

SAND AND GRAVEL EXTRACTION AT RACEFIELD

Environmental Impact Assessment Report
Volume I: Non Technical Summary



MH18057Rp0001B EIAR Vol I
Sand and Gravel Extraction
at Racefield
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25 September 2019

REPORT

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Paul Chadwick



25 September 2019

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1 INTRODUCTION

This Environmental Impact Assessment Report (EIAR) has been prepared to accompany an application by Kilsaran Concrete (trading as Kilsaran Build) for planning permission for a proposed sand and gravel extraction facility at a greenfield site at Racefield, Ballyshannon, Kilcullen, Co. Kildare. The site location is shown in Figure 1.1. Processing of the extracted material will be carried out on-site to produce a range of aggregates to be used by the applicant in the manufacture of concrete and asphalt at locations off-site.

The proposed development consists of a new sand and gravel extraction development and related ancillary site works over the application site area of circa 32.2 hectares and will consist of:

- Extraction of sand and gravel with excavation (dry and wet workings) occurring within a circa 17.2 ha active area (location to vary over the operational phase) and related mobile processing activities that includes crushing, washing and screening and all ancillary works, plant and structures (including closed circuit silt disposal lagoons);
- Stockpiling of overburden (topsoil, subsoil and waste), raw and finished aggregates (prior to processing on-site / transportation off-site);
- Staff facilities including prefabricated canteen facility and welfare facilities (located within an existing agricultural shed);
- Ancillary site works including hardstanding areas, bunded and covered fuel tanks, weighbridge, wheelwash, and packaged waste water treatment system;
- Perimeter landscaped screening berms;
- A new vehicular access point onto the L-8006 including boundary treatment and signage;
- Landscaping and full restoration of the site, with the establishment of a terrestrial and freshwater wildlife habitat; and
- The proposed extraction operational period is for 12 years with 2 years to complete restoration (total duration sought 14 years).

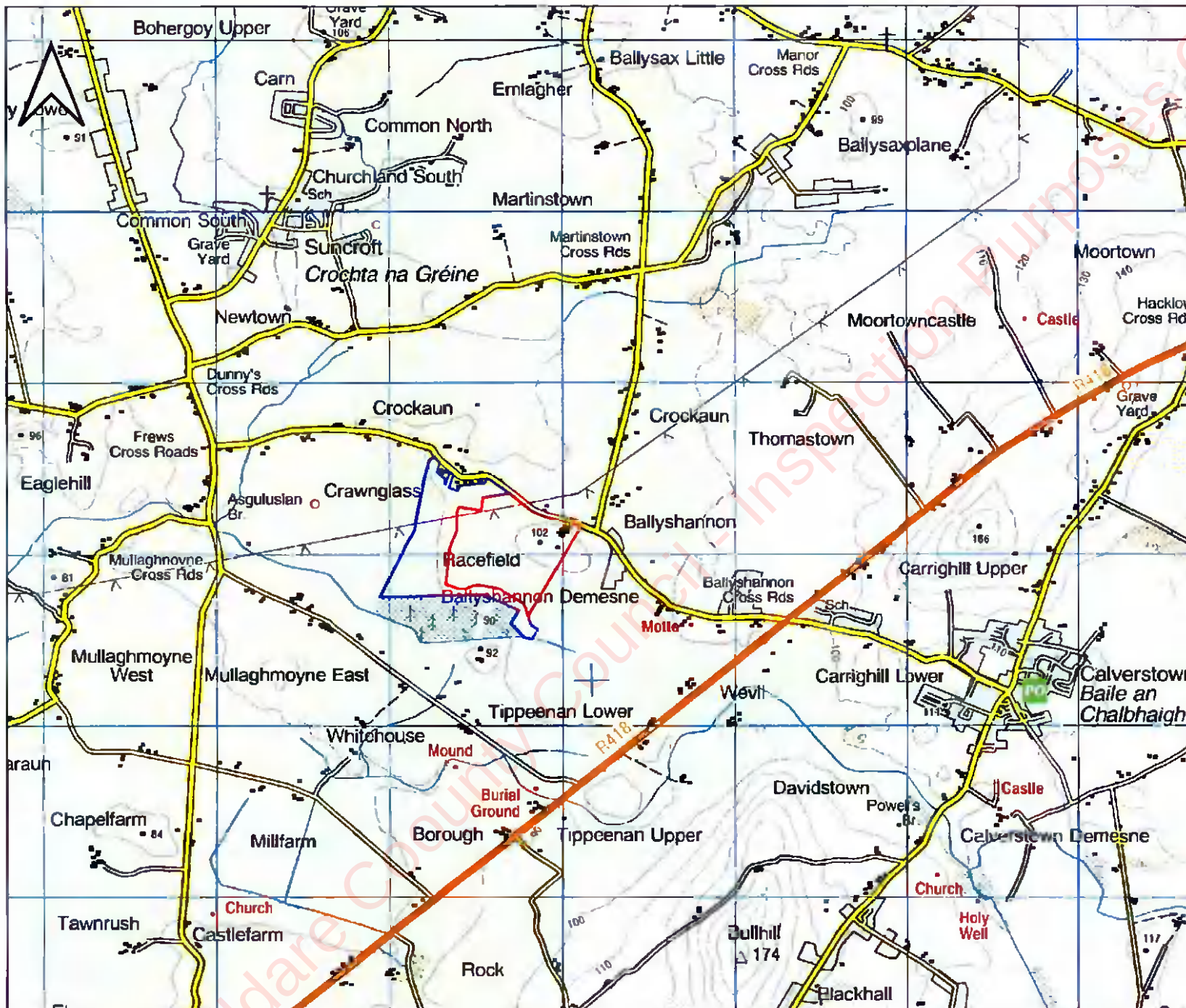
The developer for the purposes of this EIAR and applicant for planning permission is Kilsaran Concrete (trading as Kilsaran Build). Founded in 1964, Kilsaran Concrete is a wholly Irish-owned company, whose business is primarily in the production of materials for the construction industry.

1.1 Description of the Site

The lands are under the ownership of Kilsaran and the total landownership boundary is outlined in blue in Figure 1.2. This covers an area of circa 58.2 hectares. The application area for the proposed sand and gravel extraction facility covers an area of circa 32.2 hectares outlined in red and this is comprised of all or part of eight agricultural fields. The site is currently in agricultural use, leased to local farmers for use as pasture and arable lands.

The site is approximately 8.8km southeast of Kildare town. The site is accessed via the L-8006 and L-8007 local roads and the R418 (which is the former N78 National Secondary Road) which connects to the M9 Motorway. The site can also be accessed via the L-4002 at Frew's Crossroads, also 1.3km from the landownership boundary. The site is an approximately 7.5km by road from Junction 2 on the M9.

The L-8007 road travels west from the R418 serving areas of ribbon residential dwellings before changing to the L-8006 at the junction immediately east of Racefield House. This local road is a two-lane single carriageway with sweeping bends in the horizontal alignment in the vicinity of the site and an undulating vertical alignment.



Legend

- Land Ownership Boundary
- Planning Application Boundary

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Kilsaran build

Kilsaran Racefield

Figure 1.1: Site Location Map

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Source: The Land	
Drawn: DG	Project: MHTB057
Checked: XX	File Ref:
Approved: JOK	MRB057-RPS-00-10-DR-2-012019
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Date: 01/05/2019	RENET95 / ITM

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 2. Ordnance Survey Ireland's map No. B080119
 3. Ordnance Survey Ireland's map No. B080119



Legend

Boundaries

— Site Boundary

Bing Aerial

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Client: **Kilsaran**
build

Project: **Kilsaran Racefield**

Figure 1.2:
Site of Development

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Issue Details

Drawn: DG	Project: MH18057
Checked: XX	File Ref:
Approved: XX	MH18057-RPS-00-XX-DR-F-DC0010
Scale: 1:5,000 @ A4	Projection:
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Racefield House is located within the overall land ownership boundary and consists of a two-storey three-bedroom house with adjoining farm yard. The farm yard consists of a cut-stone lofted coach house, two corrugated steel farm sheds and some other small farm buildings. The house is currently vacant.

The 400 kV Moneypoint-Dunstown power line traverses the site and there are two pylons located within the land ownership boundary, the closest some 55m from the northern boundary of the site. A medium voltage overhead electricity power line runs in a north-west direction to the north of the site.

1.2 Consultation

A pre-planning consultation meeting was held between officials of Kildare County Council and the applicant as part of this planning application on the 27th of June 2019 at the offices of the Planning Authority. The proposed development was presented at this pre-application meeting and Kildare County Council outlined the key issues and requirements that must be addressed in the application.

In addition, an informal EIAR scoping exercise was undertaken whereby environmental groups were consulted by letter in May 2019 with details of the proposed development including a brief project description coupled with a site location map and indicative site layout plan. The consultation process invited any comments, queries or observations from the contacted parties on the nature of the proposed development, the potential environmental impacts and the content of the EIAR. Table 1.1 presents the summary of the consultation responses received. All comments and recommendations from each of the Statutory Authorities and Consultees have been taken into consideration in this EIAR.

Table 1.1: EIA Consultation Responses

Consultee	Key observations, issues & concerns raised in Response
Geological Survey of Ireland	- There are no CGSs located within the vicinity of the site. With the current plans, there is no envisaged impact on the integrity of County Geological Sites by the proposed developments. - We encourage discussion on end-of-life plans for the quarry and would be happy to recommend ways to promote the geology to the public or develop tourism or educational resources if appropriate. The Geoheritage Programme tries to promote a partnership between geological heritage and active quarrying, with such measures as those outlined in the 'Geological Heritage Guidelines for the Extractive Industry'
Transport Infrastructure Ireland	- Should development go ahead, all other factors considered. Geological Survey Ireland would much appreciate a copy of reports detailing any site investigations carried out - Should any significant bedrock cuttings be created, we would ask that they will be designed to remain visible as rock exposure rather than covered with soil and vegetated, in accordance with safety guidelines and engineering constraints The EIAR should identify the methods/techniques proposed for any works traversing/in proximity to the national road network in order to demonstrate that the development can proceed complementary to safeguarding the capacity, safety and operational efficiency of that network. - Consultations should be had with the relevant local authority/National Roads Design Office with regard to locations of existing and future national road schemes. - Clearly identify haul routes proposed and fully assess the network traversed. - Separate structure approvals/permits and other licences may be required in connection with the proposed haul route and all structures on the haul route should be checked by the applicant/developer to confirm their capacity to accommodate any abnormal load proposed. - A Traffic and Transport Assessment (TTA), subject to meeting the appropriate thresholds and criteria be carried out in accordance with relevant guidelines, noting traffic volumes attending the site and traffic routes to/from the site with reference to impacts on the national road network and junctions of lower category roads with national roads.
Health Service Executive	- The EIA should include an assessment of potentially significant cumulative impacts from the proposed development. This should include cumulative traffic, noise, dust and hydrological impact assessment. - The Environmental Health Service (EHS) considers the following should be assessed in the Environmental Impact Assessment (EIA) - Any potentially significant emissions to surface water,

