8

CLIMATE

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8.1 INTRODUCTION

This remedial Environmental Impact Assessment Report (rEIAR) has been prepared to accompany a substitute consent application for an existing quarry at Philipstown and Red Bog, 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 September 2020 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 September 2020, and the rEIAR process has assessed environmental impacts from that date to the present. This assessment period equates to approximately three and a half years and is identified as 'short-term' duration (those lasting one to seven years).

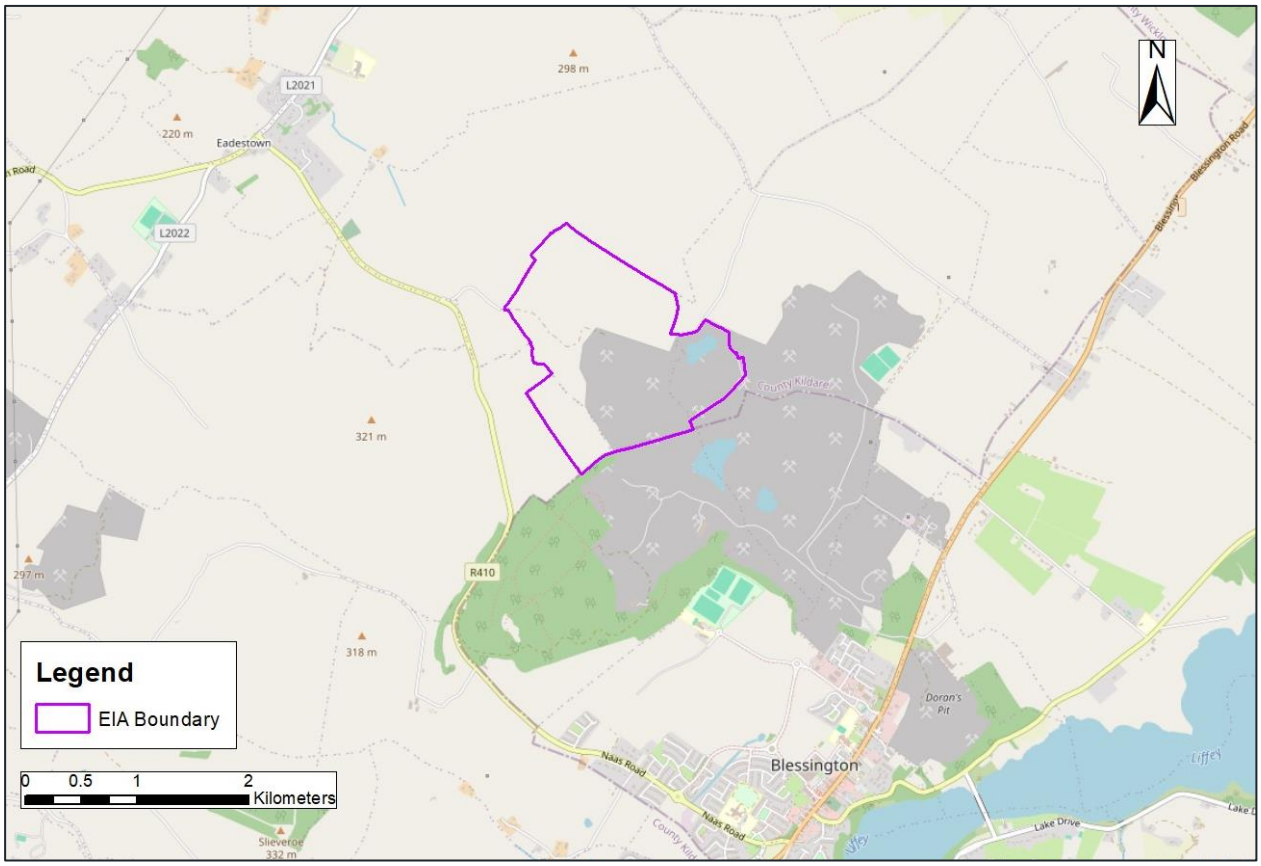

Figure 8-1 - Site location and EIA boundary

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 PLAN

National

The Climate Action Plan 2023 aims to transition to a decarbonised economy and achieve net zero greenhouse gas emissions by 2050. This plan targets key economic and strategic areas and identifies actions required to enable the State to meet the 2050 targets. The plan outlines the

current state of play across key sectors including Electricity, Transport, Built Environment, Industry and Agriculture and charts a course towards the decarbonisation targets.

Climate change is a threat for humanity and requires a comprehensive international response to address the impacts. Mitigation will be a major challenge to our society and the Climate Action Plan identifies the central priority that climate change will have in the political and administrative systems in our country in the future.

