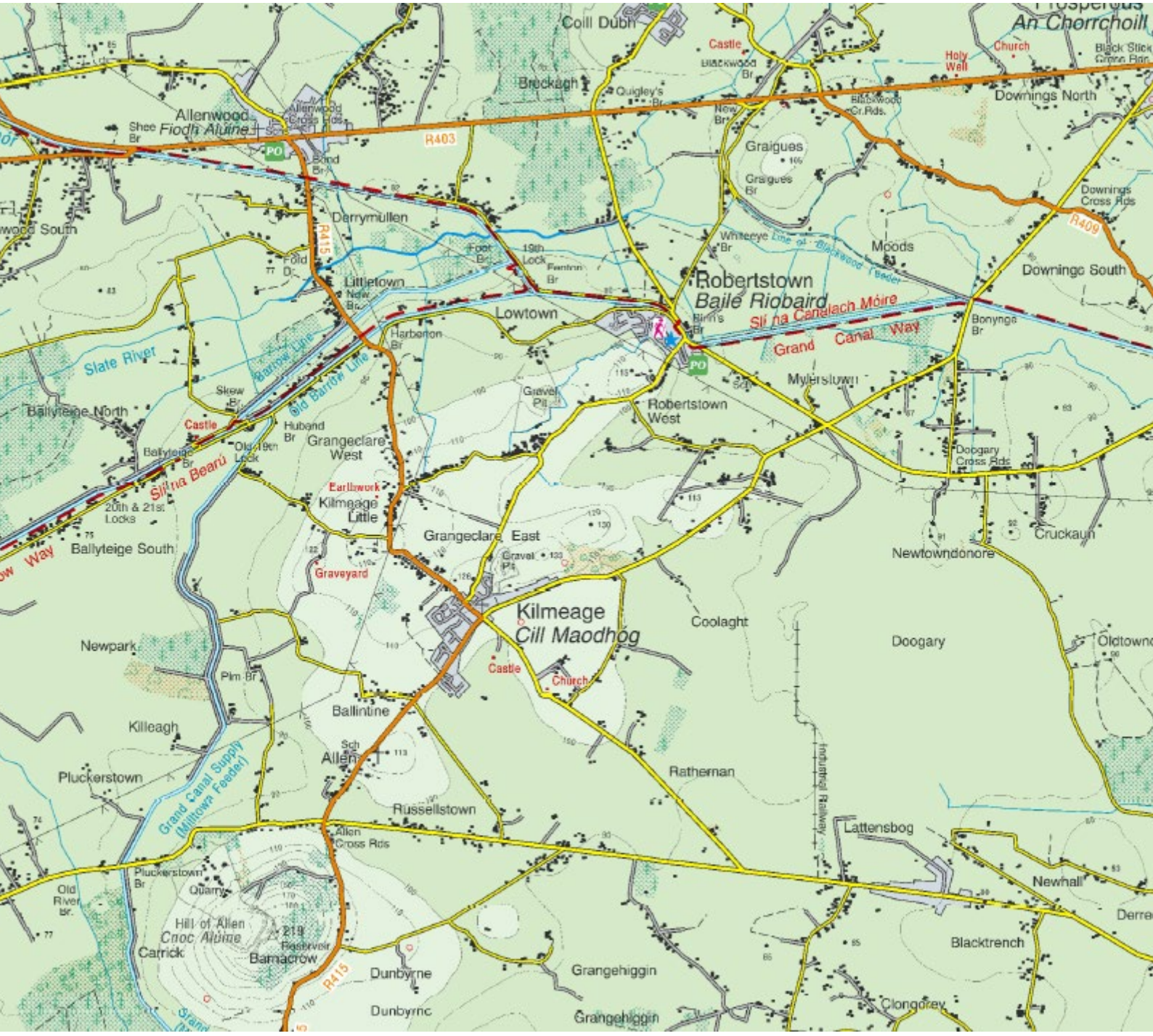
CHAPTER 4

ALTERNATIVES



QUARRY CONSULTING

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Introduction

4.1 The development will consist of the following:

- The removal of woodland, vegetation and overlying soils & subsoils;
- the extraction of sand and gravel on a phased basis from an area of c. 8.65 ha to a final floor level at 95 mOD;
- the infilling of the lands using inert waste on a phased basis following the extraction of sand and gravel;
- the restoration of the lands back to original ground level and the establishment of native woodland planting;
- all related ancillary development and associated site works including processing (crushing, screening and washing) and stockpiling of materials; installation of infrastructure for the management of water on site; provision of landscaped screening berms and all other related activities;
- Provision of a site office, toilet (portaloo), canteen, weighbridge, wheelwash and site entrance.

4.2 The Proposed Development will include for the importation of ca. 2,000,000 m^3 (or ca. 3.2 tonnes) of inert soil and stone material to restore ground gradients to similar levels prior to sand and gravel extraction i.e. current ground levels.

4.3 It is proposed to fill the pit void with either:

- Inert soil and stone classified as a waste (imported inert greenfield and non-greenfield soils and stone, and river dredge spoil) operating as a soil recovery facility that will require a waste management licence authorised by the EPA; or,
- Soil and stone by-product (i.e. virgin soil or equivalent to virgin soil and stone and dredge material) which will be notified to the EPA as an Article 27 by-product at the source location, and the Site will be authorised by the Local Authority planning conditions.

4.4 The restored land will provide natural habitat land use, with ecological benefit provided through the re-instatement of semi-historic field boundaries, woodland planting and a mixed species sward.

Need For the Development

4.5 This section examines the demand for construction aggregates, specifically sand and gravel, in Kildare and Ireland. The aim is to provide a comprehensive understanding of the existing demand for these aggregates, demonstrating the need for the development of new sources.

Construction Aggregates