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Consultee	Key observations, issues & concerns raised in Response
	b) Any potentially significant emissions to ground water, and c) Any potentially significant emissions to air, including noise, vibration and dust - When assessing the above the existing environment, the assessment methodology and evaluation criteria should be clearly reported in the EIAR. Any mitigation proposed should be identified and the predicted residual impact clear. Assessment should be carried out for both the construction phase and the operation phase of the proposed development. - The EHS emphasises the need for early and meaningful public consultation in the development process. Accurate information should be obtained regarding the location of sensitive receptors, and there should be on going engagement with these receptors during the EIA process. - The future use of the restored site should be included in the public consultation process. - It is recommended that an Environmental Management System (EMS) is identified in the EIA that includes details of training and reviewing of the effectiveness of the EMS. The EMS should be devised in accordance with international standards. - Any potential discharges to surface water resulting from proposed wet excavation and washing of sand/gravel should be assessed, including an assessment of existing baseline water quality and assimilative capacity, if there are proposed discharges to surface water. - Any proposed emissions of treated effluent to surface or ground water should be assessed in the EIA. - The EIA should assess any potential impacts from surface water run-off and identify drainage requirements and any settlement ponds or lagoons. This assessment should include details of how any lagoons are to be adequately sealed with an impermeable material to prevent leaching to groundwater. - The EIA should include details of the fuels and chemicals to be used and stored on site and the method proposed for the bunding of fuel and chemical storage tanks. - It is recommended that detailed information is gathered on the location of private wells serving properties within the vicinity of the proposed quarry. - The EIA should assess any potentially significant impacts from dust during the construction and operation of the proposed development. - The EIAR should identified dust minimisation methods that are to be used to reduce dust generation from activities on the proposed site. - The EIA should assess any potential significant impacts from noise and/or vibration during the construction and operation of the site. - Details of the location and frequency of any proposed noise monitoring should be included in the EIAR. - Specification details for the septic tank and how it is proposed to empty/treat any effluent from the tank must be included in the EIAR. - The potential to provide a facility on site which will provide an opportunity for health gain for the wider community should be considered, for example, walkways, cycle paths, woodland paths, pitch and putt course or an amenity park.
Development Applications Unit (DAU), Department of Culture, Heritage and the Gaeltacht	Archaeology: Due to the large scale of this development, it is this Department's recommendation that an archaeo-geophysical survey should be carried out on site. In addition, in order to examine any possible archaeological features identified by geophysics and to investigate further, the overall archaeological potential of the proposed development site, test excavations, as described below, should be carried out across the site. - Geophysical survey and Pre-development testing shall consist of the following - Geophysical survey should be carried out across the entire site - The applicant is required to engage the services of a suitably qualified archaeologist (licensed under the National Monuments Acts 1930–1994) to carry out predevelopment testing at the site. No sub-surface work shall be undertaken in the absence of the archaeologist without his/her express consent. - The archaeologist is required to notify the Department of Culture, Heritage and the Gaeltacht in writing at least four weeks prior to the commencement of site preparations - This will allow the archaeologist sufficient time to obtain a licence to carry out the work. - The archaeologist shall carry out any relevant documentary research and shall excavate test trenches at locations chosen by the archaeologist, having consulted the proposed development plans.

Consultee	Key observations, issues & concerns raised in Response
Kildare County Council Planning Department 3 OCT 2019 RECEIVED	- Having completed the work, the archaeologist shall submit a written report to the Planning Authority and to the Department of Culture, Heritage and the Gaeltacht. - Where archaeological material is shown to be present, avoidance, preservation in situ, preservation by record (excavation) and/or monitoring may be required. The Department of Culture, Heritage and the Gaeltacht will advise the Applicant/Developer with regard to these matters. Nature Conservation: • The department listed a number of documents and guidelines which should be consulted during preparation of any EIAR or EIAR screening document including: - Circular Letter: PL 05/2018 Transposition into Planning Law of Directive 2014/52/EU - Dept of Housing, Planning and Local Government (2018), Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment - Draft Guidelines on the information to be contained in Environmental Impact Assessment Reports, Environmental Protection Agency, 2017. - European Commission guidance document on the implementation of the EIA Directive (Directive 2011/92/EU as amended by 2014/52/EU): Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impacts Assessment Report, European Commission, 2017 - DoEHLG's Quarries and Ancillary Activities: Guidelines for Planning Authorities (2004), particularly section 3.5 - Natural Heritage, section 3.6 - Landscape (with specific reference to restoration and after-care), and section 4.7 (i) - Landscaping and Restoration of the site. - The EPA's Environmental Management Guidelines Environmental Management in the Extractive Industry (Non-scheduled Minerals) (2006) - European Commission's Guidance Document Non-energy mineral extraction and Natura 2000 (2011)

Prior to the lodgement of the planning application and associated documentation, a public consultation exercise with the local community took place via the distribution of a public information sheet during September 2019. A mail drop of public information sheets was delivered to properties in the vicinity of the proposed development to inform residents of the details of the proposal, the planning process and the means to engage in the process.

Other consultations and informal discussion held by contributors in undertaking their environmental impact assessments are detailed in the specialist environmental sections of the EIAR, together with details of relevant archives and documentation held by state agencies and organisations.

2 ALTERNATIVES

This section sets out the context in which the main reasonable alternatives were considered by Kilsaran for the proposed development and an indication of the main reasons for the final project chosen, taking into account the effects on the environment. The consideration of alternatives has been undertaken by a multi-disciplinary technical, environmental and planning project team and is considered to have concluded with the identification and selection of a solution that provides the best balance between technical, environmental and community / social indicators.

The 'Do-Nothing' alternative was also considered to retain Racefield in its current condition as a greenfield site which is used for agricultural use as pasture and arable lands.

The 2002 EPA Guidelines highlighted three different categories under which alternatives should be considered. This has since been expanded to five categories in the draft 2017 EPA Guidelines and these have been addressed, where relevant, as follows:

- Alternative Locations;
- Alternative Layouts;
- Alternative Designs;

- Alternative Processes; and
- Alternative Mitigation Measures.

Within these scenarios, a number of 'Do-Something' alternative scenarios were investigated.

2.1 Alternative Locations

In support of this EIAR, alternative locations have been assessed for completeness. Over the last number of years Kilsaran Concrete actively look for replacement aggregates sources and development sites within the Kildare area on an ongoing basis in order to continue the business and replace existing supplies that are being worked. In this period, a number of potential sites have undergone a review process of suitability. Due to confidentiality processes between the various landowners and Kilsaran Concrete, it would be breach and violation of this confidentiality to disclose the name and location of each of these sites.

In any event, not all of the sites under review and consideration were discounted for their potential environmental effects. Other reasons for discounting locations included the following:

- The seller at one location sold to a competitor at the last possible moment;
- The deposit at another location was deemed unsuitable after digging trial pit due to high clay content.

Environmental effects which played a part in the discounting of alternative sites included factors such as poor access down unsuitable county roads, too far from the intended market (excessive haulage) or proximity to built-up areas. At one location the deposit was found to be predominantly silty sand and was located a long distance down a narrow local tertiary road that would have required prohibitive investment to upgrade.

2.2 Alternative Layouts

2.2.1 General Site Layout

Alternative designs, including alternative layouts within the site were considered, with particular attention being paid to the direction of the phased working. The design and phased layout that was chosen and presented in the accompanying planning application drawings is considered to best minimise the potential impacts on the environment from noise, dust and visual impacts. The site layouts were assessment based on an analysis of the following criteria:

- Sensitive Receptors - The human environment in the area consists mainly of residential properties, one off housing along the local roads including the L-8006 and L-8007 (northern boundary), L-8009 (to the south), L-4002 (to the west) and the R418 (to the east). The nearest residential property to the site is a bungalow located along the L-8006 at the northern boundary some 150m from Racefield House.
- Other Constraints - Such as the 400 kV Moneypoint-Dunstown power line traverses the application boundary which will require safety wayleave to operate around this line in agreement with ESB Networks.
- Ecological Constraints - Field surveys have confirmed the presence of badger activity on site and in line with best practice an exclusion zone of 30m was recommended around those areas of habitat identified as either confirmed/potential badger habitat.

It is proposed to work the sand and gravel pit in phases so that it will lead only to a gradual land take over a period of 12 years, instead of immediate overburden stripping and extraction over the full extraction footprint. This gradual land take will not have a dramatic sudden impact on the fauna of the area, instead it will allow them to adapt to the pit workings and relocate to adjoining lands.



2.2.2 Site Entrance Option Analysis

The proposed development includes a new access to the site directly from the L-8006. The new access will intersect a section of the L-8006 where the horizontal alignment is predominately straight, which will maximise forward visibility of the access along the L-8006. The junction radii will be 15m. It is considered that 160m sightlines will be achievable once the hedgerow is cleared. It is proposed to provide advance warning signage of the new access.

An alternative proposal was examined in which the existing vehicular access to the farm would be altered and upgraded to provide the necessary visibility splays in both directions. The access will be provided with a 20m set-back off the carriageway to allow a car or truck to pull in off the public road. This section compares the alternatives examined which are outlined below:

- **Option 1:** The existing site entrance is located along the L-8006 at the northern boundary of the site adjacent to Racefield House. The use of this site entrance as it currently exists does not provide adequate visibility sightlines. The alteration of the existing site entrance would require the loss of existing mature treeline adjacent to the existing farmyard access and would although it would improve sightlines, it would not improve them to the required TII standards.
- **Option 2:** The proposed development would include for the construction of a new site entrance from the L-8006, located 10m from the existing site entrance. This new entrance will have improved sightlines at 160m east and west of the site entrance following clearance of the exiting hedgerow, however the existing treeline would be retained. In addition, the diversion of existing ESB line will need to be carried out in consultation with ESB.
- **Option 3:** The proposed development would include for the construction of a new site entrance from the L-8008, circa 120m from the existing site entrance. Although this new entrance would achieve the desired sightlines, it was discounted as the proposal would move the site entrance in close proximity to a residential receptor, thereby resulting in negative impact to this residence in terms of air, noise and increased traffic movements.

In summary, Option 2 is the preferred alternative for the proposed development, as safety is improved with the splayed entrance providing greater visibility and favourable driving conditions.