The plan acknowledges concern that recent growth in emissions, particularly from Industry, Agriculture, and Transport put the State on a trajectory to be over 25% off target for the next 2021-2030 accounting period. This emissions growth is driven entirely by increasing economic activity and demonstrates how highly correlated industry emissions still are with economic activity.

A detailed agenda of transition and change in these industries is required to ensure that the sectors are climate resilient and can remain competitive in a decarbonising world. Such an agenda will include:

- Improving energy efficiency of processes, buildings and transport;
- Replacing fossil fuel with renewables in their processes, buildings and transport;
- Improving the way in which resources are used in their supply chain to reduce emissions and conform to circular economy principles;
- Being innovative across production, distribution, and marketing to realise the opportunities arising
- Developing the new skills and techniques necessary; and
- Developing measures of the climate and environmental impact of activities which will become more widely expected in the marketplace.

County Kildare

The Site is within the administrative boundary of Kildare County Council (KCC). The Kildare County Development Plan 2023-2029 (KCDP) acknowledges that mineral reserves are generally located within the rural area, and that the nature of the extractive industry is such that the industry must be developed where those resources occur.

The Plan also recognises that the industry can have damaging environmental effects and states that permission will only be granted where KCC is satisfied that residential and natural amenities will be protected, pollution will be prevented, and aquifers and groundwater safeguarded.

To ensure this, KCC notes that planning applications must account for potential environmental impacts as stated in their Mineral Resources & Extraction Industry Policy, as follows:

- **RD P8:** Support and manage the appropriate future development of Kildare's natural aggregate resources in appropriate locations to ensure adequate supplies are available to meet the future needs of the county and the region in line with the principles of sustainable development and environmental management and to require operators to appropriately manage extraction sites when extraction has ceased.

To support the KCDP, KCC has adopted the following objective in relation to climate within the extractive industry:

- **RD 048:** Manage the finite aggregate resources being mined by the extractive industries in the county to supply the future needs of our region while working to reach our climate change targets.

KCC has adopted policies in the KCDP in relation to the protection of climate. KCC objectives which are relevant to the climate assessment include:

- **CS 02:** Ensure that the future growth and spatial development of County Kildare provides for a county that is resilient to climate change, enables the decarbonisation of the county's economy and reduces the county's carbon footprint in support of national targets for climate mitigation and adaption objectives as well as targets for greenhouse gas emissions reductions.
- **CS 08:** Support the implementation of Kildare's Climate Change Adaptation Plan in conjunction with relevant stakeholders.

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, 2023
- European Commission; Climate Change and Major Projects, 2016
- 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 EXISTING ENVIRONMENT

The existing operational quarry has been in use since the 1950's and has been registered with Section 261, and subsequent planning permission for continuance of use for quarrying activities was granted under PPR No. 07/267. The Application Site comprises land currently used for quarrying activities and adjacent pasture lands.

The lands surrounding the Site to the north and west can be characterised as rural in nature, with land uses in the area being agricultural and single-house residential. Glen Ding woods are located in the lands further to the south-west are defined as forestry and a semi-natural area. Quarrying and aggregate extraction are widely practiced in the adjacent lands to the east and south. The sand and gravel pits in the Blessington area are a major source of sand & gravel used in the production of

construction material in the Greater Dublin region. The boundaries of the land owned comprise hedgerows and areas of scrub. There are scattered residential properties in the vicinity of the Site, primarily concentrated to the north of the site along the Local Road L6038-1, and to the west of the Site along the R410 and unnamed local roads.

8.4.2 CLIMATE AT THE SITE

The Irish climate is subject to strong maritime influences, 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 Eireann station is located at Casement Aerodrome, Baldonnell, Co. Dublin, ca. 10 km north-northeast of the Site.

Monthly parameters recorded have been displayed in Chapter 7 of this rEIAR (Air Quality), these include minimum, maximum and mean air temperature, m rainfall, minimum grass temperature, wind speed and highest wind gusts.

8.5 CHARACTERISTICS OF THE DEVELOPMENT

The rEIAR has been prepared to accompany a substitute consent application for an existing quarry located in the townlands of Philipstown and Redbog, Co. Kildare. The lands the subject of this rEIAR (EIA boundary) extend to 95.8 ha. The quarry area that makes up the application for substitute consent planning unit currently extends to approximately 71.9 ha.

Activities at the Site involved the extraction of both rock (greywacke) and sand and gravel using excavation techniques. There was no blasting of rock undertaken over the review period. The extraction activities continued to take place above the water table with dry quarrying of the sands and gravels and rock.

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 Development 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 Aerodrome from 1964 to 2023 has been shown in Figure 8-2.

A river-network surface water feature is identified on the EPA Envision Mapviewer (Deerpark 09) ca. 700 m to the south the Site and flows to the southeast to the Poulaphouca Reservoir (Blessington lake). An unnamed river network feature (IE_EA_09L010400) flows ca. 500 m west of the Development area and also joins the 'Deerpark 09' feature 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.

