

8 Climate

8.1 Introduction

This remedial Environmental Impact Assessment Report (rEIAR) has been prepared to accompany a substitute consent application for a disused quarry at Coolsickin or Quinsborough, Monasterevin, Co. Kildare (the Site). The Project is located within the administrative boundary of Kildare County Council, (KCC).

This chapter of the rEIAR has been prepared by WSP Ireland Consulting Ltd (WSP) and assesses the climatic impacts of the Project activities at the Site between 01 January 2000 and 31 December 2006.

Potential climate impacts can be generated through the following processes at the Site:

- Impacts of climate change on the Project, including the sensitivity, exposure and the overall vulnerability of the Project to impacts from relevant climate hazards; and
- Impacts of the Project on the climate.

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8.1.1 Technical Scope

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

8.1.2 Geographical and Temporal Scope

The assessment directly covers the physical extent of the EIA site boundary for the Site as shown in Figure 8-1. In the context of the rEIAR, the EIA boundary contains lands which form the disused quarry site and some areas which extend beyond the former working areas. The EIA boundary encompasses the substitute consent (the Planning Application) boundary, which is shown on the drawing set which accompanies the planning application.

The baseline for this rEIAR has been set to 01 January 2000, and the rEIAR process has assessed environmental impacts from that date to the present. This assessment period equates to approximately 6 years and is identified as 'short-term' duration (those lasting one to seven years).

