



# Restoration of Sand and Gravel Quarry at Boherkill, Rathangan, Co Kildare.

## *Environmental Impact Assessment*

### *Non – Technical Summary*

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Rev.	Status	Author	Reviewed By	Approved By	Issue Date
D01	Draft	Raphael Mc Evoy	Deirdre Smith	RME	05/04/2016
D02	Draft	Raphael Mc Evoy	Deirdre Smith	RME	06/05/2016



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## SECTION 1: INTRODUCTION

### PROPOSED RESTORATION WORKS

This Environmental Impact Statement (EIS) is drafted to assess the proposed environmental impacts possible and arising from the proposal to carry out a full restoration of a sand and gravel quarry located at Boherkill, Rathangan Co. Kildare. The Quarry is in the ownership of the applicant Mr Michael Ennis and has been operational for the past 13 years under the operational stewardship of Kildare Sand and Gravel Ltd. The facility has operated in full compliance with the existing planning permissions and has never had any issues regarding the management of the quarry from regulatory or locally concerned stakeholders within the lifetime of the facility. The primary aim of the proposal is to bring soil and stone and associated other fill materials to the site over a 10 year period to ultimately bring the site back to its previous agricultural use.

The location of the application site is indicated on an extract from the 1:50,000 scale Ordnance Survey Discovery series map of the area, reproduced as Figure 1.1.

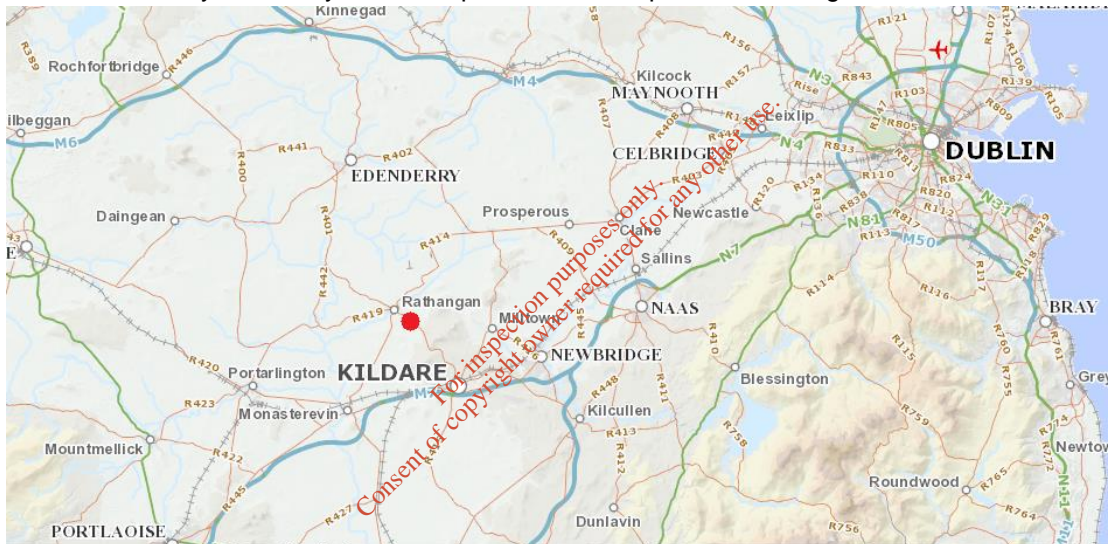


FIG 1.1 SITE LOCATION MAP(i)