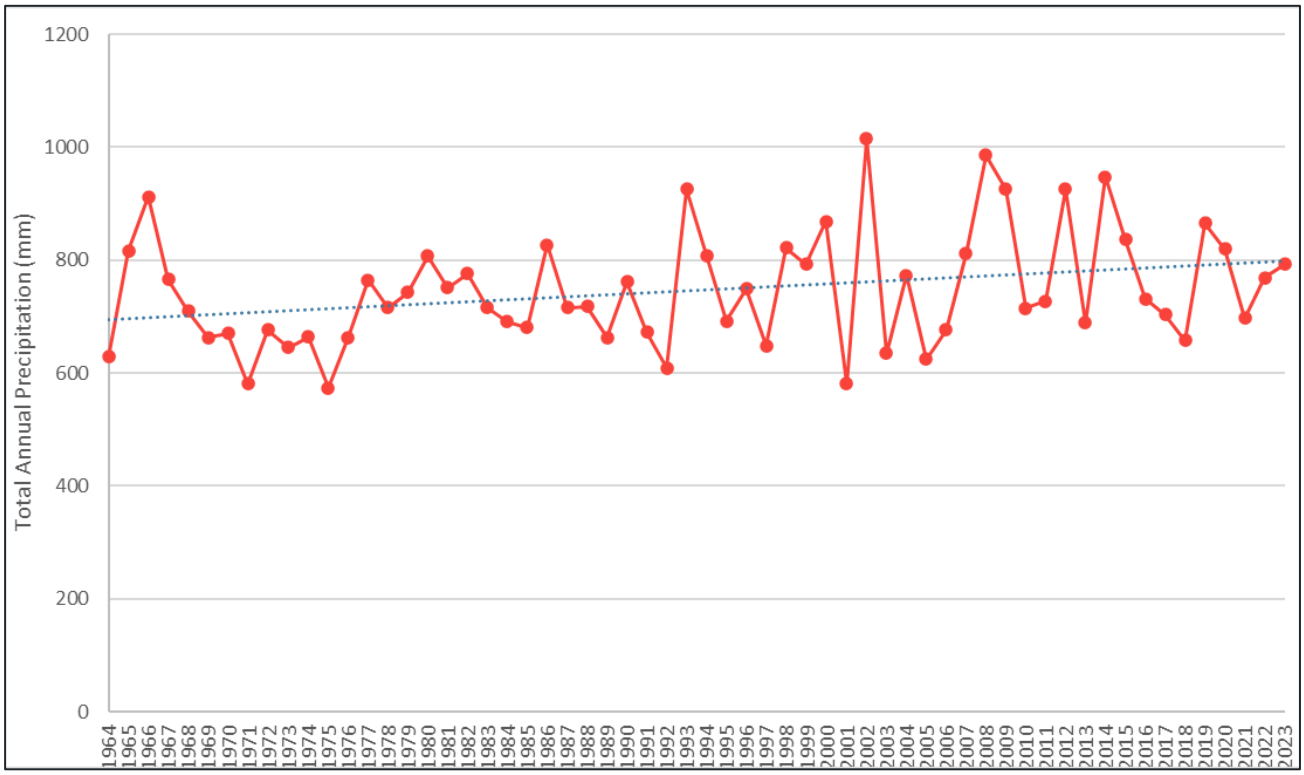

Figure 8-2 - Average annual precipitation recorded at the Met Eireann Casement station from 1964-2023.

Table 8-1 -: Sensitivity of the development to relevant 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 (greywacke, 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 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 a *'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 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 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 are estimated to have generated on average less than 50 kt CO_2e per annum during the assessment period.

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 (approximately 1.5 ha, Chapter 5 Land, Soils and Geology), the liberation of soil organic carbon and impact on the climate is considered to be 'imperceptible' adverse.

Furthermore, the proposed planting regime at the Site and the conceptual restoration of the land is considered to have positive '*Imperceptible*' impacts on the climate during and post development.

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

8.6.3 HUDSON BROTHERS LTD ENVIRONMENT POLICY

HBL has committed to achieving and maintaining industry leading environmental standards and consider environmental management to be a priority. HBL has aimed for continuous improvement with regard minimising the environmental impact of their activities, conserving mineral and energy resources, reducing their visual impacts and minimising waste generation. They seek to exists as a good neighbour and have an open communication policy on environmental performance.

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 Development did not give rise to significant adverse effects to the climate during the assessment period of September 2020 to present. In all cases the residual effect is **Not Significant**.

8.9 CUMULATIVE EFFECTS

The impacts identified during the assessment period were mitigated by design or good practice. Effects from the Site in isolation have been deemed in all instances to be **Not Significant**.

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 Development with other similar developments in the locality.

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 September 2020 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*.