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2.3 Alternative Designs (Remediation Proposals)

This section outlines the main aspects which were considered for the alternative restoration options for the proposed development. The analysis considered the following alternatives:

- **No Restoration** - This scenario is based on the absence of any coherent restoration plan for the site following cessation of extraction operations after 12 years. The void space would remain with pooled groundwater at the base of the pit with 1:2 sloped pit walls extending to the surface. All plant and machinery would be removed to other sites but the pit void would remain unaltered.
- **Infilling with Virgin Material** - This potential scenario involves the progressive restoration of the pit with virgin material (like for like sand and gravel) to restore the land back to natural ground levels for agricultural land use.
- **Infilling with Waste Material** - Similar to the above scenario but for this alternative, the vacant pit is employed as a landfill or soil recovery facility used to recover waste material to restore the land back to natural ground levels for agricultural land use.
- **Infilling with Article 27 Material** - Under Article 27 of the Waste Framework Directive excess soil and stone produced during construction projects may be classified as a by-product if it meets each of four by-product conditions. Article 27 declarations offer alternatives in certain circumstances, where there is a certain demand for the soil and stone material. In the Article 27 alternative scenario, the site would be used for accepting soil and stone by-products to infill the void space and restore the site. Unlike the waste scenario, the Article 27 scenario would not be regulated by the EPA and there would be no ongoing enforcement of the site but the EPA are involved in the declaration stage at the outset.

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- **Restoration to Park Land** - This scenario is considered whereby there is no infilling undertaken at the site but the pit void undergoes some restoration to facilitate park land for the community. Such a parkland may include walking paths, fishing amenity, etc. and restoration of gravel pits have been developed in such a manner in Ireland.
- **Restoration as an Ecological Resource** - Similar to the parkland, this scenario is based on the site being restored as an ecological resource whereby there is no public access to the site but the pit void is employed to generate a mix of terrestrial and aquatic habitat on the site. This is common practice in Ireland and the UK and there are many examples of how sand and gravel pits have developed valuable ecological resources on cessation of extraction.

Based on the multi-criterion analysis undertaken the restoration of the site as an ecological resource is the preferred option and is proposed in this EIAR as the proposed development.

2.4 Alternative Processes

Kilsaran Concrete is primarily a concrete manufacturing company with expertise and experience in the field of quarrying, aggregates production, concrete manufacturing, road surfacing materials manufacturing and road making.

The consideration of alternative processes is confined to alternative processing for the aggregate products that will be produced at Racefield. In general, the alternative processes that are under consideration only show subtle variation.

The method of extraction will be dry and wet working with a long reach excavator used to extract material below the watertable and a wheeled front-end loader will be used to excavate material above the watertable. Various grades of aggregate will be processed on site and these materials will be loaded onto Kilsaran haulage trucks which will deliver the material to market.

For wet workings, the use of a long-reach excavator versus a dragline was considered. Due to the size and depth of the deposit, it is considered that to use a long reach excavator is the most appropriate option. Material excavated in the wet workings will be stockpiled and allowed to drain, prior to being loaded into the tip-in hopper of the processing plant.

Material will be processed using mobile plant which will be located within the pit void. The aggregate processing plant chosen for this proposed development will be crushing, washing (with associated closed circuit silt disposal lagoons) and screening process which is similar to those used in other Kilsaran operations. The processing plant includes washing process using water to remove fine particles. This process results in a wet aggregate which reduces dust generation. The alternative to this process is dry screening which results in greater potential for dust generation and a poorer quality aggregate.

The alternative to utilising mobile plant would be to erect a fixed crushing, washing and screening plant. Fixed plant is considered more appropriate where larger output than proposed is required. Therefore, processing using mobile plant is the preferred option.

2.5 Conclusions

Having regard to the reasonable alternatives considered in relation to the current proposal, the preferred project alternative on which this EIAR is based includes the following:

- The proposed sand and gravel extraction at the Racefield site;
- The construction of a new site entrance from the L-8006 located 10m from the existing site entrance;
- Restoration of the site as an ecological resource, and
- Material processing using a mobile plant.

The detailed description of this scenario is presented in Chapter 3 with an environmental assessment of impact presented in Chapters 4 to 13 of this EIAR.

3 PROJECT DESCRIPTION AND NEED FOR DEVELOPMENT

3.1 Need for the Development

Extractive industries are important for the supply of aggregates and construction materials and minerals to a variety of sectors, for both domestic requirements and for export. Unlike most other forms of development, minerals can only be worked where they are found. This means that the spatial distribution of mineral resources and consequently the potential for workings is dictated by geological considerations and not by the demands of human geography. The construction materials sector is a strategically important one, as without its products, our built environment would simply not exist in its present form.¹

Aggregates (stone, sand and gravel) are critical for the development and maintenance of Ireland's built environment, infrastructure and for our people's quality of life. They are used directly as key construction materials and are used in the manufacture of a large range of products including ready-mixed concrete, concrete blocks, concrete roof tiles, precast concrete units and asphalt. Ireland's economy could not function without aggregates which touch virtually every aspect of human lives – in housing, schools, hospitals, offices, roads, rail, airports, water infrastructure and agriculture.

The Irish Concrete Federation (ICF) reported that there were 500+ active quarries and 200+ concrete manufacturing plants with an estimated 5,000 people employed directly in the aggregates and concrete products industry in 2017. The ICF also states that every year over 7 tonnes of aggregates per head of population is placed on the market by the aggregates industry and in 2017 there was > 7 million tonnes of sand and gravel produced in Ireland.

The demand for aggregate based construction materials will increase in the coming years, given the launch and publication of the Irish Government's long-term investment plans and strategic investment priorities set out in the National Development Plan 2018-2027 (NDP). This National Development Plan sets out the significant level of investment, almost €116 billion, which will underpin the National Planning Framework (NPF) and drive its implementation over the next ten years means that aggregate based construction materials will increase in the coming years, given that the houses, roads, schools and other priorities identified in the NDP will require a sustainable supply of aggregates from our national aggregate reserves.

The ICF states that while Ireland currently has a ready supply of high quality aggregate reserves, existing terrestrial reserves at active quarries and pits are being progressively diminished by ongoing extraction activity and are not being replenished at an equivalent rate.

Kilsaran, whose business is primarily in the production of materials for the construction industry, actively look for replacement aggregates sources and development sites within the Kildare area on an ongoing basis in order to continue their business and replace existing supplies that are being worked.

The need for the development is twofold. The primary rationale arises from the from the need for continuity of supply of aggregate materials by Kilsaran to meet the ongoing demands of the construction industry and secondly in response to the need to invest in public infrastructure set out in the National Development Plan.

3.2 Project Location and Site Sensitivity

The land use in the vicinity of the site is typically agricultural with the surrounding fields employed for a mixture of pasture and arable uses. The field pattern in the surrounding area is irregular, variable in scale and is delineated by low-lying hedgerows. There is a commercial coniferous plantation, Clonmoyle Forest under the ownership of Coillte which forms the southern boundary to the site.

The human environment in the area consists mainly of residential properties, one-off housing along the local roads including the L-8006 and L-8007 (northern boundary), L-8009 (to the south), L-4002 (to the west) and

¹ Competitive Analysis of the Construction Materials Sector on the island of Ireland – an update, November 2015

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the R418 (to the east). The nearest residential property to the site is a bungalow located along the L-8006 at the northern boundary some 150m from Racefield House.

There is a primary school, Ballyshannon National School located approximately 1.5km east of the site along the R418, 150m to the north of Ballyshannon Cross Roads. Suncroft National School is located approximately 2km as the crow flies and 3.5km via the road network. The school is located 1km off the L-4002 to the north-west of the site in the village of Suncroft.

Ballyshannon Stud is located to the north of the site along Martinstown Road (the L-8007). In addition, there is evidence of private domestic use equine related activities in the area with horse gallops, paddocks, horse walkers and stables visible from aerial photography.

Kilsaran's landholding contains a network of drainage ditches (albeit outside the project application area), typical of agricultural landuse and the Eaglehill Stream adjoins the southern boundary of the property. The Eaglehill Stream is not designated as a European site; however, it flows downstream and into the Kildoon River, which is designated within the River Barrow and River Nore SAC. The Kildoon River confluences with the Tully Stream, before it joins the main channel to the fifth order River Barrow located approximately 3.9km downstream to the west.

3.2.1 Proximity to Residences

There is a linear pattern of residential dwellings to the north of the site along the L-8006 and L-8007, the closest of which is approximately 45m to the proposed extraction area. There are a total of 56 residential properties located within 1km of the proposed extraction area.

There are also a number of sensitive receptors in the locality, including farms and private domestic use equine related activities, two primary schools (Ballyshannon National School located circa 1.5km east of the site and Suncroft National School located circa 2km as the crow flies to the west of site in the village of Suncroft) and a Nursing Home (Suncroft).

3.2.2 Landscape Character

The application area is located within two landscape character areas. The western part of the application area occurs within the Southern Lowlands and the eastern part of the application area occurs within the Central Undulating Lands. Both of these landscapes character areas are categorised as Class 1 low sensitivity and are described as 'Areas with the capacity to generally accommodate a wide range of uses without significant adverse effects on the appearance or character of the area.' Sand and gravel pits are deemed to have 'high compatibility' with both landscape character areas.

Scenic Route No. 25 is located approximately 1.3km south east of the application area and comprising views to the north-west of Kildare Plains from the R418 south of Moortown House to Tippeen Lower. The elevated nature of the road, which runs through the plains, and the generally low lying hedgerows provide for long distance views over the agricultural plains. The proposed development will lie within the viewpoint of this scenic route and the impact is assessed within this EIAR.

Scenic Route No. 35 is located approximately 4.5km north of the application area and comprising views of Dun Ailinne from the R418 from Moortowncastle to Knockbounce. While the proposed development lies outside the viewpoint of this scenic route, the potential for visual impact from Dun Ailinne is considered.

A designated scenic view is associated with the hilltop at Brewel Hill located over 6km south east of the application area. The application area will have minimum impact on any designated scenic view or route due to the distances involved and local topography of the area.

3.2.3 Protected Ecological Sites

The closest European site to the proposed development is The River Barrow and River Nore SAC, which is located approximately 3.9km to the west of the proposed development. This SAC is downstream of the proposed development via the Eaglehill Stream and the Kildoon Stream. The proposed development is located with the same Catchment Management Unit as The River Barrow and River Nore SAC.

3.2.4 Cultural Heritage

There are no registered monuments within the proposed sand and gravel extraction site. The National Monument of Dún Ailinne is located 4.5km to the northeast and is visible from a small part of the proposed development.

The closest known archaeological site is an archaeological complex within Ballyshannon Demesne, 830m east of the site. The existing 19th century St. James' Church is on the site of an earlier Medieval church and graveyard.

The townland of Racefield does not contain any protected structures or any structures recorded in the National Inventory of Architectural Heritage. A late 19th century farmhouse known as Racefield House is located in the northeast corner of the proposed development site. Ancillary buildings include a large stone barn, sheds and a high garden wall which has been incorporated into a farm building.

3.3 Site History

Historic mapping (1837-1842) shows Racefield with much the same field delineation patterns as today. Racefield House is not present at this time. Ballyshannon Demesne is located adjacent to the site. Subsequent mapping (1888-1913) shows Racefield House as present. Ballyshannon Demesne indicates the presence of a graveyard, church, mound, moate, Ballyshannon House and the site of Ballyshannon Castle is featured and labelled on the mapping.