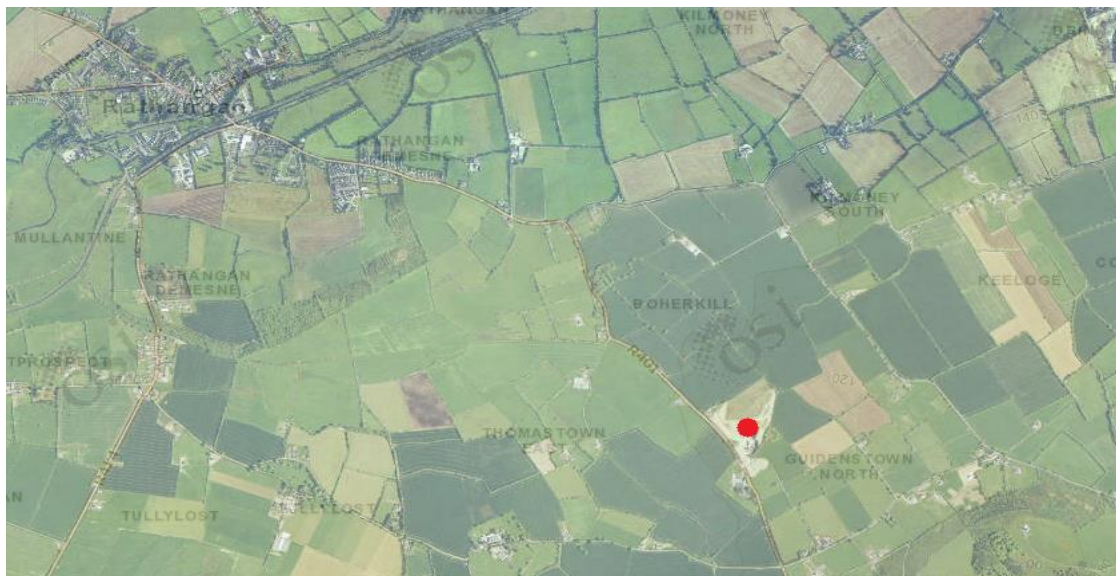


FIG 1.2 SITE LOCATION MAP(ii)



This proposal provides for the importation, placement and capping of approximately 1,500,000m<sup>3</sup> of inert soil and rock and inert construction materials (concrete, block, brick, paving stones, granular fill, ceramics etc.). The inert materials will be imported by permitted waste contractors.

The site is located entirely within the townland of Boherkill, Rathangan, Co. Kildare, approximately 3km south-east of Rathangan Co Kildare on the R401 National Secondary route way and 5.5km north-west of Kildare Town. Irish National Grid Coordinates (E269919, N217476).

The total land ownership boundary encompasses an area of 24.5Ha. The lands surrounding the site are generally agricultural in nature with a small number of dwellings located along local R401 road. The nearest town is Rathangan (3km south-west) and Kildare (5.5km east). The site is located at the foot of Dunmurray Hill, on lands sloping gently towards the west. The gravel pit is screened from the R401 road by a substantial and well established hedge line. The total site encompasses an area of 20.42hectares and is owned by the applicant Mr. Michael Ennis.

The site is set on a saddle of land slightly elevated above Rathangan and the flat lands to the west, and at the foothills of higher ground in Dunmurray Hill and Red Hill. The character of the landscape is that of a rich pastoral landscape, up to a line high on Dunmurray Hill, above which there is a mixture of established deciduous woodland and semi-mature coniferous planting. Land within the holding of the applicant (east of the R401), and adjoining this holding, has had many of the traditional field boundaries removed over the years to facilitate intensive tillage farming, however many traditional field boundaries remain and mature hedgerows are dominant in the overall landscape, notably as perceived in views from the public road.

Access to the site is to/from the main Rathangan - Kildare Newbridge road Regional Route R401. Although the road is generally characterised by its meandering, undulating nature, it is a regional route with a typical width of 5.5 metres and site visibility lines at the site entrance are acceptable.

The application site and existing sand and gravel quarry is located largely in an agricultural area. There are a number of isolated residences in the area immediately surrounding the existing facility. The surrounding land use activities are largely agricultural with a mix of tillage and grazing activities predominant.

Section 1.6 of the main EIS document discusses the planning context for the proposed development and it is highlighted throughout how the proposal is supported from the point of view of enterprise, rural development and efficient and sustainable land use in the Kildare County Council Development plan which shows the development aims and ambitions for the county for the period 2011 – 2017. Furthermore it is demonstrated that there is also a requirement for restoration projects like this proposed in order to meet the increasing requirements for waste management and resource recovery. At present in County Kildare there are inadequate facilities for the recovery of construction and demolition inert waste material. This development will be seen as key to the local and national infrastructure given its proximity to Dublin also where the demand for materials recovery will be greatest. A



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snippet from a United Nations policy document is also presented in the main body of the EIS and whilst it discusses the halting of desertification it focuses on the need for us to recognise land availability as a scarce resource and a need to recover quarried or destroyed land for more sustainable uses. This only makes sense but the UN recognise that we need to become more proactive in this regard.

