considering the Site land is classed as a Mineral Extraction Site by Corine Landcover (Figure 3.11). This qualitative assessment of land-use impacts has been undertaken using professional judgement. Given the size of lands exploited for extraction during the period of 1990 to 2022 and the wide availability of such lands in the locality would suggest low sensitivity and it is considered that the magnitude of this impact would be negligible, affecting a small number of rural enterprises and would have little damage to these enterprises. The significance of impact has been classified as imperceptible.

Given the land use development objectives of succeeding Development Plans, and the extent and location of the Development, it is considered that these lands have a low sensitivity. It is considered that the magnitude of impact is low, leading to an assessment of slight (adverse) significance of impact.

3.5.5 Human Health, and Health and Safety

Human Health

Potential impacts to human health with regards to air quality include dust generating activities on the Site. Other impacts include increased concentrations of airborne particles and combustion emissions due to exhaust emissions from diesel powered vehicles/equipment used on-site and other vehicles accessing the Site.

Discharges to ground resulting from site activities can impact the underlying groundwater and soils environment and could have potential to impact on human health by introducing contamination to the environment, should this be present at the Site. Chapter 6 has identified that there is no hydraulic connectivity between existing water well users or Irish Water public mains water supply and the Application Site. Chapter 5 has not identified any likely contaminative land uses prior to quarrying that could have arisen in the mobilisation of contaminants.

Impacts to human health from excess noise and vibration on-site may result in; hearing loss and various vibration syndromes of workers from high level occupational exposure. Off-site impacts include the nuisance and effects on mental health in the surrounding residential receptors.

The companion chapters of this rEIAR define and asses the predicted impact of the development and set out mitigation measures from the perspective of discreet environmental factors. These chapters have determined that the assimilative capacities of those environmental factors are sufficient, with mitigation measures, to accommodate the Development. However, for this assumption to be drawn the mitigation measures set out in each chapter of the rEIAR must be implemented.

Air Quality

Potential air quality impacts to human health from the Development have been assessed in Chapter 7 (Air Quality and Climate) of the rEIAR. The factors relevant to human health considered in the assessment are the generation of fugitive and combustion emissions (dust, PM_{10}, $PM_{2.5}$, NO_2 and SO_2) from site activities.

Fine particulates such as $PM_{2.5}$ and PM_{10} have a potential for negative effects on human health and may arise primarily from vehicle emissions and may have arisen during the operation of the quarry. Of these finer particulates, the IAQM (2016)[1] guidance states that quarries are more likely to experience suspended dust in

[1] IAQM; Guidance on the Assessment of Mineral Dust Impacts for Planning, 2016;

the sub-coarse fraction (PM_{10}-$PM_{2.5}$) as opposed to the fine ($PM_{2.5}$) fraction. The suspension of fine particulates has been managed through the same mitigation measures employed for the management of deposited dust during the assessment period.

The assessment of traffic impacts predicted that vehicle movements associated with the historical operation of the Site has had a **negligible** impact on air quality concentrations.

Water

Site-specific groundwater quality data is not available for the Site in 1990, however it is noted that quarrying activities, were likely operating above the groundwater table based on aerial photographs.

Surface and groundwater quality has been reported during previous investigations in 2008, in 2016, 2017 and more recently in 2020 and 2021. Surface water is generally shown to be of good quality from 2020 – 2021 with no exceedances of the standard values during the 2020 and 2021 monitoring period. Orthophosphate, copper and hydrocarbons were all observed to be less than the limit of detection in the 2020-2021 surface water samples, showing an improvement on the previous monitoring in 2008 and 2016. Total suspended solids were also reported below the limit of detection at all sampling points with the exception of one downgradient location.

The results of sampling in 2008 indicated the groundwater was generally of very good quality. An exceedance of the drinking water quality threshold was recorded for manganese which is noted to be typically high in Irish groundwaters. Sampling in 2016 and 2017 reported elevated counts of faecal coliform, iron and manganese at specific locations. Groundwater samples collected in 2020 and 2021 were tested for a number of parameters at the UKAS accredited Element Materials Technology laboratory. exceedances of the EU Drinking Water Regulations for iron, manganese and ammoniacal nitrogen were recorded in some locations.