Racefield was in the Jackson family for over 100 years and the name originates from the time it was used as a racecourse when the British army was garrisoned in the Curragh. Since early 1900, the farm has been associated with the bloodstock industry.

There are no historic planning permissions relevant to the current proposal associated with the lands.

3.4 Do-Nothing Scenario

The 'Do-Nothing' scenario refers to a scenario whereby the site would remain in its current condition as an agricultural land holding. The lands are currently owned by Kilsaran and leased to local farmers for use as pasture and arable lands and this arrangement would likely continue until such a point that Kilsaran sought to divest the lands in the future.

3.5 Development Description

This section provides a description of the proposed development and considers all relevant aspects of the project life cycle. This will include the following:

- **Construction/Operational Phase** - this phase constitutes:
 - Enabling works (works required for new site access, treatment of hedgerows, utility diversions, establishment of site facilities and infrastructure;
 - Site preparation works including topsoil & overburden stripping from the extraction area;
 - Extraction and on-site processing of sand and gravels that includes crushing, washing (with associated silt disposal lagoons) and screening;
- **Restoration Phase** - this phase constitutes:
 - The restoration of the site to a mix of terrestrial and freshwater wildlife habitat following cessation of all extraction and removal of all plant and equipment from the site. There will be some environmental monitoring carried out during this period.

A proposed operational layout is shown in Figure 3.1.





- Legend**
- Boundaries
 - Land Ownership
 - Planning Boundary
 - Extraction Boundary
 - Site Compound
 - Silt Lagoon
 - Seeded Earth
 - Overburden Storage
 - WFD RIVER
 - Wet Drainage Ditch
 - Racefield



Client **Kilsaran build**

Project **Kilsaran Pacfield**

File

**Figure 3.1:
Operational Site
Layout**

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Page Details

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3.5.1 General Description

The proposed development consists of a new sand and gravel extraction development and related ancillary site works over the application site and will consist of the following:

- Extraction of sand and gravel within an extraction area of circa 17.2 hectares using both wet and dry extraction processes at a rate of 250,000 tonnes per annum to a total extraction volume of circa three million tonnes of sand and gravel;
- On site processing of extracted sand and gravels including crushing, washing (with associated closed circuit silt disposal lagoons) and screening prior to export off site and all ancillary works and structures;
- Installation of site facilities consisting of prefabricated canteen facility, welfare facilities, bunded and covered fuel tanks, weighbridge, wheelwash, packaged waste water treatment system and perimeter screening berms;
- Ancillary site works include a new access point onto the public road adjacent to Racefield House along the L-8006 local road; and
- Final restoration of the site to a mix of terrestrial and freshwater wildlife habitat.

The proposed extraction operational period is for 12 years with 2 years to complete restoration (total duration sought 14 years).

3.5.1.1 Aggregate Reserve Assessment & Extraction Rates

The total recoverable reserve of sand and gravel from within the proposed extraction area is estimated at three million tonnes. It is anticipated that extraction would be carried out at a rate of up to 250,000 tonnes per annum. This annual output would be considered small in comparison to typical mineral extraction developments.

3.5.1.2 Restoration Phase

As the groundwater level is close to the surface, extraction of aggregate will also be undertaken below the watertable. Extraction below the watertable will result in the creation of an artificial lake which will be fed by groundwater.

Upon the cessation of extraction operations, the site will be restored to landscaped habitat lake capable of supporting many local habitats and wildlife. The primary focus in this restoration process will be treatment of the banks and surrounding hinterland so that restoration has good suitability for the development of habitats for a variety of species and restoration of habitats lost during the operation phase (e.g. hedgerows).

3.5.2 Site Establishment (Enabling Works)

The following are required in advance of proposed extraction:

Diversion of the electricity poles and associated overhead electricity lines present along the northern boundary of the site on the L-8006 local road (northern site boundary).

It is proposed to cut back the hedgerow and lower the boundary treatments on both sides of the proposed site access (which are under the ownership of the applicant) to optimise sight visibility in both directions of the access junction. Vegetation clearance will be undertaken outside of the bird nesting season (1st March to 31st August) or under the supervision of a suitably qualified ecologist.

- It is proposed to provide a new access to the site directly from the L-8006 and a new access road to the buildings within the site. Security gates will be provided for general security and to allow

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vehicles a location to temporarily park off the public road while awaiting processing through the weighbridge. The new access will intersect a section of the L-8006 where the horizontal alignment is predominately straight, which will maximise forward visibility of the access along the L-8006. It is considered that 160m sightlines will be achievable once the hedgerow is cleared. It is proposed to provide advance warning signage of the new access.

- The site establishment will include the development of hardstanding areas and site compound area in advance of the proposed operations. Following completion of the new site access, the internal access route from the site access to the site compound area will be constructed and paved with a macadam surface. Other internal roads will be unpaved. The site compound will consist of a portacabin with a canteen and welfare facilities. Five car parking spaces and bicycle parking facilities will be provided within the site compound.
- An established ESB connection is in existence at Racefield House, which is located within the land ownership boundary. It is proposed that any power supply requirements associated with the on-site facilities will connect to this power supply.
- There will be a requirement to supply potable water for human consumption to the welfare facilities. The nearest public watermain operated by Irish Water (IW) is located on the L-8006 local road that bounds the site to the north.
- Sanitary effluent water will be generated from the canteen, toilet and wash facilities within the site compound for the 3-4 direct employees on site and the associated HGV drivers (design caters for up to 10 persons) on the site. All effluent will be collected in a sealed underground pipe network and discharged to a packaged treatment plant with treated effluent percolated to ground through a polishing filter.
- To cater for the storm water generated by the additional hard stand associated with the new site access and site compound a dedicated storm water management system is included in the design. The layout of the site has been designed to collect surface water runoff from the access road and associated hard stand areas within the development. From here the water will be collected then discharged via a Class 1 bypass interceptor to a soakaway and allowed to exfiltrate to ground at the appropriate greenfield run off rates.
- A wheelwash facility will be provided in close proximity to the site entrance, however this will be distant from the public local road and this will be used during the lifetime of the proposed operation. All Kilsaran aggregates haulage vehicles leaving the site will be required to exit through the wheelwash to reduce the potential for dust and mud being carried to the public roads. Water for the wheelwash will be supplied from the groundwater sump within the pit.
- All vehicles exiting the site will also be required to pass over a weighbridge which will also be provided at the site entrance.
- A designated refuelling area is to be located adjacent to the site compound to cater for mobile plant on site only. Road haulage vehicles will source their fuel elsewhere. To that end a double skinned and bunded single chamber tank with storage of green diesel for on-site mobile plant will be provided.

3.5.3 Proposed Operations

3.5.3.1 Site Preparation

Vegetation clearance within the proposed extraction area will be undertaken outside of the bird nesting season (1st March to 31st August) or under the supervision of a suitable qualified ecologist.

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3.5.3.2 Removal of Topsoil & Overburden

Overburden is the material that must first be removed before the underlying sand and gravel reserve can be accessed and extracted. This will be undertaken on a periodic basis by a dedicated stripping crew, to limit the areas of topsoil/overburden stripping exposed at any one time. The typical proposed operational equipment will consist of a dozer, excavator and two dump trucks.

Overburden stripped to obtain access to the sand and gravel resource will be either utilised directly for construction of screening mounds or placed in the overburden storage area to the east, north and west of the site.

Excess overburden will also be used during the production period to construct / maintain silt disposal lagoon side walls to be located on the pit floor close to the washing plant as part of the closed circuit washing facilities.

3.5.3.3 Silt Lagoons

It is proposed that a minimum of three closed circuit silt disposal lagoons will be provided in the south eastern corner of the extraction area. The silt lagoons will be constructed from overburden material from the stripping phase. The lagoons will be rectangular in shape with parallel sides in the directions of flow. The floor and sides of the lagoon will be as smooth as practicable to minimise turbulent flow. The base of the silt lagoons will be raised off the pit floor and will be sealed with impermeable clay material sourced from within the site. Similarly, the side walls of the silt disposal lagoons will be constructed from silty/clay material, which will be sourced from within the site and will in effect seal the lagoons.

3.5.3.4 Resource Extraction: Method

Once the topsoil and overburden has been removed the sand and gravel material will be extracted via dry and wet working methods. A wheeled front-end loader will be used to excavate material above the watertable using the dry working extraction method of load, haul and dump. The material excavated will be directly fed by the same loader into the mobile processing plant which will be located within the pit void. The depth of dry workings varies due to the rolling topography of the site. The maximum dry working depth is approximately 9.5m from below ground level.

A long-reach excavator will follow from behind in the footprint of the dry workings and extract material below the watertable to maximum target depth of approximately 7m to 8m. The excavator will work from a position on the shore adjacent to the new waterbody. There will be no requirement to dewater the working areas of the site as the material will be extracted 'wet' and so the watertable will remain undisturbed.

Material excavated in the wet working method will be stockpiled and allowed to drain, prior to being loaded into the processing plant by the front-end loader. Both dry and wet extraction methods will progress across the site as a combined operation.

For the wet working process, the use of a long-reach excavator versus a dragline was considered. However due to the size and depth of the deposit, it is considered that a long reach excavator is the most appropriate option.

Figure 3.2 provides a summary of the extraction working methods that will be undertaken at the proposed application site.





Figure 3.2: Extraction Process

3.5.3.5 Processing Operation

The processing of the sands and gravels, into aggregate products, will consist of crushing, washing and screening by mobile processing plant, which will be located within the pit void. The proposed processing plant will be refuelled locally in their area of operation by an off-site mobile double skinned fuel bowser visiting the site. There will be spill trays, spill kits and procedures in place for this operation. The fuel bowser will also carry a spill kit.

Progressive stages of size reduction and screening allows Kilsaran to produce the desired range of aggregate types, size's and grading which will be used by the company for concrete product manufacture at other Kilsaran facilities.

Crushing: The crushing operation consists of primary and secondary crushing units designed to reduce the feed material in size to produce a range of sizes of the aggregate material. This process will be carried out via a mobile primary and secondary crushing plant.

Washing: The washing section of the plant will initially be supplied with water from groundwater via a borehole or sump. This washing plant will be operated with a silt disposal lagoon system to minimise the need for excessive extraction of groundwater and to eliminate the need to discharge process water from the site. The primary purpose of the silt lagoons is to remove suspended solids derived from the washing process and will operate as a closed system, which allows for the re-cycling of water for use in the processing plant. A minimum of three closed circuit silt disposal lagoons will be provided in the south eastern corner of the extraction area to treat this process water.

Screening: Following washing of the aggregate, the material will be passed over a number of screening decks which grades and feeds the material into stockpiles of varying nominal aggregate.

Operations at the pit will adhere to the Health and Safety Authority Safe Quarry Guidelines in relation to the Safety Health and Welfare at Work (Quarries) Regulations 2008 and this will limit the potential for unplanned events such as instability of pit faces or instability in adjacent lands.