4.6 The construction industry in Ireland has experienced significant growth in recent years, contributing to the demand for construction aggregates. In 2019, the construction sector accounted for 7.8% of Ireland's Gross Domestic Product (GDP), amounting to €23.7 billion (Central Statistics Office, Ireland).

4.7 Ireland, including Kildare, has prioritized infrastructure development to enhance connectivity and support economic growth. The National Development Plan 2018-2027, which allocates

€116 billion for infrastructure projects, emphasizes the need for new construction aggregates. This plan includes investments in road networks, bridges, railways, utilities, and public transport projects (Department of Public Expenditure and Reform, Ireland).

4.8 Housing construction is a significant driver of the demand for construction aggregates. In Ireland, the government aims to address the housing shortage by constructing 33,000 new homes annually (Department of Housing, Local Government and Heritage, Ireland). Additionally, renovation and refurbishment projects contribute to the ongoing demand for aggregates.

4.9 Commercial and industrial projects, such as office buildings, retail centres, manufacturing facilities, and warehouses, require substantial amounts of construction aggregates. For instance, the construction of Data Centre Parks in Ireland is estimated to require around 4.6 million tonnes of aggregates over the next decade (Irish Concrete Federation).

4.10 The public sector invests in various projects, including schools, hospitals, government buildings, and public infrastructure. For instance, the National Development Plan allocates significant funds for public infrastructure projects like public transport, education, healthcare, and social housing. These projects generate substantial demand for construction aggregates.

4.11 The transportation sector heavily relies on road construction and maintenance to ensure efficient connectivity. In Ireland, the government has allocated €10.6 billion for national road projects from 2022 to 2027 (Department of Transport, Ireland). Construction aggregates, particularly gravel, are essential components for road building and maintenance.

4.12 Concrete is a key construction material, and its production requires substantial quantities of sand and gravel. In Ireland, the annual consumption of aggregates for concrete production is estimated to be around 31 million tonnes (Irish Concrete Federation). Concrete is widely used in foundations, structural elements, and pavement construction, driving the demand for construction aggregates.