**SECTION 2 PRINCIPAL ELEMENTS OF THE PROPOSED RESTORATION SCHEME**

**2.1 PRINCIPAL ELEMENTS**

The proposed restoration scheme at Boherkill, Rathangan, Co. Kildare provides for:

- (i) Use of imported inert natural materials, principally excess soil, stones and/or broken rock excavated on construction sites, to backfill and restore a large existing void created by previous extraction of sand and gravel
- (ii) Recovery of imported inert construction materials, including stones, granular fill, concrete, blocks, bricks and ceramic tile.

The target materials for recovery are as follows:

EWG Code	Description
170504	Soil and Stone
170101	Concrete
170102	Bricks
170103	Tiles and Ceramics
170107	Mixture of concrete Bricks, tiles and Ceramics other than those mentioned in 170601

Table 2.1 Proposed Waste Materials for import

(iii) Separation and Quarantine of any non-inert construction and demolition waste (principally metal, timber, PVC pipes and plastic) unintentionally imported to site prior to removal off-site to appropriately licensed waste disposal or recovery facilities

(v) Continued excavation on a limited basis of the residual resource of sand and gravel remaining in the quarry. Export of sand and gravel off-site for use by others.

(vi) Phased restoration of the backfilled void (including placement of cover soils and seeding) and return to former use as agricultural grassland

(vii) Temporary stockpiling of topsoil and subsoil pending re-use as cover material for phased restoration of the site





(viii) Environmental monitoring of noise, dust, surface water and groundwater for the duration of the site restoration works.

## 2.2 SITE INFRASTRUCTURE

### Site Security

Access to the application site can only be gained via access road leading off the existing local road R401 and main site entrance. All vehicular traffic accessing the site must stop at a security barrier in front of the temporary site office before gaining access. The identity of the client forwarding the waste and facilitate electronic recording of time and date inert waste is received at the site is recorded. Aside from the access road to the existing facility, the entire site boundary is closed off by post and wire fences and agricultural field gates. All gates will remain padlocked for the duration of the site restoration activities. The only vehicles accessing the site at the present time are heavy good vehicles (HGV's) carrying sand and gravel from the site full and returning empty. The existing planning permission provides for up to 50 truck movements in and out of the site each day. No further increase in traffic levels, over and above this level, is envisaged in future years. Inert materials are anticipated to be accepted at the site between 08.00 hours and 18.00hours each weekday and 08:00hours to 13:00hours on Saturday. No materials are accepted at any other time.

### Site Roads and Parking Areas

All trucks delivering inert waste to this site will be confined within the Applicant's landholding. Trucks will initially travel over a stoned road surface between the site security barriers and the existing temporary wheel wash facility before travelling over an existing network of stoned internal roads to get to the active restoration area or the recycling area. Provision for employee and visitor car parking is currently provided on a stoned out area adjacent to the temporary site office, before the site security barrier.

### Hardstanding Areas

A temporary hardstanding area constructed of secondary aggregate is provided in the centre of the application site for the recovery of inert construction and demolition waste imported to site and for separation and storage (in skips) of any separated non-inert construction and demolition wastes inadvertently mixed with it, most likely to comprise metal, timber, PVC pipes, plastic etc. This hardstanding area also provides for the storage of plant, equipment and materials. At the present time, the hardstanding area is not sealed and any rain falling over this area either percolates downwards into the underlying soils or runs-off over the exiting ground surface toward the main haul road through the site and into the groundwater pond in the closed depression at the western site boundary. It is envisaged that the eastern side of the existing recovery area will in future be sealed by a 100mm thick reinforced concrete slab over 150mm of granular sub-base and used as a waste inspection and quarantine area.

### Wheel wash and Weighbridge

In order to prevent transport of soil on public roads, a wheel wash facility is and will continue to be installed close to the site entrance, as shown on the site infrastructure layout in Figure 2.2. All egressing site traffic will be required to pass through the existing wheel wash.



In order to track and record the amount of material entering the application site, it is proposed to install a weighbridge along the internal access road in front of the temporary site office. Sand and Gravel exported off-site and any non-inert construction and demolition waste dispatched to other licensed waste disposal or recovery facilities will also be weighed. Records of waste in and sand and gravel resource and exported quarantined material will be maintained for waste auditing purposes.



Fig 2.2 Site ancillary Services Layout Map (Ref Dwg 151324-P-06)

### Laboratory Testing

Laboratory testing of soil, surface water, groundwater and leachate will be undertaken off-site at an ILAB / UKAS accredited geo-environmental laboratory. Any validation testing and laboratory testing required to confirm classification of waste as inert will also be undertaken by the same laboratory. All samples taken on-site will be forwarded to the laboratory on the same day and test results will typically be forwarded to site within ten working days.