REPORT

Material once processed will be placed in stockpiles. The stockpiles will be situated in various locations within the extraction application area and will consist of varying grades of aggregate. The stockpiles will be of sufficient size to ensure that there is adequate material to meet market demand (in the event of plant failure or breakdown) and ensure excessive amounts of material are not stored to minimise nuisance to neighbours associated with dust from dry periods.

Material will be loaded from the stockpiles onto Kilsaran aggregates haulage vehicles using the loading shovel and weighed at the weighbridge before exiting the site. In dry weather conditions, electric trailer covers will be utilised on vehicles to prevent dust nuisance on local roads.

3.5.4 Site Infrastructure

3.5.4.1 Access Arrangements

Ancillary site works include a new access to the public road adjacent to Racefield House along the L-8006 local road. This will entail a setback of 20m from the local road. The internal access road from the site to the proposed site facilities & infrastructure (between the main site entrance and the wheelwash/weighbridge) will be a paved surface with interceptor. All other internal roads will be unpaved.

3.5.4.2 Designated Haul Route

The haulage route from the site will be via the existing local road network with the main route onto the R418 from the Ballyshannon Crossroads. Vehicles exiting the facility will be directed to turn right onto the L-8006 local road and travel the L-8007 to the Ballyshannon Crossroads where traffic will turn north onto the R418 and continue north to Junction 2 of the M9. Returning traffic will use the same route, travelling no further westwards on the L-8006 than the site entrance. Kilsaran in conjunction/supervision of the local area engineer propose to construct two passing bays along the northern side of the L-8007 and some pavement works are also proposed along sections of this road.

3.5.4.3 Operating Hours

The proposed hours for operations (extraction, processing and haulage) at the site will be 08:00 hours to 18:00 hours Monday to Friday only with loading to commence from 07:00 hours. Operations on Saturday will be from 08:00 to 14:00 hours. No operations will be carried out on Sundays or Public Holidays.

3.5.4.4 Employment

The proposed development will secure direct employment of up to 3-4 people (Operations Manager and general operatives) for the duration of the extraction development i.e. 12 years with additional indirect employees such as Kilsaran HGV drivers who will access the site. In addition, there will be a number of indirect employees such as maintenance contractors.

3.6 Environmental Controls

Extraction, processing and ultimately restoration activities at the application site require a number of environmental controls to eliminate or minimise the potential nuisance to the public arising from the extraction and processing operations. All environmental controls implemented will be in line with the relevant EPA guidance *Environmental Management in the Extractive Industry (Non-Scheduled Minerals)* (2006).

In addition, a series of going monitoring regimes are proposed for surface water, groundwater, noise and dust to be undertaken around the site by Kilsaran to ensure all mitigation measures are suitably implemented.

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3.7 Proposed Restoration

Following cessation of extraction after the 12 year period the restoration of the site will commence for a two year period. The proposed restoration of the pit will not involve any infilling at the void space but the site will be restored as an ecological resource through the development of a mix of terrestrial and aquatic habitats to ensure a diverse ecosystem.

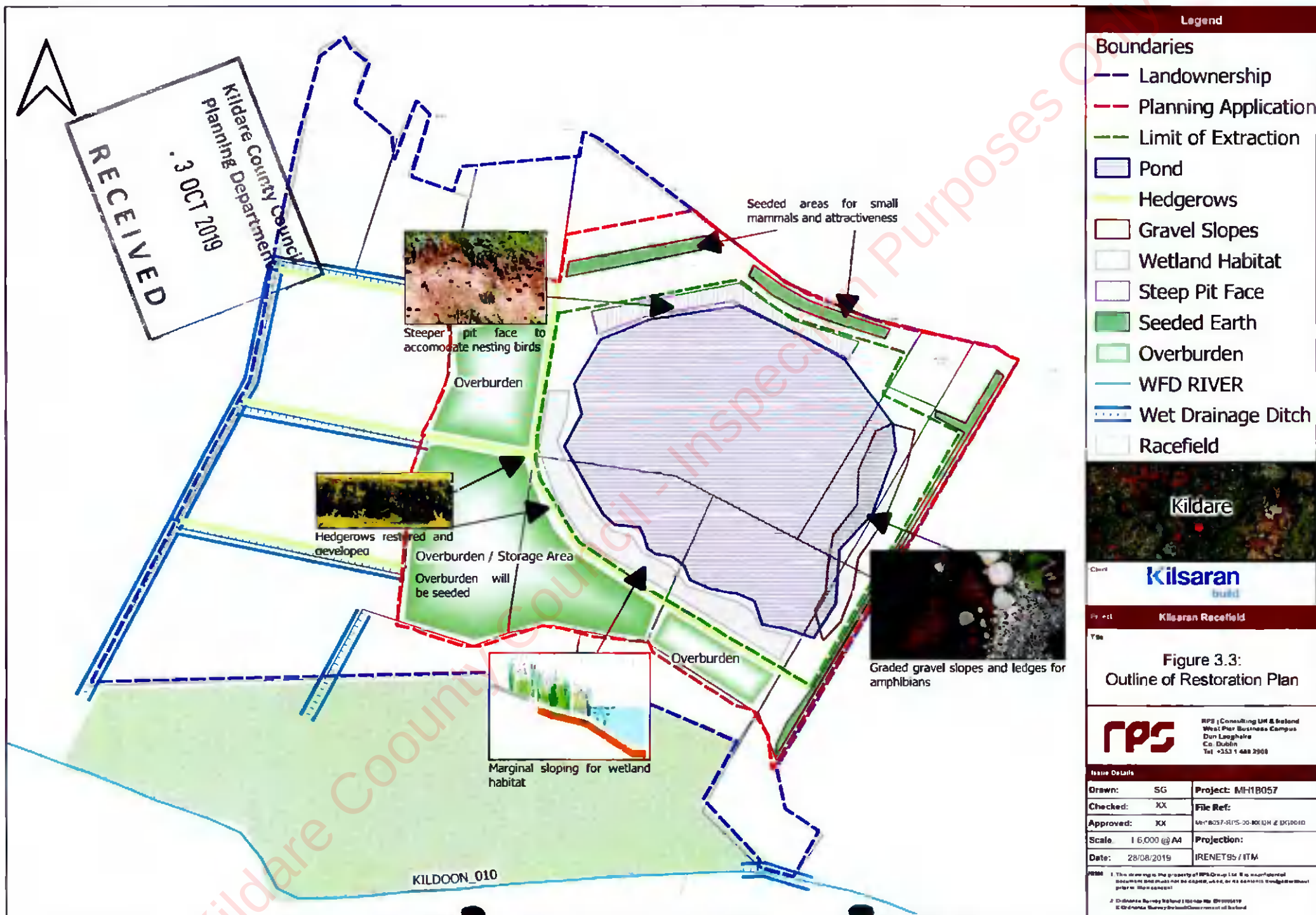
The development of the habitat will be in accordance with best practice and guidelines such as the *Wildlife, Habitats & the Extractive Industry*, (Notice Nature, Guidelines for the Protection of Biodiversity with the Extractive Industry www.noticenature.ie)

The outline design details of the restoration plan are presented below and an indicative restoration layout is shown in Figure 3.3.

- At the centre of the pit the standing groundwater will remain in place to allow for freshwater aquatic habitat to establish and to allow for the development of wet grassland species.
- The pit face at the north (south facing) will be retained to facilitate nesting birds and burrowing insects.
- The pit slopes to the east will be graded and stepped to facilitate development of wildlife ledges for amphibian species.
- Some graduation of sloping on other pit faces will be undertaken at the water edge to allow for ease of access between terrestrial and aquatic habitat.
- The hedgerows removed during site clearance will be substituted with restoration of additional hedgerow around the pit void coupled with improvement of existing poor quality hedgerow within the land ownership of Kilsaran.
- All planting and seeding will be strictly confined to native species. A varied mix of shrubs, trees and plants will be employed which are reflective of those in the surrounding environ.
- Planting will be in clusters to provide adequate habitat and promote diversity.
- Seeding of grasses and plants to use a variety of species to develop a diverse ecosystem.
- Plant species will include some pollinator plants to maximise biodiversity in addition to providing visual attraction. The plan includes seed and berry rich plants, and those that would provide nectar for bees and insects. These in turn, would provide food for birds and bats.
- Bird enhancement areas will be developed to attract roosting birds to the site.
- The stockpiles of topsoil at the northern site perimeter will be reseeded for use as wildlife mounds to develop shelter and make these areas attractive to wildlife.
- Where required the existing topsoil and overburden will be employed to facilitate grading and profiling to ensure that no material importation is required.

Once the excavations are complete and the size and topography of the void space are known, an updated restoration plan will be prepared by Kilsaran and agreed with the Kildare County Council prior to implementation.





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3.8 Risks of Major Accidents and/or Disasters

The requirement to carry out an assessment of the vulnerability of the proposed development to major accidents and natural disasters is set out in the EIA Directive.

Ireland's geographic position means it is less vulnerable to natural disasters such as earthquakes or tsunamis, which might pose risk to projects of this nature and scale in other locations. However, in recent times there has been an increase in the number of severe weather events in the country, particularly those leading to flooding and flash flood incidents.

According to the OPW Flood Maps, there are reports of recurring flood events at Ballyshannon. An area engineer meeting minutes in 2005 reported that *'localised hollow on the road is flooded every year after heavy rain. The water flows off the land. The council has undertaken remedial work and may be resolved.'* With regards natural disasters, severe weather conditions pose one of the most common risks to Ireland and to the proposed development.

Other extreme weather events also have the potential to significantly impact on operations and the frequency of such events at the nearest meteorological met station (Casemount). Vulnerability of the site to extreme weather includes a number of factors as follows:

- Extreme rain event – increased surface water run-off and requirements for attenuation and management of storm water to mitigate the potential for surface water or groundwater impact. A 20% margin for additional rainfall from climate change has been factored into the drainage design.
- Extreme weather event (e.g. heavy snow, hurricane, etc.) – such an event would likely result in a temporary shutdown of operations on site and hence no residual impact is predicted.
- Extreme cold event – potential for freezing of standing water across the site impacting on the handling systems and stockpile management where materials are 'bound' by the extreme temperatures. No residual impact on the environment is predicted.
- Drought and/or prolonged high temperature – potential for reduced capacity to implement dust mitigation measures and fugitive dust releases causing impacts on neighbouring communities. Refer Chapter 8 of this EIAR for details on how such an event has been mitigated through operations. No other residual impact on the environment is predicted.
- Prolonged or extreme high winds – as above, there would be potential for increased need to implement dust mitigation measures (depending on levels of associated rainfall) and fugitive dust releases causing impacts on neighbouring communities. Refer Chapter 8 – Air Quality & Climate of this EIAR for details on how such an event has been mitigated through operations. No other residual impact on the environment is predicted.

As a consequence of the above the proposed operation is considered climate resilient and no anticipated residual impact from such natural events is predicted.