Project Ireland 2040

4.13 Project Ireland 2040 is a long-term national planning framework that sets out the strategic vision for Ireland's future development. It aims to shape sustainable growth and improve quality of life by focusing on balanced regional development, social infrastructure, and economic progress.

4.14 Project Ireland 2040 recognizes the need for housing construction to address the housing shortage and accommodate population growth. It sets a target of building 550,000 new homes by 2040, which translates to an average of 33,000 new homes annually. The construction of these homes requires a steady supply of construction aggregates, including sand and gravel, for various applications such as foundations and concrete production.

4.15 The project emphasizes the importance of infrastructure development to support economic growth and improve connectivity. Investments are planned for road networks, public transport systems, utilities, and social infrastructure. These infrastructure projects require significant quantities of construction aggregates to meet the demand for concrete, road surfacing, and foundation construction.

4.16 Project Ireland 2040 aims to achieve balanced regional development by promoting investment and employment opportunities outside major urban centres. Kildare, with its strategic location and proximity to Dublin, is expected to experience substantial growth and attract commercial and industrial projects. These projects, such as enterprise centres and

employment lands, create demand for construction aggregates for building construction and infrastructure development.

4.17 Project Ireland 2040 recognizes the importance of sustainable resource management, including the responsible extraction of construction aggregates. Developing a new sand and gravel pit in Kildare aligns with this goal, as it allows for the local sourcing of construction aggregates, reducing the environmental impact associated with long-distance transportation and preserving existing resources in other regions.

4.18 Given the increasing demand for construction aggregates in Kildare and Ireland, there is a potential supply and demand gap. Existing sources may face limitations due to depleting reserves or transportation constraints. Developing a new sand and gravel pit in Kildare would help bridge this gap, ensuring a reliable supply of construction aggregates to meet the demands of Project Ireland 2040 and support ongoing construction activities in the region.

Kildare Country Development Plan 2023-2029

4.19 The Kildare County Development Plan for the period 2023-2029 outlines the strategic vision and objectives for sustainable development within the county. It aims to accommodate population growth, promote economic prosperity, enhance infrastructure, and protect the environment. The plan identifies the need for an adequate supply of construction aggregates to support the anticipated development and infrastructure projects.

EIA Directive

4.20 Annex IV of the amended EIA Directive, 2014/52/EU, requires a description of the reasonable alternatives (for example in terms of project design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.

4.21 This chapter recognises and fulfils this requirement in respect of the Proposed Development.

4.22 In this context, the consideration of reasonable alternatives and design evolution has been undertaken with the aim of avoiding and / or reducing adverse environmental effects (following the mitigation hierarchy of avoid, reduce, and, if possible, remedy), while maintaining operational efficiency and cost – effectiveness, and considering other relevant matters such as land and planning policy.

4.23 This chapter provides an analysis of alternatives which have been considered for this proposed development in terms of the following:

- ‘Do Nothing’ Scenario;
- Alternative Sources;
- Alternative Locations;
- Alternative Designs / Layouts;
- Alternative Processes.

The 'Do Nothing' Scenario

4.24 A 'Do Nothing' scenario in which the Proposed Development does not proceed is the baseline against which the impacts of the Proposed Development will be compared within the assessment.

4.25 The 'Do Nothing' scenario would result in the new sand and gravel pit not being commissioned. The 'Do Nothing' scenario would not enable the Applicant to create an essential supply of aggregate to the Irish market, or a suitable site for an inert waste facility.

4.26 The sand and gravel from the site will be used in concrete production and therefore will impact the supply of concrete in the region. There would no benefit in terms of additional employment in the region as the development will employ 10 no. people on site, in addition to several indirect employees such as crushing contractors, HGV drivers, maintenance contractors, local suppliers, etc.