The main potential risks associated with the proposed continuation of quarrying activities at the Site to the water environment (and subsequently human health) are identified to be: the release of hydrocarbons to surface water and groundwater, and the use of the waste water facilities on-site. Chapter 6 recommends that the on-site water supply (DW1) should be routinely tested to assess ongoing suitability as the source of drinking water and that bottled water should be used if exceedances of the drinking water standards are observed

Whilst elevated concentrations have previously been identified in the samples taken, as set out above, there is no evidence of migration of contaminants from the Site in groundwater and therefore there is no perceived degradation of off-Site groundwater quality due to the activities at the Site. It is also noted that hydrocarbons were not detected in any of the 2020-2021 samples indicating good practices with regards to fuel management and vehicle maintenance at the Site. It is therefore considered that there has been no significant risk of water related impacts from the Site on the surrounding human health.

Noise and Vibration

The impact of the proposed development in terms of noise and vibration is assessed in Chapter 8 of this rEIAR. Noise and vibration can have direct impacts on human health (i.e. damage to hearing from long term exposure, and the development of vibration syndromes such as hand-arm vibration syndrome, vibration white finger or carpal tunnel syndrome). Such risks and impacts to employees are managed on-site through the health and safety management system and by the use of personal protective equipment during certain tasks (including hearing protection).

Noise and vibration from the Site can also have indirect impacts to surrounding residential developments through annoyance and effects on mental health.

Chapter 8 of this rEIAR sets out a detailed assessment of the noise impacts associated with the Proposed Development.

Noise monitoring undertaken indicates that while the quarry and the nearby recycling plant was in operation and audible during the noise surveys, the measured background noise level at each location of approximately 38 – 43 dB L_{A90} indicates that these sources are not having a significant noise impact in the wider area even when all plant was operated concurrently so that a worst-case noise level could be assessed.

The quarry noise at the nearest residential properties was and is significantly below the 55 dB(A) noise limit that applies to the quarry.

The World Health Organisation's (WHO) 'Guidelines for Community Noise'[2] documents details that protect the majority of people from being seriously annoyed during the daytime, with the outdoor sound level from steady, continuous noise not to exceed 55 dB L_{Aeq} in outdoor living areas. To protect the majority of people from being moderately annoyed during the daytime, the outdoor sound level should not exceed 50 dB L_{Aeq}.

Health and Safety

The Applicant and business owner has been ultimately responsible for the health and safety management of the Site. The predominant health and safety concerns for the human environment surrounding the Site relate to the possibility of humans and livestock straying into the quarry area and from excavation related activity at the Site.

With regard to the health and safety of workers on the Site, Health & Safety legislation in the form of the Safety, Health & Welfare at Work Act, (2005, as amended) was enacted during the assessment period, along with the secondary legislation or statutory instruments under the Act, such as the Safety, Health and Welfare at Work (General Application) Regulations 2007- 2020, and the Safety, Health and Welfare at Work (Quarries) Regulations 2008.

The applicant is committed to providing appropriate information, training and supervision to employees who will be operating at the Application Site, and their Safety Statement is reviewed annually at the Site.

The Site has confirmed that there have been no serious injuries or fatalities to employees, contractors or third-parties/members of the public during the assessment period of 1990 to present.

All site employees, contractors and subcontractors have been required to wear a minimum personal protective equipment (PPE) whilst on-site, these are steel toed boots and a high visibility jacket or vest. Other task specific PPE which has been used at the Application Site includes, safety glasses/goggles, hard hats, gloves and hearing protection.

The Proposed Development is well located and can be easily served by emergency services if required. The closest Accident and Emergency unit operates out of St Columcille's Hospital, Co Dublin. Fire emergency services for the Site operate from the relevant on call units in the Rathdrum and Wicklow Town area.

These staff and local populations are both valued with a 'High' sensitivity receptors. Based on the assessment of impacts (identified above) and embedded management measures employed at the Site it is considered that the operations have had potential for a negligible direct or indirect magnitude of impact on health and safety, with potential for an impact of slight significance.

[2] World Health Organisation (WHO), 1994, Berglund, B., Lindvall, T., and Schwela, D.H., Guidelines for Community Noise'.