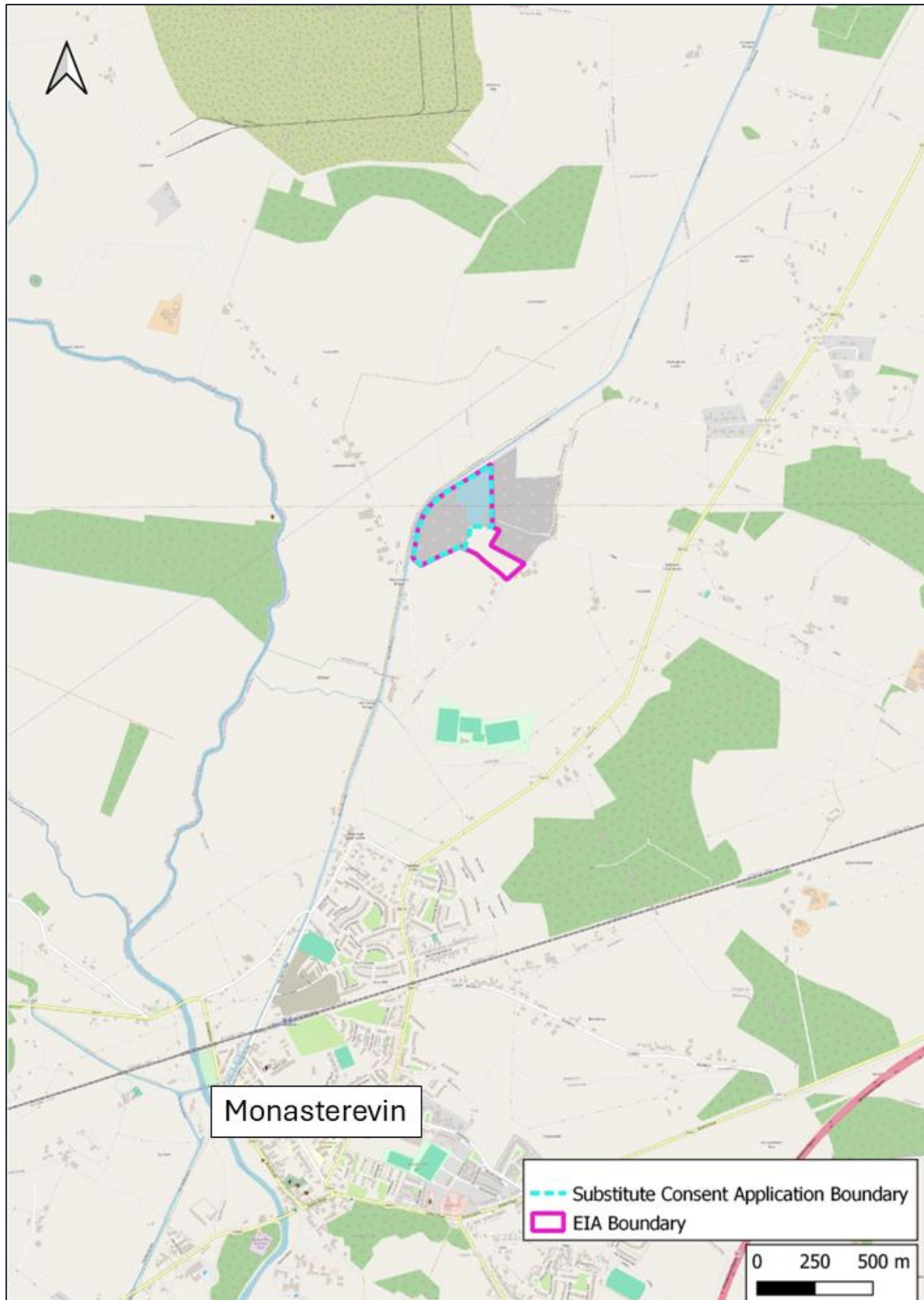


Figure 8-1 - EIA Boundary and Substitute Consent Boundary

8.1.3 Project Description Summary

The Project seeking substitute consent consists of extraction of sand, gravel and rock over an area of 7.87 ha through blasting, mechanical excavation and rock breaking along with aggregate processing and stockpiling. The Project was operational between the years 2000-2006.

A full project description is presented in Chapter 2 (Project Description).

8.2 Legislative and Policy Context

8.2.1 Legislation

Legislative references considered specifically for the assessment of climate from quarrying activities, and relevant statutory instruments in a planning context include:

- Directive 2014/52/EU of the European Parliament and of the Council, (amending Directive 2011/92/EU);
- European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018, S.I. 296 of 2018; and
- Planning and Development Regulations 2001 (as amended).

Relevant statutory instruments in the context of quarrying include:

- Mines and Quarry Act 1965, 7 of 1965.

8.2.2 Relevant Policies and Plans

8.2.2.1 National

National Climate Change Strategy 2000

The National Climate Change Strategy (NCCS), published in 2000, formed the basis for Government policy in relation to climate change during the assessment period. The strategy document set out a number of actions the Irish Government would undertake over the succeeding decade specifically intended to meet the requirements of the Kyoto Protocol.

NCCS required that action be taken across all sectors in order to meet the Kyoto target using economic instruments, comprising a variety of cross-sectoral measures, which used market processes to achieve objectives. These include measures to change prices of goods or services, and the development of markets (in carbon or greenhouse gas emissions) where they do not currently exist (Department of the Environment, Heritage and Local Government. 2000).

The NCCS' key relevant objectives include:

1. **Reducing greenhouse gas emissions:** The strategy aims to limit the increase in greenhouse gas emissions to 13% above 1990 levels by 2008-2012
2. **Implementing market-based instruments:** This includes taxation and the trading of greenhouse gas emissions to provide incentives for reducing emissions

3. **Sector-specific actions:** Measures are outlined for various sectors such as energy, transport, built environment, industry, agriculture, and waste management.

Kildare County Development Plans

- The Kildare County Development Plan (CDP) 1999 is the strategy document for County Kildare which covers most of the temporal scope of this assessment period. The key policies and objectives of this plan are listed in Section 2.5.1 of the Project Description (Chapter 2.0).
- The Kildare CDP 2005-2011 was adopted on 18 May 2005 and covers the temporal scope from this date to 31 December 2006. The key policies and objectives of this plan are listed in Section 2.5.2 of the Project Description (Chapter 2).

8.2.3 Relevant Guidance

This assessment has been made with guidance from the 'Guidelines on the information to be contained in environmental impact assessment reports', published by the EPA in May 2022.

Other guidance documents considered in this assessment include:

- European Commission; Climate Change and Major Projects, 2016; and
- IEMA; Assessing Greenhouse Gas Emissions and Evaluating their Significance, 2017.

