Contents

Tables

Introduction

16.1 All of the reasonably predictable significant impacts of the proposed development and the measures in place to mitigate them are outlined in the EIAR. However, for any development with the potential for significant environmental impacts there is also the potential for interaction amongst these impacts. The result of these interactions may either exacerbate the magnitude of the impact or ameliorate it. The interaction of impacts on the surrounding environment is required to be addressed as part of the Environmental Impact Assessment process.

16.2 Article 3 of Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment as amended by Directive 2014/52/EU of the European Parliament and of the Council of 16 April 2014 amending ('EIA Directive') stipulates that:

'The environmental impact assessment shall identify, describe and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a project on the following factors: (a) population and human health; (b) biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC; (c) land, soil, water, air and climate; (d) material assets, cultural heritage and the landscape; (e) the interaction between the factors referred to in points (a) to (d).'

16.3 Table 3.4 of the EPA (2022) Guidelines on the information to be contained in Environmental Impact Assessment Reports also recommends that the potential for 'synergistic' effects, i.e. whereby a potential impact of greater significance can arise than the sum of two individual impacts.

Interaction of Environmental Factors

16.4 Where relevant, the interaction between various environmental topic areas, are already addressed within each of the individual assessment or chapters of this EIAR. For example, there are clear overlaps between the land, soils and geology assessment and the hydrological conditions at the site. The purpose of this chapter is to draw attention to significant interactions and interdependencies between one topic and another where they may otherwise be missed.

16.5 **Table 16-1** provides a matrix to examine the main interactions and interdependencies between specific environmental sensitivities given the findings of the preceding chapters of the EIAR. A supporting commentary is provided below, which explains the main interactions of note between the environmental topic areas in the context of the application site / proposed development, and effectively provides a check to ensure that no potential for interaction of impacts has been overlooked in the individual assessment.

16.6 A matrix method has been used, in which the environmental components addressed in the previous Chapters of this EIAR have been placed on both axes of a matrix. Where interactions potentially arise between two environmental components, the intersection square along a row or column of the matrix in **Table 16-1** is shaded green.

16.7 Full details of the significance of the effects and the relevant interactions of the environmental aspects along with any proposed mitigation are discussed within each of the individual preceding Chapters which included:

- Chapter 4 Population and Human Health;
- Chapter 5 Biodiversity;
- Chapter 6 Land, Soils and Geology;

- Chapter 7 Water (Hydrology and Hydrogeology);
- Chapter 8 Air Quality;
- Chapter 9 Climate;
- Chapter 10 Noise and Vibration;
- Chapter 11 Material Assets;
- Chapter 12 Cultural Heritage;
- Chapter 13 Landscape;
- Chapter 14 Traffic; and
- Chapter 15 Major Accidents and Disasters.

Population and Human Health

16.8 Potential effects on human health should be considered in relation to relevant pathways (such as air, soil and water) and should be considered in the context of accepted standards for exposure, dose or risk. Opportunities for enhancing wellbeing as a result of the proposed development should also be considered.

16.9 This EIA Report indicates that the proposed bio-renewables facility could proceed with acceptable emission limits for noise and dust emissions, while potential effects on soil and water could be adequately addressed through good environmental management practices and mitigation measures to avoid accidental spillages of fuel, etc.

16.10 The key matters in relation to amenity are noise, dust, landscape and traffic. As previously noted, this EIA Report has established that the proposed development can proceed within acceptable levels for noise, dust and traffic effects.

16.11 Existing screening berms (c. 4-6m in height) for the quarry site and hedge/tree vegetation already bound the southern and western boundaries of the application site. These will assist in mitigating potential adverse views, and noise or dust disturbance to the local population.

16.12 The proposed development takes advantage of its rural, agriculturally dominated surrounds to ensure provision of a local supply of agricultural waste and byproducts and a mutually positive relationship whereby agricultural operators can secure sustainable solutions for management of waste / byproduct streams and diversify their activities.

16.13 The support for agricultural diversification is considered to be a positive for cultural heritage as it provides opportunities for continued viability of traditional local land uses.

16.14 The design proposals themselves include inherent measures such as odour abatement technology and management techniques to minimise the potential for adverse interactions with local residents.

16.15 The traffic assessment undertaken during the EIA process and described in Chapter 14 concludes that the road infrastructure is capable of carrying the projected traffic associated with the proposed development.

Biodiversity

16.16 There will be minimal habitat loss as a result of the proposed development being entirely located within the footprint of the existing quarry. The ecological assessment set out in Chapter 5 of the EIAR provides details on proposed measures to protect any potential bat population as a result of the planned demolition of the existing quarry store building. The

landscape team has consulted with the biodiversity specialists to ensure the maximum ecological benefits are achieved from boundary landscaping proposals.

16.17 The land and soil, water, noise and air assessments have been undertaken with reference to accepted guidance on the acceptability of impacts in relation to human and ecological receptors, and all available mitigation measures are incorporated to the design and operation of the proposed development to minimise the potential impacts to these receptors even further.

Land, Soils & Geology

16.18 Bedrock geology underlying the site has high potential economic value, however, this will be minimally disturbed as a result of the proposed development. The status of the site as a proposed Natural Heritage Area (pNHA, site code 000959) due to the presence of unique limestone pavement and calcareous grassland in these areas will not be impacted and no existing geological exposures will be lost.

