8 CLIMATE

8.1 INTRODUCTION

This remedial Environmental Impact Assessment Report (rEIAR) has been prepared to accompany a substitute consent application for an existing quarry at Hempstown Commons, Co. Kildare (the Site). The development 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 previous activities relating to the development and operation at the Site between 30 December 2019 and the present day.

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

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

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 existing quarry site and some areas which extend beyond the 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 29 December 2019, and the rEIAR process has assessed environmental impacts from that date to the present. This assessment period equates to approximately five years and is identified as 'short-term' duration (those lasting one to seven years).

Figure 8-1 - Site location and EIA boundary

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

National

The 2024 Irish Climate Action Plan (CAP24) is a comprehensive roadmap designed to guide Ireland towards achieving its climate goals. This plan is the third annual update since the introduction of the

Climate Action and Low Carbon Development (Amendment) Act 2021, which legally binds Ireland to reduce its greenhouse gas emissions by 51% by 2030 and to reach net-zero emissions by 2050.

Key Objectives and Strategies:

- Emission Reductions: CAP24 outlines specific measures to halve Ireland's emissions by 2030. This includes sectoral emissions ceilings for key sectors such as electricity, industry, built environment, transport, and agriculture;
- Carbon Budgets: The plan aligns with the economy-wide carbon budgets and sectoral emissions ceilings agreed upon by the government in 2022. These budgets set limits on the total amount of greenhouse gases that can be emitted during a specific period; and
- High-Impact Actions: A new approach to the Annex of Actions has been implemented, focusing on high-impact actions that are crucial for meeting climate targets. This ensures that the most effective measures are prioritized.

Sector-Specific Measures:

- Electricity: Transitioning to renewable energy sources and enhancing grid infrastructure to support increased renewable capacity;
- Transport: Promoting electric vehicles, improving public transport, and encouraging active travel like cycling and walking;
- Built Environment: Enhancing energy efficiency in buildings through retrofitting and adopting sustainable construction practices; and
- Agriculture: Implementing sustainable farming practices and reducing methane emissions from livestock.

The plan emphasizes the importance of governance and accountability, with a framework for ministerial accountability and oversight of government actions. It also highlights the need for public engagement and a just transition, ensuring that the shift to a low-carbon economy is fair and inclusive.

County Kildare

- The Kildare County Development Plan 2017-2023 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 2.7.5 of the Project Description (Chapter 2); and
- The Kildare County Development Plan 2023-2029 was adopted on 9th December 2022 and covers the temporal scope from this date to present day. The key policies and objectives of this current plan are listed in Section 2.7.6 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:

- Kildare County Council; Climate Change Adaptation Strategy, 2019 – 2024;
- Climate Action Plan, 2019, 2021, 2023 and 2024;
- 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 development, including the sensitivity, exposure and the overall vulnerability of the development to impacts from relevant climate hazards; and
- Impacts of the development on the climate.

The assessment of the development'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 development on climate will consider GHG emissions calculation for the project life cycle and other aspects of the development design that may impact emissions.

8.4 BASELINE AND SUBSEQUENT CONDITIONS (2020 TO PRESENT)

8.4.1 EXISITING ENVIRONMENT

The existing operational quarry has been in use since the mid 1940's and has been registered under Section 261, Planning & Development Act 2000 (Quarry Ref. No. QR 39) and subsequent planning permission for continuance of use for quarrying activities was granted under PPR No. 07/443 ABP ref PL09253383. The Site comprises land currently used for quarrying activities.

The lands surrounding the Site can be characterised as rural in nature, with land uses in the area being agricultural and single-house residential. Quarrying and aggregate extraction are practiced in the adjacent lands to the north of the Site and more widely to lands further to the southwest. The quarries located in the Blessington area are a major source of aggregate used in the production of construction material in the Greater Dublin region. The boundaries of the land comprise hedgerows and areas of scrub. There are other commercial sites operating in the vicinity of the Site, with a precast concrete company and a sand and gravel quarry operating directly adjacent to the Site. There are also scattered residential properties in the vicinity of the Site, primarily along the Local Road L6030.

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 Casement Aerodrome approximately 11 km to the north of the Site. The total rainfall for the area recorded in 2019 was 865.3 mm.

8.5 CHARACTERISTICS OF THE DEVELOPMENT

The rEIAR has been prepared to accompany a substitute consent application for an existing quarry located in the townland of Hempstown Commons, Co. Kildare. A detailed Project Description has been provided within Chapter 2 of this rEIAR. The lands, which are the subject of this rEIAR (EIA boundary) extend to 18.45 ha. The quarry area that makes up the application for substitute consent planning unit currently extends to approximately 10.05 ha.

Activities at the Site involved the extraction of rock (greywacke and shale) using various excavation techniques, such as drilling & blasting and rock-breaking. Blasting of rock was periodically undertaken during the review period.

8.6 POTENTIAL EFFECTS

8.6.1 CLIMATE CHANGE IMPACTS ON THE DEVELOPMENT

To assess the potential effects of climate change on the development the approach identified in European Commissions (2016) 'Climate Change and Major Projects' assessment guidance has been considered. Although the development 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 adaptions 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 development 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.

The sensitivity of various aspects of the development have been assessed in Table 8-1 with regards to the relevant climate hazards identified. On-site assets include any structures and accessible aggregate within the Site footprint.

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 average annual rainfall recorded at Casement Aerodome from 1964 to 2023 has been shown in Figure 8-2.