8.3 Assessment Methodology and Significance Criteria

8.3.1 Assessment Aims

As identified above, the key objectives of this assessment are to assess:

- Impacts of climate change on the Project, including the sensitivity, exposure and the overall vulnerability of the Project to impacts from relevant climate hazards; and
- Impacts of the Project on the climate.

The assessment of the Project's vulnerability to climate change shall review published historical regional weather data to demonstrate the current climate impacts in the study area and will also consider any relevant events reported by site personnel.

Impacts of the Project on climate will consider GHG emissions calculation for the project life cycle and other aspects of the Project design that may impact emissions.

8.4 Baseline and Subsequent Conditions (January 2000 to December 2006)

8.4.1 Existing Environment

The quarry is reported to have been operated from approximately 2000-2006 and is no longer an active quarry. Project activities during the quarry life included:

- Stripping of soils and not economically valuable overburden from within the quarry void area and associated working areas and subsequently storage of this material within the Application Site.
- Extraction of sand, gravel and limestone rock through drilling, blasting, and mechanical breaking;
- Mobile crushing, and screening of the rock into specific aggregate sizes;
- Temporary stockpiling of screened aggregate prior to sale to market;
- Loading aggregate materials onto road trucks for sale and distribution; and,
- Dewatering of the quarry void during extraction for bedrock.

Information on the Project of the site as a quarry was obtained from various sources including local anecdotal knowledge, Kildare County Council Planning portal and mapviewer, geohive imagery and Kildare County Council section 261A quarry register.

8.4.2 Climate at the site

The Irish climate is subject to strong maritime influences, such as the Atlantic Ocean and the warm North Atlantic Drift, with the effects decreasing with increasing distance from the Atlantic coast. The climate in the area of the Site is typical of the Irish climate, which is temperate maritime. The closest Met Éireann station is located at Carlow Oakpark approximately 36 km to the south of the Site. The total annual rainfall for the area recorded in Long Term Average was 851.1 mm.

8.5 Characteristics of the Project

The Project is described in Chapter 2 (Project Description) and Section 8.4.1

8.6 Potential Effects

8.6.1 Climate change Impacts on the Project

To assess the potential effects of climate change on the Project the approach identified in European Commissions (2016) 'Climate Change and Major Projects' assessment guidance has been considered. Although the Project is not a 'major project', this method is considered suitable guidance for such a climate change impact assessment. In designing and planning of such projects the guidance seeks to consider both climate change adaption and mitigation measures. Adapting a project is to ensure adequate resilience is built into the design to cope with relevant climate change impacts, e.g. flooding. The assessment of project adaptations required first must assess the vulnerability of the Site and also the risk of impacts from relevant climate hazards.

Given the retrospective nature of the rEIAR, this assessment will conduct a routine review of climatic events during the assessment period and mitigation employed (if required) to abate any impacts.

Climate change factors such as ocean acidification, sea-level rise and storm surges and waves have been scoped out of this climate assessment. For the Project the most applicable climate variables and hazards to consider are:

- Increasing precipitation affecting groundwater levels;
- Fluvial flooding;
- The effects of colder weather extremes effecting site operations; and
- Potential drought conditions from prolonged heat.

Inputs to the Site include the raw materials required for Site function, i.e. water and imported fuels. The quarry site's outputs are the extracted aggregate and transport linkages, including access to and from the site to the local road network.

Incidents of increased groundwater levels and fluvial flooding in the region coincide with periods of higher precipitation. The monthly and average annual rainfall recorded at Naas (Osberstown) for the assessment period has been shown in Table 8-1.

The closest surface water feature to the Site under baseline conditions was the Grand Canal, which runs adjacent to the northwest boundary and is designated as a pNHA (see Chapter 4 – Ecology and Biodiversity). Any run-off event from the Site would likely have been absorbed by a dense hedgerow / treeline and a strip of grassland which separates the Site from the Grand Canal, or infiltrated to ground through the superficial sands and gravels, prior to reaching the Canal in any significant quantity.

A river-network surface water feature is identified on the EPA Mapviewer, to the west (ca. 0.5km) of the Site is the River Figile. The Ummeras Beg stream, a tributary of the Figile runs ca. 0.8km north of the Site. It is likely that any surface water flows within the vicinity of the Site will have flowed towards the northwest, towards the Grand Canal, under baseline conditions.