16.19 No potential impacts on human health via land use, soils and geology pathways have been identified, and the potential links between geology / hydrogeological and water pathways have been considered in Chapter 7.

16.20 Standard best practice construction and drainage management mitigation measures will be implemented at the site to manage any accidental fuel or oil leaks that could cause interactive impacts between ground and other environmental features.

Water (Hydrology and Hydrogeology)

16.21 Chapter 7 of the EIAR identifies possible hydrological pathways for the mobilisation of any potential contaminants that could arise as a result of the proposed development. The water assessment provides a fundamental basis of the ecological assessment and the potential for impacts at ecologically sensitive sites.

16.22 Based on an assessment of the component activities entailed in the proposed development the key management actions to ensure that the potential leakage of any soils/contaminants (such as hydrocarbons) into these pathways are identified.

16.23 The water assessment also interacts closely with the population and human health assessment, both in terms of avoiding the potential of any contaminants entering a hydrological pathway and causing harm to human health, but also by ensuring that the quality of water for health and sanitary uses on site is of the standard required for human health and by ensuring that activities on site will not impact on water availability or quality for the local community (e.g. reducing in local surrounding wells). Potential flooding risk and appropriate drainage solutions are identified in Chapter 7 are important considerations for local human receptors, material assets and possible climate change vulnerability.

Air Quality

16.24 The main air quality impacts are associated with the potential for dust emissions due to the demolition, earthworks and general construction at the proposed development, potential emissions from HGVs during both stages of the development and process emissions during operation of it. The potential for dust arisings is assessed in relation to established guidelines on the acceptability of dust levels. Numerous mitigation measures are proposed to ensure that any potential for impacts on local residents and ecological receptors are minimised further. The potential for air quality impacts from traffic emissions is also assessed in relation to established guidelines.

16.25 Design opportunities have been taken to ensure containment of biological materials and treatment of process emissions within a specialised odour abatement treatment system to avoid impacts on the local community or interactions with other potential emissions.

Climate Change

16.26 The resilience of the application site and proposed development is considered in Chapter 9 in relation to its suitability (for example in relation to flooding susceptibility, extreme temperatures and wind) and potential for adaptation.

16.27 The effects of the proposed development provide a positive contribution to climate resilience and interactions with targets of the national frameworks in relation to carbon reduction and agricultural diversification.

Noise

16.28 The noise assessment described in Chapter 10 was undertaken with close consideration of the local resident settlement pattern. The prediction of potential impacts has been modelled on the likely impacts at each of the closest, representative residences. The assumptions on noise generated is also closely aligned to the assumptions regarding traffic to be generated as a result of the proposed development. Best practice guidance in relation to acceptable noise limits in relation to ecologically sensitive areas.

Material Assets

16.29 The main interactions between material assets and other topic areas are in relation to disturbance to the local population in terms of amenity and utility service (including waste management and water supply) provision. By definition traffic infrastructure (Chapter 14), land use (Chapter 6) and cultural heritage (Chapter 12) also interact with the wider Material Assets topic area. The assessment of material assets in Chapter 11 of the EIAR provides an overview of all of these and enables identification of any interactions hitherto not identified.

Cultural Heritage

16.30 The entire application area has been completely stripped of topsoil down to subsoil levels and no unplanned events capable of effecting known archaeology, cultural heritage or buildings of special architectural significance within the application area has been identified by the assessment.

16.31 As stated earlier, however, the support for agricultural diversification is considered to be a positive for cultural heritage as it provides opportunities for continued viability of traditional local land uses.

Landscape and Visual

16.32 The proposed development maximises the use of an already developed area that is well screened within the existing quarry. The boundary landscape proposals have been developed with the objective of providing the maximum ecological habitat benefits, contribution to cultural heritage (native species planting) and screening opportunities to reduce the potential of noise, dust and adverse views, thereby reducing the potential for interactive impacts with the local population.

Traffic

16.33 The assumptions in relation to traffic generation have been fundamental to the noise and air quality assessments given that the emissions from HGVs are identified as one of the

core activities with potential for such impacts. The potential for traffic congestion or disturbance to amenity is also a key consideration in terms of impacts to population and human health.

Major Accidents and Disasters

16.34 The review of the potential of the proposed development in terms of its vulnerability to, or its potential to cause, accidents or disasters is based on the information set out in the core technical assessments of the EIAR and is a core part of the assessment of interactions.

Table 16-1 Interactions of the Foregoing

	Population & Human Health	Biodiversity	Land, Soils & Geology	Water	Air	Climate	Noise & Vibration	Material Assets	Cultural Heritage	Landscape and Visual	Traffic	Major Accidents and Disasters
Population & Human Health												
Biodiversity												
Land, Soils and Geology												
Water												
Air												
Climate												
Noise & Vibration												
Material Assets												
Cultural Heritage												
Landscape and Visual												
Traffic												
Major Accidents and Disasters												

Synergistic Effects

16.35 The review of potential interactions has not identified any potential for harmful synergistic effects.

Mitigation and Residual Impacts

16.36 Where any potential interactive negative impacts have been identified in the above, a full suite of appropriate mitigation measures has already been included in the relevant sections (Chapters 5-15) of the EIAR. These mitigation measures are presented in a consolidated version in Chapter 17.