4.27 The site which is subject to the application would remain as forested lands and thus unutilised at a time when the economy and construction industry are growing and demand for aggregates is increasing.

Alternative Sources

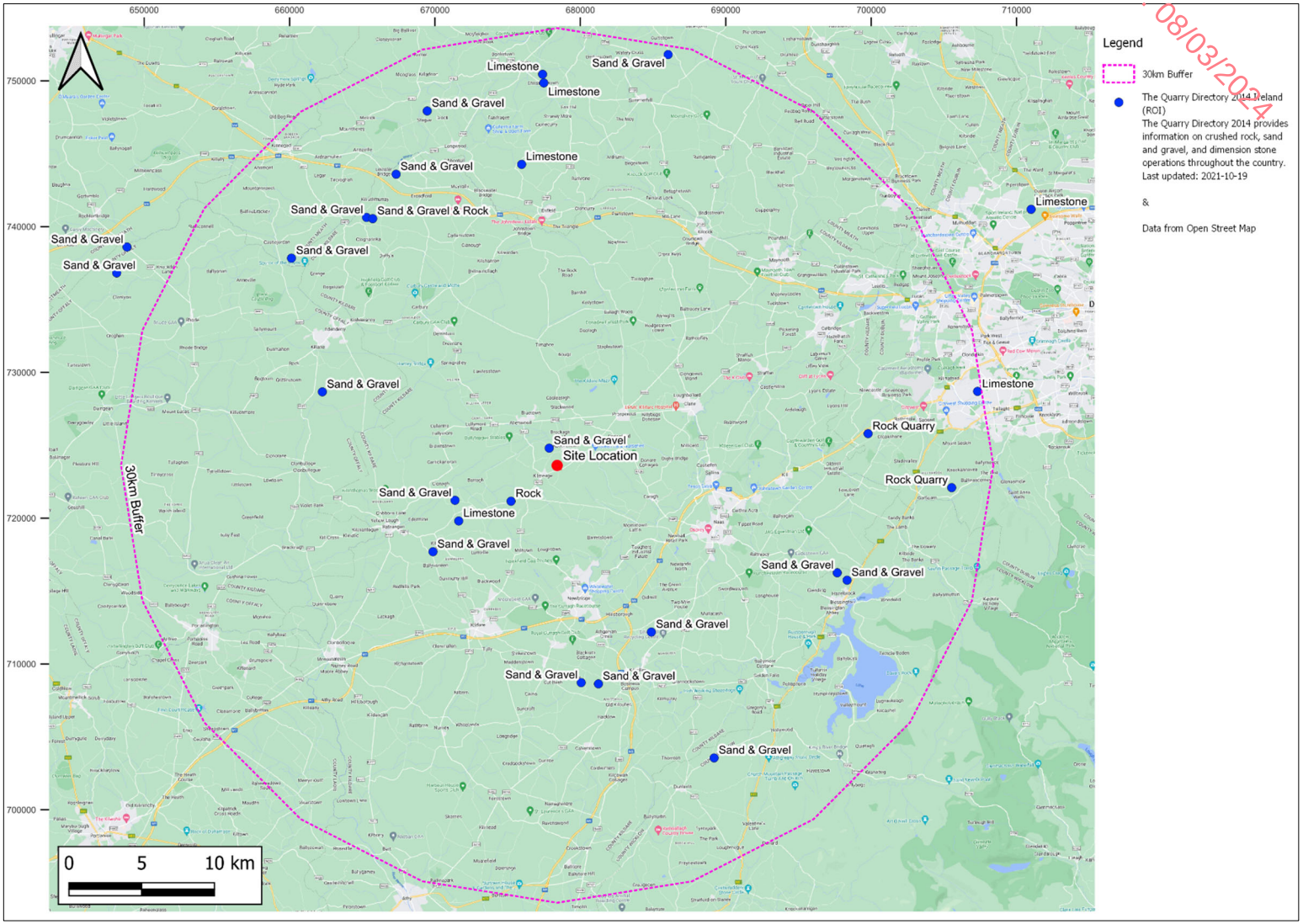
4.28 There are several alternatives to traditional sand and gravel pits for sourcing construction aggregates in Kildare. These alternatives aim to minimize environmental impacts, optimize resource utilization, and promote sustainable practices. Some alternatives include:

- Recycled Aggregates: Utilising recycled aggregates from construction and demolition waste can reduce the need for extracting natural resources. Concrete and asphalt can be crushed and processed into reusable aggregates for various construction applications.
    - Recycled Concrete Aggregates (RCA): This is the most common alternative to virgin aggregates. It is the byproduct of the construction and demolition of buildings / structures. The process involves crushing the concrete and screening it to size. RCA can be used in a variety of construction applications, although its end use is limited compared to virgin limestone aggregates.
    - Recycled Asphalt Pavement (RAP): Asphalt pavements can be crushed and repurposed as an aggregate in new pavement construction. The reuse of RAP not only saves natural resources but also reduces costs associated with disposal of old pavement material and purchase of new material.
- Marine-Derived Aggregates: In many countries marine-derived aggregates can be sourced through responsible and sustainable dredging operations. This method involves extracting aggregates from the seabed, which can be suitable for certain construction applications. Currently the regulatory system does not exist in Ireland to allow extraction of sand and gravel from marine sources.

4.29 While there are alternatives available, completely replacing sand and gravel pits is not feasible or practical. Sand and gravel pits are essential for the following reasons:

- Quality and Suitability: Sand and Gravel are naturally occurring materials with specific characteristics and properties that make them suitable for construction applications. Alternative sources, such as recycled aggregates or manufactured aggregates, may have different qualities or may require additional processing to meet the required specifications.

Figure 4.1: Other Quarry / Sand and Gravel Developments (medium – large scale) within 30 kilometres



Alternative Locations

4.30 The location of other medium – large output quarries and sand & gravel pits within 30 km of the application site are shown on Figure 4.1 above (taken from the Geological Survey of Irelands 'Directory of Active Quarries and Pits in Ireland (4th Edition)).

4.31 It is worth noting that the majority of the extraction sites identified in Figure 4.1 are operated by the larger quarrying companies operating in Ireland. In some cases aggregates from these sites are used to supply internal valued added manufacturing facilities only.

4.32 The development of a sand and gravel pit and inert waste facility at Coolaght is crucial for economic growth and sustainability. It not only ensures a consistent local supply of sand and gravel and void space for inert waste, but also significantly reduces transportation costs and emissions, underlining its strategic importance for the area's development.

4.33 The alternatives available to the Applicant relate to:

- Purchase of an existing sand and gravel pit;

or

- Development of a new replacement 'greenfield' sand pit in County Kildare to serve the markets in this region.

4.34 At the current time, there is no suitable alternative location available to the applicant in County Kildare. It is generally accepted that the overall timeframe for development of a 'greenfield' quarry site (from initial site selection, land acquisition, preparation of a planning application and accompanying EIAR, through planning process and site development to extraction of aggregates) takes between 5 and 10 years.

4.35 Notwithstanding the above, the development of a sand and gravel pit and inert waste facility would be beneficial in planning terms by eliminating the need for:

- Extracting additional materials from other quarries within the county. This would result in faster depletion of aggregate resources at these other quarry locations and potentially result in future intensification of those operations;
- Development of a 'greenfield' site at some other location within the county;
- Haulage of materials by road from other quarries within, and outside the county, with potentially longer haulage distances and increased traffic levels on the wider road network.

4.36 This development is not like a factory for example that can be located at many locations; this is a resource tied development. Aggregates can only be worked where they exist and where the environmental effects of working such resources can be managed to an acceptable level.