There are 20 industrial sites and 15 waste sites within County Kildare which are subject to licences from the EPA. However, there are no licensed sites within 5km of the landownership boundary. Intel Ireland Limited is an Upper Tier Seveso establishment in accordance the Directive on the control of major-accident hazards involving dangerous substances. This Seveso site is located approximately 30km from the proposed development. Based on the above, the proximities show that all establishments are a significant distance from the site and hence the site is not vulnerable to accidents from these operations.

3.9 Cumulative Impact with other Projects

In terms of existing development, there is a commercial coniferous plantation, Clonmoyle Forest under the ownership of Coillte, which forms the southern boundary to the site. Any future potential deforestation or afforestation works undertaken by Coillte in accordance with Coillte's EMS at this commercial forest has the potential for significant adverse environmental impact.

A search was conducted of planning applications (projects) within the vicinity of the proposed development, using the Kildare County Council planning portal map viewer and the Department of Housing, Planning and Local Government EIA portal map viewer. The search was limited to the five year period preceding the date of issue of this report and excluded retention applications (i.e. typically local-scale residential or commercial developments where an impact has already occurred), withdrawn and refused applications. The search returned mostly one-off housing development applications (with associated waste water treatment facilities) and application for agricultural storage sheds (for both produce and machinery).

A search of the An Bord Pleanála website was completed to identify any relevant applications, including Strategic Infrastructure Development and Strategic Housing Development in the past three years, or in close proximity to the proposed development. With the exception of a permission for the construction of one assembly room and two new resource rooms and a formal drop off area for cars on the R418 at Ballyshannon National School, no other projects are listed in the An Bord Pleanála website for the area.

4 POPULATION AND HUMAN HEALTH

This purpose of this chapter is to consider the proposed development having regard to potential impacts that relate to the human population. In order to evaluate the magnitude and significance of likely environmental impacts in relation to population, this chapter of the EIAR considers the proposed land use relative to recent trends in relation to population, human health, employment, economic performance, amenity and the community. The assessment also proposes, wherever possible, appropriate mitigation measures that may be necessary to reduce and remedy, significant adverse effects on these elements of the environment.

The desktop analysis to inform this assessment included a review of demographic characteristics of the area as ascertained from Census of Population data and other statistics released by the Central Statistics Office and the International Labour Organisation. The smallest geographical units are Electoral Divisions for general statistical use. Small Area Population Statistics are available when describing some of the smaller settlements within the study area. Demographic trends and employment trends were analysed at state, county, and local levels for the purposes of this EIAR.

The extraction phase of the development is predicted to have a slight beneficial effect in terms of the potential to generate a range of employment opportunities.

Given the scale of the proposed development, there is potential for certain medium-term adverse local impacts during the operational period. These impacts would pose a potential nuisance such as an increase in daytime noise levels in the locality, albeit within guidelines, and would include the impacts of factors such as dust and construction traffic.

The extraction phase of the development is predicted to have no negative effect in terms of capacity on the surrounding road network. The effects of noise and dust emissions arising as a result of project traffic will be minimised by the implementation of the appropriate controls on site during this phase.

The application of the mitigation measures detailed in this EIAR and in each of the additional specialist sections of this EIAR, as appropriate, will ensure that people and properties located in close proximity to the subject site will not experience significant long-term adverse impacts during the proposed development.

The nature of the already established land use of the subject site will alter as a result of the proposed development, from its current status as agricultural land, to an operational sand and gravel extraction facility, to its eventual state as an ecological resource. No residual impacts are identified during the restoration Phase.

5 BIODIVERSITY

This chapter provides an assessment of the potential impacts of the proposed sand and gravel extraction on the ecological environment, i.e. living organisms, their habitats, and their interaction; collectively known as biodiversity.

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A desk study was completed to assess the potential for all protected species to occur, given their ecological requirements. All subsequent field surveys had regard for relevant guidance on ecological surveying techniques for protected flora and fauna which provide useful information on appropriate survey seasons and methods for many of Ireland's protected species.

The closest European site to the proposed development is the River Barrow and River Nore SAC which is located approximately 3.9km to the west of the proposed development and downstream via the Eaglehill Stream and the Kildoon Stream.

Habitat in the area around the site was categorised as a mixture of improved agricultural grassland, cultivated and built land, woodland and scrub and freshwater habitat. No plants protected under the Flora Protection Order 2015 were recorded during the desk study or field study. No invasive species were recorded within the footprint of the site or wider area.

The site visits identified areas with potential suitability for roosting bats, evidence of badger activity and evidence of some key bird activity (such as Yellowhammer). No other protected fauna were identified on site. The survey of the Eaglehill Stream indicates that the stream is a heavily modified drainage ditch and no spawning or juvenile salmonid/lamprey habitat were observed and habitat conditions are not supportive for crayfish. Similarly, no freshwater pearl mussel were identified within the Eaglehill Stream or at the downstream confluence with the Ballysax Little.

There is no direct impact on the River Nore and River Nore SAC, despite the groundwater connection between the site and the Eaglehill Stream. No specific mitigation measures are likely required in respect of the single European site for which the proposed development is hydrologically connected owing to the measures detailed within this EIAR.

Vegetation clearance from linear features- hedgerows to facilitate site access or from within the central (working part of the proposed development site) should be planned and carried out outside of the bird breeding season from 1st March to 31st August.

With successful implementation of mitigation measures as outlined within this EIAR, none of the potential impacts will be significant above the local geographic scale of significance. Significant residual impacts at local level are predicted in relation to:

- Permanent net removal of scrub and some hedgerow during construction;
- Disturbance or displacement to foraging bats, and nesting birds during both construction and operation; and
- Disturbance and/or mortality during construction to localised populations of nationally protected species hibernating in dense vegetation.

The extraction phase is considered to be of relative short duration (12 years) but will nonetheless result in the loss of some linear hedgerow. This residual impact will unlikely be undone until such time that the site restoration measures are undertaken, and supplementary landscaping and reinforcement of linear hedgerow features is completed.

The operation, if carried out in accordance with standard construction measures and implementation of the specified ecological mitigation measures, should ensure that the ecology should not greatly alter. The bulk of the disturbance will undoubtedly arise during the operation of the proposed development and notwithstanding the implementation of mitigation measures, the loss of habitat and the alteration/disturbance of the landscape will influence mammals – birds, bats and terrestrial mammals.

It is not considered likely that there will be any significant residual impacts as a result of the restoration phase of the proposed development. Indeed, the provision of the large water feature is predicted to increase the habitat and floristic biodiversity of this site and provide positive refuge for wildlife in a currently largely managed environment.

6 LAND, SOILS, GEOLOGY AND HYDROGEOLOGY

This chapter describes the likely effects of the proposed sand and gravel extraction facility at Racefield, Ballyshannon, Kilcullen, Co. Kildare on the land, soil, geological and hydrogeological environment.

The greenfield site is currently used for agricultural purposes, leased to local farmers for use as pasture and arable lands. Historical maps indicate that the site was previously used as pasture and arable lands.

The underlying subsoil or quaternary sediments comprise primarily of till derived from limestones with a small area of lacustrine sediments in the southwest of the landownership boundary. The bedrock geology in the vicinity of the sand and gravel extraction facility and to the west thereof is dominated by Carboniferous limestone of the Ballysteen Formation. The closest geological heritage site is The Curragh approximately 5km north of the site.

The aquifer classification for the key geological units within the study area is a Locally Important Aquifer where bedrock is moderately productive only in local zones. The water level data combined with the well location map suggests that water flows away from the sites topographic high point towards the west of the site.

The construction and operational phase does have the potential to affect land, soils, geology and hydrogeology and the effects considered include:

- Generation of suspended sediment within the standing water during wet working. The impact analysis shows that any sediment generated through wet working will be effectively 'filtered' by the surrounding gravel body ensuring no release of suspended sediment to the groundwater body and then subsequently to the connected surface water systems (such as the Eaglehill Stream or springs in the area) or other receptors.
- Accidental release of hazardous materials most notably fuels and oils associated with areas of perking, vehicle movements and refuelling activities. The project design ensure that these areas are on concrete hardstand and all areas are served by a suitable stormwater management system including petrol interceptor to ensure no accidental loss of fuels and oils from these activities.
- Chemicals will be banded, accidental release could occur if not mitigated correctly. Such spillages can be mitigated through a suite of good working practices on handling and storage of chemicals and fuels as set out in this chapter.
- Increased hard standing area associated with the new access road will reduce local recharge to ground and increase surface run-off. The concrete hardstand has been assessed during the design stage to ensure that the stormwater generated is ultimately treated (through an interceptor) and then discharged to ground (via the soakaway) at greenfield rates.
- Stockpiling of excavated material reducing local recharge to ground and increased surface run-off. The stockpiled overburden and topsoil will be laid out to minimise environmental impact and will be located away from water courses.

Based on the above impact assessment and mitigation through both design and good practices, there is no predicted significant residual impact to land, soils and hydrogeology from this phase of works.

7 WATER (HYDROLOGY AND FLOODING)

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This chapter presents baseline information on the local hydrology and assesses the likely significant effects of the proposed activities on the receiving water environment.

The site contains drainage ditches to the west of the project application area on the western area, which is typical of agricultural land use. There are two watercourses in the direct vicinity of the site - the Eaglehill Stream and the Brownstown Stream. The Eaglehill Stream runs from east to west approximately 250 metres south of the proposed excavation area. The Brownstown Stream runs in a southern direction until it

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confluences with the Eaglehill Stream approximately 1.1km downstream of the south-west corner of the development application area

According to the EPA database, the Eaglehill Stream and the Brownstown Stream both discharge to the Kildoon River (part of the Tully River Network). The EPA mapping locates the Tully River within the River Barrow catchment. The flow direction of this Eaglehill River from the site is generally to the west where the Kildoon River and subsequently the Tully River discharges to the River Barrow approximately 6.5km upstream of Athy.

The OPW flood mapping website shows the site does not reside within river or coastal flood zones. Similarly, the site does not reside in any rainfall (pluvial) flood zones. The recorded and predicted flood risk at the site as per the OPW flood risk mapping tool are available on the flood info website. The flood mapping website also contains records of historical flooding incidents in the surrounding area. The nearest location subject to previous flooding is approximately 750m east of the site occurring within a localised hollow on the country lane. This location was subject to flooding after heavy rainfall on an annual basis.

A series of good practice mitigation measures are included in the EIAR to mitigate the potential for sediment release to surface water bodies (such as streams) as well as other springs and drainage ditches in the area. These measures include:

- The use of a closed circuit series of lagoons to contain and treat process water from the aggregate washing plant;
- A series of surface water channels will be contoured around the edge of the pit to direct flow towards the lagoons;
- Use of sediment barriers such as silt fences and/or silt curtains (used and positioned in appropriate locations); and
- Leave buffer strips of vegetation 5–10m wide between the stockpiles and the ditches to act as sediment filters.