Table 8-1 - Monthly Rainfall Totals and Long-Term Averages

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Yearly Totals
2000	54	75	26	65	94	50	58	89	72	119	130	112	942
2001	41	47	37	66	38	49	58	67	23	72	21	24	542
2002	-	-	-	-	-	-	61	56	15	164	154	84	534*
2003	54	39	45	38	107	85	118	9	44	119	53	77	788
2004	104	27	49	50	35	49	30	113	60	119	48	55	739
2005	82	47	42	65	112	21	64	46	68	135	62	54	797

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Yearly Totals
2006	29	46	74	-	95	23	20	84	111	104	110	122	820*
Avg.	61	47	46	57	80	46	58	66	56	119	83	75	737
Long-Term Avg.	76	57	60	65	60	64	54	75	63	94	76	79	824

Table 8-2 - Sensitivity of the Project to climate hazards.

Sensitivity	Climate Variables			
	Fluvial Flooding	Precipitation and Groundwater Levels	Colder Weather Extremes	Heat/Drought
On-site assets	Low	Medium	Low	Low
Inputs to site (water, fuels, etc.)	Low	Medium	Low	Medium (water)
Outputs (rock, treated mine water)	Low	Low	Low	Medium
Transportation Linkage	Low	Low	Medium	Low
Highest Sensitivity Score	Low	Medium	Medium	Medium

Table 8-3 presents an assessment of the Project in relation to the climate change events during the assessment period, with consideration of any embedded mitigation which have been built into the Project during the assessment period.

Table 8-3 - Exposure of the Project to future climate change

Exposure	Climatic Variables			
	Fluvial Flooding	Precipitation and Groundwater Levels	Colder Weather Extremes	Heat / Drought
Climate Events during the assessment period	Low	Low	Low	Low
Highest Score	Low	Low	Low	Low

The combination of the Site's 'Sensitivity' and 'Exposures' have shown, overall, that the Site has been at 'Low' risk from climate hazards (Table 8-4), which is considered to be **Not Significant**. Adaptions have been inbuilt into the Site as the area of extraction is the most exposed to potential climate impacts. Good site management in terms of groundwater monitoring and the management of site excavations and run-off management during very extreme rainfall events have been incorporated into the design and operation of the quarry site. Following the implementation of these mitigation measures the overall impact from climate hazards at the site is considered to be '*Imperceptible*'.

Table 8-4 - Overall vulnerability of the Project to relevant climate change events

Vulnerability		Exposure (Current & Future Climate)		
		Low	Medium	High
Sensitivity	Low	Fluvial Flooding	-	-
	Medium	Precipitation & Groundwater Levels Colder Weather Extremes Heat /Drought	-	-
	High	-	-	-

8.6.2 Impacts on Climate from the Project

The Project is not considered to be of a sufficient scale to have had the potential to impact the regional or local climate in any significant manner. In addition, the operation of plant and traffic movements at the Site have been screened out of the assessment as they are

considered to have an insignificant effect on the local air quality (refer to Chapter 7 Air Quality).

The Site has not had any significant effects on local prevailing weather conditions, nor has the Project increased the potential of flooding in the surrounding area.

Quarry operations during the assessment period had the potential to result in a loss of soil organic carbon in form of CO₂. Given the small area of stripping that occurred the liberation of soil organic carbon and impact on the climate is considered to be '*Imperceptible*' adverse.

Therefore, the historical impacts on climate and climate change are considered to be **Not Significant**.

8.7 Remedial Mitigation and Monitoring

No remedial measures to address potential impacts to climate during the assessment period are required. No monitoring is proposed as part of this rEIAR.

8.8 Residual Effects

The assessment concludes that the Site did not give rise to significant adverse effects to the climate during the assessment period of 01 January 2000 to 31 December 2006. In all cases the residual effect is therefore considered to be **Not Significant**.

8.9 Cumulative Effects

Assuming other developments in the area have incorporated widely adopted good design, practice and mitigation measures it is considered that there has been no significant cumulative effects of the Project with other developments in the locality. Therefore cumulative effects are considered to be **Not Significant**.

8.10 Difficulties Encountered

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

8.11 References

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