It is not envisaged that any environmental monitoring equipment such as pH and temperature meters, conductivity meters, flow meters and dissolved oxygen meters will be stored at the site office for the duration of the restoration works. Any such equipment will be brought to site by an independent environmental consultant as and when required.

### Fuel and Oil Storage

It is not intended to provide bunded fuel storage tanks at the application site. Fuel for plant and equipment undertaking the site restoration works and/or the construction and demolition waste recovery activity will be stored in double skin bowzers located on the hardstanding area. The effect of the double skin is to minimise the potential for fuel spillage on account of leakage / accidental piercing of bowser. A small bunded tank for waste oils will be provided on the concrete slab at the waste quarantine area. This tank will be emptied at intervals by a licensed waste contractor and disposed off-site at a suitably licensed waste facility. No re-fuelling of HGV trucks will take place on site. Oil and lubricant changes for wheeled or tracked plant will be undertaken on-site at the existing hardstanding area.



Plant maintained on site principally comprises mechanical excavators and/or bulldozers. Both tracked and wheeled plant will be serviced as necessary at the hardstanding area or, if necessary, on the concrete slab at the waste quarantine area.

#### Waste Inspection and Quarantine Area

A temporary waste inspection and quarantine area will be constructed to the north of the entrance, at the location shown on Figure 2.2. The waste inspection and quarantine area will be sealed by a 100mm thick reinforced concrete slab over 150mm of granular sub-base and bunded to a design storm volume.

Any suspect or unacceptable waste identified in this area will be placed in skips and covered with plastic sheeting in order to minimise potential contamination of surface water run-off. Visual inspection, in-situ monitoring and testing of imported waste materials will be undertaken by the Applicant's site staff as inert waste materials are end-tipped at the active restoration area.

Should there be any concern about the nature of the waste being end-tipped it will be re-loaded onto the truck and re-directed to the waste inspection and quarantine area for closer examination and inspection. Detailed records of all such inspections will be kept.

Should inspections or testing at the waste inspection area identify any non-inert material which cannot be accepted and used for restoration of this site, it will be segregated and temporarily stockpiled (at the quarantine area) and covered, pending removal off-site by permitted waste collectors to a suitably licensed permitted waste disposal or recovery facility.

#### Traffic Control

All traffic to and from the application site will enter and leave via the existing entrance which fronts onto the local road R401. The existing site access has been designed to accord with the standards set out with the "Design Manual for Roads and Bridges".



Photograph 1.0: Southbound view into R401 from existing gravel pit access.



Photograph 2.0: Northbound view into R401 from existing site access.





Photograph 3.0: View to the east from R401 into existing site access.

It can be seen from the above that the roads and traffic conditions assigned to the grant of planning permission for the gravel pit have been fully implemented. In addition this access has been designed to a standard that provides sightlines within the site access that accords with the standards set out with the Design Manual for Roads and Bridges.

Internally within the application site, warning notices, direction signs and speed restriction signs will be established along paved and/or unpaved roads leading to and from the active restoration areas and the construction and demolition waste recycling area.

All HGV traffic egressing the application site will be required to pass through a temporary wheel wash facility and weighbridge at the end of the paved internal road, shown on Figure 2.2.

#### Sewerage and Surface Water Drainage Infrastructure

At the present time, site staff use a temporary portaloos provided on the hardstanding area and is emptied / replaced as required by an approved waste Contractor. It is envisaged that this arrangement will continue for the duration of the site restoration works.

With the exception of the sealed concrete slab at the waste inspection and quarantine area, it is not intended to provide any site drainage infrastructure to collect and remove surface water runoff at the application site. During the infilling of the restoration site, surface water will be allowed to run over the existing ground surface to collect in surface ponds and discharge to groundwater. Some rainfall may also percolate downwards through the backfilled soil to the underlying groundwater table. At no time during the restoration works will surface water runoff be directed to watercourses or ponds beyond the site boundary. The temporary waste inspection and quarantine area, will be sealed by a 100mm thick reinforced concrete slab over 150mm of granular sub-base and bunded to a design storm volume.