With this mitigation, the probability of fine sediment discharge to surface water run-off impacting on the local hydrology is imperceptible.

There is a potential impact on the surface water run-off if refuelling and maintenance activities are undertaken on site. These activities will be limited to the designated hard stand area within the site compound and any potential contaminants will pass through the surface water interceptor before discharging to the proposed soakaway with no significant impact.

Wastewater will be produced at the site from the welfare facilities at the site entrance. With the designed treatment system, the probability of waste water impacting on groundwater and surface water quality is negligible.

The proposed activities will involve wet working which is sand and gravel extraction from below the watertable. The proposed wet extraction phase will create an open water body within the pit where any sediment laden water will remain. This water body will be surrounded on all sides by the gravel body preventing any groundwater pathway for such sediment to reach the surface water bodies in the area. The standing water will be effectively filtered by the surrounding gravel beds before any connection to the surrounding surface water network. The magnitude of such an impact would be negligible.

The final restoration for the project application area will consist of remediation works to convert the pit void to facilitate an ecological resource. The proposed plant, site facilities and associated infrastructure are to be decommissioned and removed from site following the cessation of the sand and gravel extraction activities. Without mitigation, the probability of water discharge from the proposed development causing deterioration in surface water quality is low. The magnitude of such an impact would be negligible. Therefore, the overall risk to surface water is imperceptible.

8 AIR QUALITY AND CLIMATE

This chapter assesses the Air Quality and Climate impacts associated the proposed sand and gravel extraction facility at Racefield, Ballyshannon, Co. Kildare.

Existing baseline levels of pollutants based on the data from the EPA are currently below ambient air quality limit values and by extension the levels in the vicinity of the proposed sand and gravel extraction facility are also considered to be below the limit values.

Dust is considered a risk of pollution to the atmosphere from the activities associated with the proposed development. Based on Transport Infrastructure Ireland guidance, where there are operations at a large construction type operation, there is a risk that dust may cause an impact at sensitive receptors within 100m to the source of the dust generated. There are approximately 13 properties located within 100m directly to north of the site's landownership boundary, of these only one is located within 100m directly to north from the proposed extraction area of the site. Operational related dust from the proposed development is likely to result in a 'Medium-Term Slight Adverse' impact for the single property located within 100m of the extraction area, without additional mitigation measures in place. All other properties that are beyond a 100m distance are unlikely to experience dust impact as a result of the proposed operations. Where dust related impacts are anticipated avoidance and mitigation measures will be put in place to reduce the impact level.

Road traffic associated with the proposed development can impact directly on local air quality and any sensitive receptors that are located adjacent to the local road networks may experience the impacts to local air quality. The results of assessment modelling indicate that all levels of road traffic pollutants are predicted to remain within the limits for the protection of human health and the WHO guidelines along the proposed haul route during standard levels of road haulage in a typical scenario year. Using the relevant significance criteria, the predicted increases associated with the proposed development relative to the background air quality are classed as imperceptible. While the levels remain below the relevant limits, these increases and the air quality impact from this traffic are classed as 'negligible'.

The total estimated greenhouse gas emissions associated with the 12 years of extraction included in the proposed development is calculated at 79,482 tonnes of greenhouse gases (6,653 tonnes per annum) which will result in a 'permanent slight adverse impact' for climate.

The implementation of a dust minimisation plan during the operation of the project will include measures such as:

- Screening mounds will be put in place along the site's periphery at the northern and eastern boundaries;
- Dust suppression and water spraying of plant, material loads, stockpiles and roads;
- Wheelwashing, covering of material exiting the site;
- Inspection and regular cleaning of the public road and site entrance area;
- Appropriate maintenance of vehicles and machinery; and
- Maintenance of overburden storage areas.

To ensure that potential dust nuisance is minimised, a series of mitigation measures have been listed in this EIAR. If the applicant adheres to good working practices and the dust mitigation measures, the levels of dust generated are assessed to be minimal and are unlikely to cause an environmental nuisance. Dust deposition is unlikely to result in a significant impact as a result of the proposed development, as it will continue to be controlled in the appropriate and adequate manner.

9 NOISE AND VIBRATION

This chapter assesses the predicted noise and vibration impacts of the proposed sand and gravel extraction facility at Racefield, Ballyshannon, Co. Kildare. Particular attention is focused on sensitive receptors, such

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as residential dwellings adjacent to the transport road, as these would experience the greatest level of impact with regard to noise and vibration.

Baseline noise monitoring was undertaken at the site and comprised of seven attended measurements locations, five sensitive receptors and two onsite locations. The main baseline noise sources identified in the study area comprise of road traffic noise, primarily from the R418 regional road but also from occasional local passing traffic along the local roads, birdsong, farm animals and agricultural practices.

The assessment of noise impact from road traffic has been undertaken in accordance with the UK's Highway Agency, Design Manual for Roads and Bridges. The haulage route from the site will be via the existing local road network with the main route selected being via the M9, R418, Ballyshannon Crossroads on to the single lane L-8007 and L-8006 local roads. This analysis focuses on the areas where traffic noise will have the greatest impact, i.e. the sensitive receptors along the L-8007 and L-8006 local roads and the school on the R418.

It is anticipated that the additional road traffic noise attributable to the development will result in an increase in the baseline noise environment by less than 3dB(A) for properties located along the L-8007 and L-8006 local roads and the school on the R418 with other receptors further from the road network experiencing a lower noise impact. Based on the predictions relating to operational traffic noise, the changes in noise levels can be categorised, as 'slight/moderate change' at these properties. The increase in traffic associated with the proposed development scheme is therefore not expected to give rise to significant noise nuisance in the area.

During the excavation operations at the site the primary noise impact will arise as a direct result of the use of mobile plant within the pit void including excavators, the crusher and the screener. Using the method outlined in standard noise guidance, a worst case noise at the nearest residential property has been calculated for the proposed mobile plant and machinery to be employed. The results show that the resultant noise levels from both mobile plant and road haulage would be well within the day time ambient limit listed in the EPA Guidance. As such, the combined proposed development will not have an adverse impact on the noise climate in the vicinity of the site during daytime hours. No night time working is proposed so there is no night time noise impact.

The main source of noise during restoration of the site will arise from any minor landscaping and planting activities and therefore comprise occasional use of machinery such as tractors. Hence a negligible noise impact is predicted.

10 TRAFFIC AND TRANSPORTATION

This chapter assess the traffic and transportation aspects of the proposed development in order to establish the impact it could have on the operational capacity of the local road network if planning permission is granted. It includes a comprehensive description of the transportation characteristics of the receiving environment, a first principle assessment of the level of trips associated with the development and an analysis on the impact the trips could on the capacity of the L-8006 and L-8007 local roads and the R418 Regional Road.

The proposed access to the site is located on the L-8006 local road along the northern boundary of the site, approximately 1.52km west of the junction with the R418. The L-8007 road is a cross country local road and it travels west from the R418 serving areas of ribbon residential dwellings before turning north and the road continues westerly as the L-8006. This local road is a two-lane single carriageway with sweeping bends in the horizontal alignment in the vicinity of the site and an undulating vertical alignment.

The R418 is a regional road that links Kilcullen, County Kildare to Tullow, County Carlow and the section of this route between Kilcullen and Athy was the former N78 National Secondary Road. It is a critical route on the regional road network, and it is a wide single carriageway in the vicinity of the junction with the L-8007 Road.

Automatic Traffic Counters were placed on the network between May and June 2019 to record the volume, type and speeds of vehicles over a week-long period. The resulting 2019 values for the L-8006 is 465

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vehicles per day, the L-8007 is 826 vehicles per day and the R418 is 4,021 vehicles per day as an annual average daily traffic value.

A review of the Road Safety Authority's Road Collision Database for the period 2005 to 2014 inclusive has been undertaken. The database contains information on all reported collisions by severity of injury and year of collision during this period. The review concluded that no collisions were recorded on the L-8006/L-8007 near the proposed site access between the period 2005 to 2014. A serious collision was recorded (in 2009) and two minor collisions were recorded (in 2005 and 2009) along the R418 in the vicinity of the junction with the L-8006/L-8007. It is noted that the R418 at this time was the N78 National Secondary Road and prior to the opening of the M9 motorway this road served higher traffic volumes than it does today.

It is considered that the development site has the potential capacity to extract 3,000,000 tonnes of sand and gravel over the 12 years of extraction which would equate to an average 250,000 tonnes per annum. It is assumed that the trucks exporting material from the site will have a capacity of 28 tonnes per truck. This would result in circa 8,950 trucks arriving at the site per year. Typically, per annum there is 247 working days so therefore it is estimated that the works at the site would generate circa 36 trucks per day to the site (72 movements in total).

With this additional traffic, the resultant impact of traffic from the proposed development on the R418 equates to less than 2% of the existing volumes. This additional volume represents a temporary 8.6% growth in vehicle numbers on the L-8007 and a temporary 15.2% growth in vehicle numbers on the L-8006.

A full road width survey of the L-8006/L-8007 from the site entrance to the junction with the R418, which is circa 1.55km in length, was undertaken in August 2019. The road width is in excess of 5.3m close to the R418 (which will be a sufficient width to allow a truck and vehicle to pass simultaneously without causing an obstruction to two-way traffic flow) but varies travelling west to the site. Further west of this point the road width is circa 4.5 to 5.2m in width. The traffic surveys showed that on average ten HGV a day travel on the L-8006/L-8007 which is not a significant volume so it is envisaged that the scenario of two HGV meeting on the local road will be limited.

Kilsaran in conjunction/supervision of the local area engineer propose to construct two passing bays along the northern side of the L-8007. The proposed passing bays will comprise extending the paved road width by 1.0m for a 20m distance at locations approximately 500m and 1km from the junction with the R418. Some pavement works are also proposed along sections of this road.

The key junction on the haul route is the priority-controlled crossroads junction between the L-8007 and the R418 Regional Road. The junction has a wide splay and the R418 has a straight alignment at the point of intersection which optimises sight lines from the junction. A capacity assessment was undertaken to establish the impact that could be generated by an increase in truck movements along the L-8007. The results indicate that the junction will continue to operate well within the practical capacity with the addition of the traffic from the proposed development.

Ballyshannon National School is located along the R418 which will be utilised as the dedicated haul route. Although the road has ample width and capacity to cater for the expected truck demand it is considered that hauling will be suspended for half an hour in the morning and two 20-minute periods in the afternoon to prevent trucks travelling during school opening and closing times.

It is proposed to provide advance warning signage of the new site access. The signs will be located along the L-8006/L-8007 at 50m, 100m and 160m distances in both directions. All warning signage will be in accordance with Chapter 6 of the Department of Transport, Tourism and Sports Traffic Signs Manual and will be complemented by supplementary plates stating 'Quarry Entrance Ahead' and the distances.

11 MATERIAL ASSETS

This chapter examines the material assets of human and natural origin within the vicinity of the proposed development at Racefield which could be impacted as a result of the proposed development.