Table 3.19: Evaluation of Initial Impacts and their Effect Significance

Receptor	Sensitivity	Source of Impact/Description of Change*	Impact Magnitude*	Level of Effect *
Local Populations / Communities	High	Stability in local population community size, age distribution, density and household composition due to nuisance environmental emissions from the Site.	Negligible (adverse)	Slight
Local Populations / Communities	High	Change in local population community size, age distribution, density and household composition due to quarry workers migrating to the area.	Negligible (adverse)	Slight
Local Employment	High	Provision of continuing employment at the Site over the period of 1990 - 2021	Low (beneficial)	Slight
Local Businesses	Low	Change and disruption to trading conditions for local commercial and industrial businesses.	Negligible (adverse)	Imperceptible
Rural Economies	Low	Impacts to rural enterprise from nuisance, changes in spatial relationship of such enterprises.	Negligible (adverse)	Imperceptible
Land Use and Development	Medium	Land take from rural agricultural enterprises.	Negligible (adverse)	Imperceptible
Amenity	Low	Nuisance impacts from factors such as air quality, noise, vibration, traffic and landscape and visual on community lands, sports and recreation areas, tourism.	Low (adverse)	Slight
Employees / Contractors	High	Health and safety management practices which may impact direct employees and sub-contractors on site.	Negligible (adverse)	Slight
Local Populations / Communities / Non-motorised Road Users	High	Health and safety management practices which may impact members of the public including non-motorised road users.	Negligible (adverse)	Slight
Human Health	High	Discharges and the introduction of contamination to the underlying groundwater thereby changing water quality.	Negligible (adverse)	Slight
Human Health	High	The generation of fugitive and combustion emissions (dust, PM_{10},	Low (adverse)	Slight

Receptor	Sensitivity	Source of Impact/Description of Change*	Impact Magnitude*	Level of Effect *
		$PM_{2.5}$, NO_2 and SO_2) from site activities thereby changing air quality.		
Human Health	High	Noise and vibration from Site activities impacting surrounding residential receptors through annoyance and effects on mental health.	Low (adverse)	Slight
Health and Safety - Employees / Contractors	High	Health and safety management practices which may impact direct employees and sub-contractors on site.	Low (adverse)	Slight

** Taking account of embedded mitigation*

3.6 Cumulative Impacts

There are no similar extractive industries within the study area (i.e. 500 m from the Application Site) which may contribute to cumulative impacts. The closest quarry is Baleece Quarry, located 2.5 km northwest of the Site.

Given the small nature and scale of the quarry, the fact that it is a sand and gravel operation with relatively low levels of extraction, and an agricultural baseline environment dominates the surroundings of the Site. It is considered that the Site provides an insignificant contribution of effects to the environs, therefore, it is considered that the potential cumulative air, noise and water effects on human health surrounding the Site are not significant.

As there were no other relevant plans or projects in the 500 m of the Site during the assessment period of 1990 to present, it is considered that in-combination effects as a result of the historical works with regard to other plans or projects is not significant.

3.7 Remedial Mitigation

No remedial measures other than those detailed in the below chapters of this rEIAR are required:

- Chapter 5 – Land, Soils and Geology, which include the implementation of recommendations from geotechnical appraisals;
- Chapter 6 – Water;
- Chapter 7 – Air Quality and Climate;
- Chapter 8 – Noise and Vibration;
- Chapter 10 – Landscape and Visual Impact; and
- Chapter 11 – Traffic.

3.8 Monitoring

The chapters identified in the above Section 3.7 have included for monitoring measures as appropriate (including water, air, noise, and vibration). On this basis, no specific monitoring was required in relation to population and human health during the assessment period of 1990 to present on the basis of the monitoring undertaken to date at the quarry.

3.9 Residual Effects

The assessment concludes that the existing development did not and does not give rise to significant adverse effects on human environment surrounding the Site during the assessment period of 1990 to 2022. In all cases the residual effect is no greater than slight and therefore overall, not significant.

3.10 Difficulties Encountered

There were no particular difficulties encountered in undertaking the assessment, however, there was no aerial photography available for 1990, hence the assessment also assumes that the receptors which are identified in 1993 were also present at the start of the rEIAR assessment period. There was a similar difficulty in identifying non-residential receptors surrounding the Site earlier in the assessment period.

With regard to the human health of the Cronebane ED, similar and directly comparable census data was unavailable for the period of 1990 to 2006 which presents as a difficulty in comparing Human Health earlier in the assessment period to more recent trends.

There is an absence of census data from the interim period of 2016 to the present.

No other particular difficulties were encountered in the preparation of this chapter of the rEIAR.

3.11 References

- Environmental Impact Assessments of Projects Guidance on the Preparation of the Environmental Impact Assessment Report (Directive 2011/92/EU as amended by 2014/52/EU). European Commission 2018.
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- Department of the Environment, Quarries and Ancillary Activities, Guidelines for Planning Authorities 2004.
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- HSA's 'Guidelines to the Safety, Health and Welfare at Work (Quarries) Regulations 2008.
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- L. Behan Aggregates and Recycling Ltd, Safety Statement and associated Site Specific Risk Assessments, Revision 08 January 2020
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- Wicklow County Council Development Plan, 2022-2028, Issues paper: Draft Wicklow County Development Plan 2021-2027.