Any surface water running over the surface of the concrete slab will be directed toward a buried storage tanks with double skin protection located on the western side of the hardstanding area, as shown on Figure 2.2. Surface water will only be collected in the buried tanks when suspect waste consignments are stored at the quarantine facility. At all other times, surface water run-off from the sealed slab will either percolate directly through the ground to the underlying groundwater table or will be directed over the existing ground surface to ponds in low lying areas, at which point it is effectively discharged to groundwater.

Should it be necessary to prevent high concentrations of suspended solids entering existing groundwater ponds, intermediate temporary surface water ponds will be constructed to hold runoff and encourage settling out of suspended solids prior to discharge to ground water



ponds at a lower level. Any wastewater collected in the buried tanks will be emptied by licensed waste collectors and transferred to a collection tanker for disposal off-site at an approved waste water treatment facility.

#### Site Services

Electric power, lighting and heating is provided at the temporary site office near the entrance to the application site. Key personnel overseeing site backfilling and recovery operations at the application site will be contactable by mobile phone. It is possible to install permanent telephone, fax and email facilities at the temporary site office. Mains water is available on site and can be used for any basic sanitary functions.

Given the lack of combustible waste materials at this site, it is considered highly unlikely that a fire will break out during backfilling and recovery operations. Fire extinguishers will be kept at the site office to deal with any localised small scale fires which might occur. Additional fire-fighting capacity may be provided by storing water in a mobile bowser at the hardstanding area.

#### Plant Sheds and Equipment Compounds

Plant and equipment used in the backfilling and/or recovery activities will be stored on the temporary hardstanding area in the centre of the application site. Given the limited access into the site, it is not considered necessary to provide a security fence around this area to create a secure compound.

No workshops will be provided on site. Any plant or equipment which requires specialist repair or overhaul will be removed off-site if required. Small items of mobile or hand-held plant and equipment will be stored in closed metal containers at the hardstanding area as and when required.

#### Site Accommodation

At the present time, there is only a small security hut at the entrance to the application site. All site administration and management functions will be based at this office. Changing facilities will also be provided here. It is envisaged that staff will continue to access handwashing and canteen facilities at this office also. A review of these requirements will be assessed and appropriate small scale adjustments made if required.



## 2.3 RESTORATION AND RECOVERY ACTIVITIES

The backfilling of the existing void with inert soils and stone is deemed to constitute inert waste recovery for the purposes of land improvement or restoration. The proposed restoration scheme provides for direct use of the imported soil and stone, without further processing.

### Backfilling / Restoration Schedule

Backfilling of the application site will proceed in several phases and on completion, will merge into the surrounding undulating pastoral landscape. A summary of the proposed phasing and the final ground level contours are shown in drawings 151324 P01, 151324 P02/01 – 151324 P02/11 attached to the main application documentation.

The proposal is to commence the restoration project at the Northern Boundary of the site and progress southwards year by year. Approximately 158400 tonnes per year in approximately 7920 HGV loads is the target requirement for the restoration project. It is calculated that the site will be fully restored to agricultural land in 10 years based on the surveyed void space.

The only material requirements in respect of the proposed restoration scheme are the inert soil, stone and rock used in backfilling the existing void and site-won secondary aggregates used for backfilling silt ponds and in the construction of temporary internal haul roads. Clean, inert soil and stone is likely to be sourced from green field development sites. Intermixed soil, stones and inert construction waste (concrete, block and brick) will be sourced from re-development sites.

EW Code	Description
170504	Soil and Stone
170101	Concrete
170102	Bricks
170103	Tiles and Ceramics
170107	Mixture of concrete Bricks, tiles and Ceramics other than those mentioned in 170601

All of the inert materials to be used in the restoration of the application site will be imported from external construction and demolition works sites. This includes secondary aggregate used to construct temporary haul roads across and through the site and to backfill silt ponds

Any non-hazardous or hazardous wastes identified within the inert soils imported to site for restoration purposes or the construction and demolition waste imported for recovery purposes will be transferred off-site by permitted waste collectors to suitably licensed waste disposal or



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recovery facilities. It is anticipated, on the basis of experience in operating the existing facility to date, that these waste quantities will be very low.

Inert construction and demolition waste recovered / quarantined on site, not re-used for haul road construction or backfilling of groundwater ponds up to and above design groundwater level, will be supplied as low grade hard core to construction companies in the Kildare and Greater Dublin area. Any non-inert construction and demolition waste (principally scrap metal, plastic and timber) will be removed off-site by permitted waste collectors to appropriately licensed recovery or disposal facilities.