4.37 The extent and quality of the sand and gravel deposit at Coolaght has been established (refer to EIAR Chapter 6).

4.38 On the basis of the above, it is considered that, subject to implementation of best environmental management practice and compliance with appropriate planning controls (i.e. planning conditions and recommended emission limit values for the sector) development of this site is preferable in an overall planning context, compared to the development of a new 'greenfield' site at some alternative location in the Kildare region.

4.39 The site is advantageous for use as a sand and gravel pit and inert waste facility for several factors, including:

- Within market distance of a number of large settlements;
- Good road access. The site has good accessibility including the R415 regional road;
- The site is wholly owned by the applicant and the financial implications of purchasing a site without the same characteristics as identified below would not be technically or commercially viable;
- The site is situated in an area that has a long standing and strong association with extractive industries;
- No national, regional or local environmental designations affecting the site in terms of protection under the Habitats Directive (Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora), the Birds Directive (Council Directive 79/409/EEC on the conservation of wild birds), or the Wildlife Acts 1976 to 2000.

4.40 It is considered that these factors justify the selection and the appropriateness of this site for the development of a sand and gravel pit / inert waste facility of this scale and nature.

Alternative Designs / Layouts

4.41 Below are detailed descriptions of alternative designs and layouts considered throughout the EIA process:

- **Preservation of Woodland:** Recognizing the ecological value and potential for biodiversity, an area of woodland located to the northeast of the landholding was identified for retention.
- **Buffer Zone of Trees:** To mitigate visual impacts and integrate the development more seamlessly into the surrounding landscape, a buffer zone of trees was proposed around the site boundary. This feature aimed to provide a natural screen, reducing the visibility of the facility from adjacent areas.
- **Landscaped Screening Berm:** Specifically for the western and southern boundaries of the site, a landscaped berm was considered. This earthen or landscaped mound would serve as a physical and visual barrier, further minimizing the project's visual intrusion into the landscape.
- **Access Road Options:** The design and routing of the access road into the site underwent several iterations. Various options were considered to optimize traffic flow, minimize environmental disturbance, and ensure safety for all site users. This included evaluating the impact of road construction on the local ecosystem and existing land use.
- **Site Entrance Design:** The entrance to the site was a focal point of design consideration, particularly regarding the accommodation of the swept path of articulated trucks (as requested by Kildare Co Co). Proposals included widening the entrance to ensure ease of access for larger vehicles, thereby reducing potential congestion and impact on local traffic.
- **Location of the Processing Plant:** Initial proposals suggested establishing the processing plant at the original ground level. However, to reduce noise, dust, and visual impacts, it was later decided to relocate the plant to the pit floor. This adjustment aimed to utilize natural topography to lessen the facility's footprint and visibility.

- **Management of Ash Woodland:** While an area of ash woodland was not initially required to be moved for the development, the decision was made to remove it alongside other ash-dominated woodlands due to the threat of ash dieback disease. Proactively replacing it with more resilient species in the first year was seen as a strategic measure to ensure long-term sustainability and biodiversity.
- **Retention of Southern Lands:** To minimize visual impact and preserve the character of the landscape, the southern part of the lands, being the flank of a hill, was retained in its natural state. This decision underscored the importance of maintaining landscape features that contribute to the overall visual and ecological value of the area.

4.42 These alternative designs and layouts reflect a thoughtful and multi-faceted approach to planning and developing the sand and gravel pit/inert waste facility.

Alternative Processes

4.43 Consideration was given to recycling of suitable imported waste material for use as secondary aggregate. This is a timely consideration considering the relatively recent EPA publication:

'National End-of-Waste Decision EoW-N001/2023 of 12th September 2023 establishing criteria determining when recycled aggregate ceases to be waste under Regulation 28 of the European Union (Waste Directive) Regulations 2011 – 2020'.

4.44 In addition, alternative sand and gravel processing methods were considered (e.g. dry screening), however to ensure a consistent product wet screening was determined as the best method to adopt at the site.