The local area surrounding the subject site features a mix of agricultural, undeveloped lands, detached one-off residential properties and small housing clusters/estates.

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Land use in the local area of the site is typically agricultural and undeveloped with the surrounding fields employed for a mixture of tillage, pasture and arable uses. The field pattern in the surrounding area is irregular, variable in scale and is delineated by low-lying hedgerows. There are approximately 845 residential and 100 commercial properties within a 3km radius of the site. Of these approximately 12 residential and 14 commercial properties are located along or just off the L-8006/L-8007 roads.

Overall, any impacts of the proposed development on land use and property in the vicinity will be short-term to medium-term in duration with slight/moderate adverse impacts but not these are not considered significant.

In short, it is not predicted that there will be any significant impact on property or landholdings in vicinity as a result of the medium term (12 year) operations at the subject site. Upon cessation of the activities at the site, the pit void will be restored to an artificial lake habitat with improved material asset value in terms of nature and biodiversity resulting in a positive material asset impact in the long term. Chapter 4 Population and Human Health and Chapter 7 Water also provide a more detailed assessment of the potential impacts that the proposed development will have on the inhabitants of the surrounding area.

The 400 kV Moneypoint-Dunstown power line traverses the application boundary. In terms of Health and Safety, there will be engagement with utility providers regarding exclusion and safe operating distances around electricity infrastructure and the ESB Code of Practice and HSA guidance will be adhered to in full. The hazard zone for the 400kV line is a minimum of 10.0m (on both sides of the outside electricity line). The exclusion zone for operating plant and machinery near a 400kV line is 8.0m. Height restriction barriers and equipment will be used onsite to demark electricity infrastructure. These working practices and engagement with ESB Networks will ensure no significant impact on this utility.

In addition, there are overhead power lines along the L-8006 road that bounds the site to the north. These power lines will be diverted in consultation with ESB Networks at the enabling phase of the development.

There are no telecom transmission poles and lines traversing the proposed site entrance or extraction area. The impact of the construction works on telecommunications infrastructure in area will not be significant. Operational activities on site will not result in a significant impact on the broadband, mobile and telecoms network in the area.

The nearest public watermain operated by Irish Water is located on the L-8006 local road that bounds the site to the north. Racefield House which lies within the proposed application area is connected to this watermain. This watermain will supply potable water for human consumption to the welfare facilities and canteen contained in the portacabin.

Water for the processing of sand and gravels will be sourced from the on-site groundwater sump and will operate as a closed loop system with no requirement for the mains supply to feed this system. Similarly, any water employed for dust suppression and the wheelwash will be sourced from the on-site sump.

There are no predicted significant residual impacts on material assets during the construction/operation and restoration phases of the proposed development.

12 CULTURAL HERITAGE

This chapter provides an archaeological, architectural and cultural heritage background with respect to the proposed development. The objective of the chapter is to assess the impact of the proposed development on the receiving environment and to propose ameliorative measures to safeguard any monuments, features, finds of antiquity or features of architectural or cultural heritage merit.

The site is adjacent to Ballyshannon Demesne, a former demesne landscape which was created at the site of a Fitzgerald castle and 17th century fortification.

The lands under the ownership of Kilsaran comprise of 17 fields of south-westerly aspect, covering approximately 58.2 hectares. The highest point at approximately 100 mAOD is in the north-eastern corner in Fields 10, 14 and 15), sloping towards the south and west, with the lowest points occurring in the western

fields below the 90m contour in Fields 1, 3, 4 and 5. The land has to date been used for a mixture of arable and pastoral farming.

The initial phases will involve some activity within the existing farmyard of Racefield House. It is proposed that Racefield House and the existing stone structures within the farmyard be retained, with no plans to demolish any buildings. With appropriate mitigation measures, this should cause no impact to the house and structures. Groundworks will be minimal but have the potential to directly impact subsurface remains related to the house and farm, or other pre-existing features.

Site access will be provided from the northeast corner of Field 10 and will involve the construction of a splayed entrance set back 20m from the road edge, a hard surface access road, a weighbridge and a wheelwash. This will require the removal of a portion of the hedgerow, and groundworks will have the potential to impact subsurface remains. It should be noted, however, that the ploughing of this field over many years may have reduced the potential for the survival of subsurface remains.

Other activities in advance of the operational phase will require the removal of hedgerows, topsoil and overburden within the working area and the installation of silt disposal lagoons. The topsoil and overburden will be used either to construct perimeter berms on the northern edge of the site or held in designated overburden storage areas. Overburden will be used for the construction of temporary topsoil storage and screening mounds, placed in the overburden storage area or used in the construction of the silt disposal lagoon side walls. These works have the potential to directly impact subsurface remains. However, all of the fields which will fall within the proposed working areas have been ploughed over many years, which may have reduced the potential for surviving subsurface remains.

Mitigation measures are proposed in order to assess the potential below ground archaeological risk and the results from these surveys will inform the statutory authorities in their decision making.

While it is noted that there is the potential for a slight visual impact towards the hill of Dún Ailinne (National Monument), the landscape and visual impact assessment has concluded that the proposed development will result in no change and the proposed development will not directly affect protected views of Dún Ailinne.

The implementation of screening/planting strategies are envisaged at the early stages of the proposed development. Planting regimes can take several years to develop and successfully establish and any visual impacts will be most pronounced during the construction and initial operation stages, after which mitigation measures will be increasingly effective in integrating the development within the landscape and historic environment and in reducing visual impacts.

During the site clearance operations, a mechanism for recording, protecting and where necessary resolving any newly revealed sites as a result of the geophysical survey and test excavation works within the planning application area will have to be agreed with the National Monuments Service.

It is anticipated that after mitigation measures have been applied there will be no significant residual archaeological, architecture and/or cultural heritage impacts.

As the Department of Culture, Heritage and the Gaeltacht has recommended, and based on the findings of the geophysical survey and required test trenching, some archaeological monitoring may be required. The Department will advise Kilsaran on these matters following completion of the geophysical survey which is currently being undertaken.

13 LANDSCAPE AND VISUAL

This chapter documents the landscape and visual effects of the proposed sand and gravel facility at Racefield, Ballyshannon, Co. Kildare.

The landscape of the site comprises gently rolling farmland in use primarily for tillage. The field pattern is of variable scale and defined by hedgerows some of which feature mature vegetation. The northern boundary of the site is adjacent to the L-8006 local road on which are located individual and clusters of dwellings.



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The 400kV Moneypoint – Dunstown overhead transmission line crosses the north western corner of the application area. The pylons and conductors of this overhead powerline are clearly visible elements in many views within the application area and in views from elevated locations in the surrounding landscape of the study area.

Clonmoyle Forest plantation is located immediately south of the application area and comprises an extensive area of coniferous forest which presents as a distinct and visible element in views from within the application area and the landscape of the surrounding area.

The landscape surrounding the application area is comprised generally of farmland associated with the Southern Lowlands landscape character areas which occurs in the south western part of the study area and The Central Undulating Lands which occurs in the north eastern part of the study area. Further afield to the east, a part of The Eastern Transition Lands falls within the eastern part of the study area.

Further to the east, a distinct increase in elevation is apparent with a gentle escarpment rising up to a ridge of low hills associated with the Eastern Transition Lands in the vicinity of Kilcullen and Calverstown. The highest of these is Bulhill at 174m AOD which presents as a local landmark or focal point in the landscape of the study area. Additionally, Old Kilcullen Hill and Knockaillinne are distinctive hilltop landmarks associated with the Eastern Transition Lands further afield outside the study area. The farmland comprises predominantly pasture and patches of deciduous and coniferous vegetation occur throughout.

The landscape description and key characteristics of the landscape character areas that occur within the study area are set out below taken from the original published landscape character assessment in the County Development Plan 2005 - 2011. A review of the County Development Plan has identified that there are two Scenic Routes within the study area associated with the proposed development as follows:

- Scenic Route No. 25 is located approximately 1.3km south east of the application area and comprising views to the north-west of Kildare Plains from the R418 south of Moortown House to Tippeen Lower. The elevated nature of the road, which runs through the plains, and the generally low lying hedgerows provide for long distance views over the agricultural plains. The proposed development will lie within the viewpoint of this scenic route and the impact is assessed within this EIAR.
- Scenic Route No. 35 is located approximately 5km north of the application area and comprising views of Dun Ailinne from the R418 from Moortowncastle to Knockbounce. While the proposed development lies outside the viewpoint of this scenic route, the potential for visual impact from Dun Ailinne is considered.

Direct impacts will occur to the landscape of the application area during the construction/operation phase. An area of farmland together with mature hedgerow vegetation would be lost. The direct changes to the landscape during operations constitute a relatively small loss of key elements, namely agricultural land cover and hedgerow vegetation which would be discernible in the landscape of the site and immediate north of the application area. The change is considered to be limited in scale and of short term duration. Hence, the character of the Southern Lowlands and the Central Undulating Lands within the study area would not be altered to the extent that would result in significant effects on character.

Activities associated with the construction/operation phase are expected to be visible at the selected viewpoints documented in the baseline. For viewpoints at Crockaun Road there is the greatest potential impact which is categorised as moderate to major and locally adverse but not significant during the operational phase of the proposed development. The views from the R418 (to the north east - Scenic Route 25) and views from the Ballyshannon Road (to the north west) will be negligible during the summer months rising to minor, adverse but not significant during winter months. No other significant visual impacts are identified.

During the restoration phase, within the wider landscape the proposal will continue to blend with the existing agricultural landscape around the site with a beneficial residual landscape character impact. With regards to visual impact on sensitive receptors the beneficial impact on existing views will continue post remediation and the site will remain as a new, feature from some viewpoints in very close proximity to the north and west but overall the visibility of the site will be limited through time and the proposals will continue to blend within the local context.

14 INTERACTIONS

This chapter identifies the interrelationships of impacts as identified throughout the Environmental Impact Assessment Report. An impact measure from one environmental topic may indirectly cause a secondary impact on another topic. While direct and indirect impacts have been assessed within the relevant chapters of this EIAR, the overall purpose of this chapter is to highlight the main areas of interrelated impacts identified for the proposed development. In this regard, a matrix has been provided in Table 14.1 which identifies the interactions as identified in the EIAR and illustrates that impacts resulting from one aspect of the environment can have a direct effect on other elements of the environment.



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Table 14.1: Interaction of Impacts

	Population	Human Health	Biodiversity	Soil, Geology and Hydrogeology	Water	Air Quality and Climate	Noise and Vibration	Traffic and Transportation	Material Assets	Cultural Heritage	Landscape and Visual Assessment
Population		X						X	X	X	X
Human Health				X	X	X	X	X			
Biodiversity				X	X	X					X
Soil, Geology and Hydrogeology					X						
Water											
Air Quality and Climate								X			
Noise and Vibration								X			
Traffic and Transportation									X		
Material Assets											
Cultural Heritage											X
Landscape and Visual Assessment											