A river-network surface water feature is identified on the EPA Envision Mapviewer (IE_EA_09R020300) ca. 650 m to the northwest of the Site and flows to the north to the River Liffey. The Hempstown Stream (IE_EA_09G090950) flows 1.4 km to the southeast of the Development area before it flows to the Poulaphouca Reservoir. As the Site is located far up gradient from these surface water features it is not anticipated to be at risk of fluvial flooding and surface water run-off will not flow from the site due to the inwards sloping nature of the floor and faces of the extraction area.

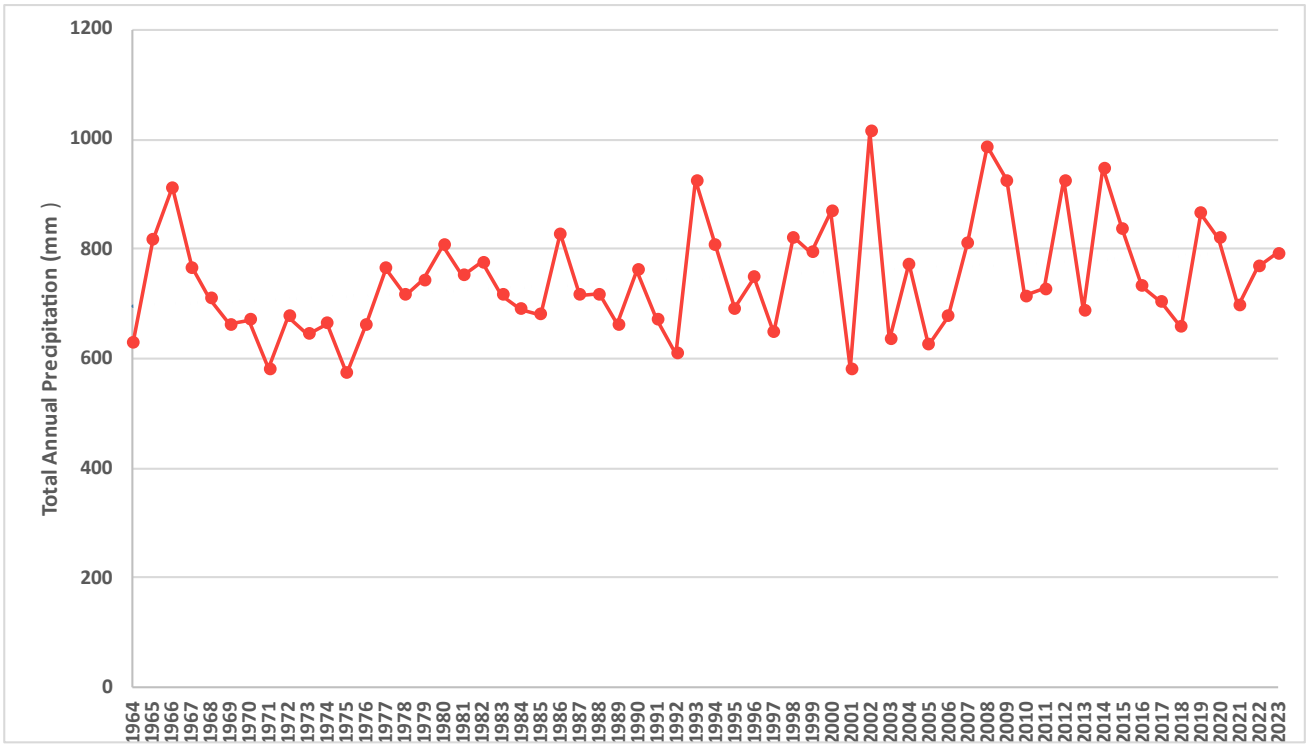

Figure 8-2 - Annual precipitation recorded at Met Eireann Casement station from 1964-2023.

Table 8-1 – Sensitivity of the development 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 8-2 presents an assessment of the development in relation to the climate change events during the assessment period, with consideration of any embedded mitigation which have been built into the Development during the assessment period.

Table 8-2 – Exposure of the development 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 8-3), 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 8-3 – Overall vulnerability of the development 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 DEVELOPMENT

The development 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 has 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 Development 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 CO_2. 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 MEASURES REQUIRED

No remedial measures to address potential impacts to climate during the assessment period are required.

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 of29 December 2019 to present. In all cases the residual effect is therefore considered to be **Not Significant**.

8.9 CUMULATIVE EFFECTS

The cumulative effects associated with other permitted / under construction third-party developments have been considered in Chapter 15 of this rEIAR. Cumulative effects are considered to be **Not Significant**.

8.10 MONITORING

No monitoring is proposed as part of this rEIAR.

8.11 DIFFICULTIES ENCOUNTERED

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

8.12 SUMMARY AND CONCLUSIONS

This assessment considers the potential impacts and effects of the Development on the surrounding climate over the assessment period from 29 December 2019 to present.

The main receptors that could be affected by changing climate due to activities undertaken at the Site through the review period were identified and potential effects were assessed.

The assessment concludes that the assessment and combination of the Site's climate 'Sensitivity' and 'Exposures' have shown, overall, that the Site is at a Low risk from climate hazards, 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 good 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 have been '*Imperceptible*'.

8.13 REFERENCES

Department of the Environment, Climate and Communications. 2022. Climate Action Plan 2023.

European Commission. 2016. Climate Change and Major Projects

EPA. 2022. Guidelines on the information to be contained in Environmental Impact Assessment Reports.

IEMA. 2017. Environmental Impact Assessment Guide to: Assessing Greenhouse Gas Emissions and Evaluating their Significance.

Kildare County Council (2023) Kildare County Development Plan 2023-2029.