#### Capping and Decommissioning

The application site will be restored on a phased basis to give a landform similar to that existed prior to extraction of sand and gravel. On completion, the final landform will be profiled to give a very slightly domed shape in order to facilitate surface water run-off into the in-situ sand and gravels along the site boundary, refer to final site contour map in drawings 15324 P01, 15324 P02/01 – 15324 P02/11.

A cover layer comprising 150mm of topsoil and approximately 850mm of subsoil shall be placed over the inert backfilled materials on completion of each phase of restoration. This will be immediately planted with grass in order to promote stability and minimise soil erosion and dust generation. The lands will then be progressively returned to use as agricultural land. Topsoil and subsoil will be segregated at all times during the importation phase for this use and shall not be used in the general backfilling of the site. The topsoil and subsoil shall be stockpiled pending re-use in the phased restoration of the site. They shall be stored separately within the application site, away from the active backfilling area and in such location and manner as not to create any temporary adverse visual impact. In the course of the 10<sup>th</sup> (and final) phase of the site restoration works, all mobile plant and equipment will be removed off site and any temporary site accommodation, infrastructure and services will be progressively removed off-site or decommissioned.

#### 2.4 WASTE ACCEPTANCE AND HANDLING

Only inert, uncontaminated soils and construction and demolition waste shall be accepted at the application site. Inert materials shall be accepted at the site between 08.00 hours and 18.00hours each weekday and 08.00hours to 13:00hours on Saturday. No materials shall be accepted at any other time. These operating hours will also be observed in relation to the extractive operations ongoing on-site.

#### Backfilling Activities

Insofar as practicable, the source of each consignment of soil imported to site for backfilling purposes shall be identified in advance and subject to basic characterisation testing to confirm that soils at that location can be classified as inert. Limit values for inert soils shall be in accordance with those set by *European Council Decision 2003/33 of 19 December 2002 establishing criteria for the acceptance of waste at landfills*. Characterisation testing will be undertaken in advance by Clients and/or Contractors forwarding soil to the application site.



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It is also suggested that site management visit each source site and inspect the nature of the development ongoing there in advance of the commencement of reception of material from that site. This process will give the site management an upfront visual characterisation of the site details whether greenfield, urban, rural brownfield etc. and allow for a more accurate understanding of the possible characterisation of the proposed imported product.

All inert soils imported to the site shall be unloaded (end-tipped) from trucks at the active backfilling face. It will be visually inspected by site personnel at that point to ensure that there is no intermixed non-hazardous or hazardous waste placed within it. Should there be any concern about the nature of the waste being end-tipped it will be segregated (if required), re-loaded onto the truck and directed to the waste inspection and quarantine area for closer inspection and classification.

A detailed record will be kept of all such inspections. Should inspections and/or subsequent testing indicate that the materials are non-inert and cannot be accepted and used for restoration purposes at this site, they will be placed in skips and covered pending removal off-site by permitted waste collectors to a suitably licensed / permitted waste disposal or recovery facility.

A representative sample shall be taken from one in every 200 loads of inert soil accepted at the facility and subjected to a less extensive scope of testing (compliance testing) focusing on key contaminant indicators. This data shall be used to confirm that the accepted soils are inert and comply with acceptance criteria. Compliance testing shall be undertaken by the Applicant. Any other EPA Licence criteria will also be met.

In accordance with the relevant waste collection permitting legislation only hauliers / contractors approved firstly via signed declaration by the site operators will be permitted to transport material to the site. Each approved haulier must have the facility permit added to their waste collection permit in advance of commencement of haulage to the site. A copy of each waste collection permit for each individual contracting haulier will be maintained in the site office and maintained, reviewed and updated in line with licensing requirements.

The ongoing restoration activities at the application site require a number of environmental controls to eliminate or minimise the nuisance to the public arising from the importation, placement and compaction of inert soils, the importation and recovery of construction and demolition waste. These will include and not be limited to Bird Control, dust control, litter control, odour control, vermin control and fire control. Conventional control mechanisms will be employed in accordance with the requirements of the EPA Licence.

All environmental monitoring to be carried out will be in accordance with National and European internationally accepted best practice and will reflect a continuation of the current environmental monitoring regime carried on at the existing site.

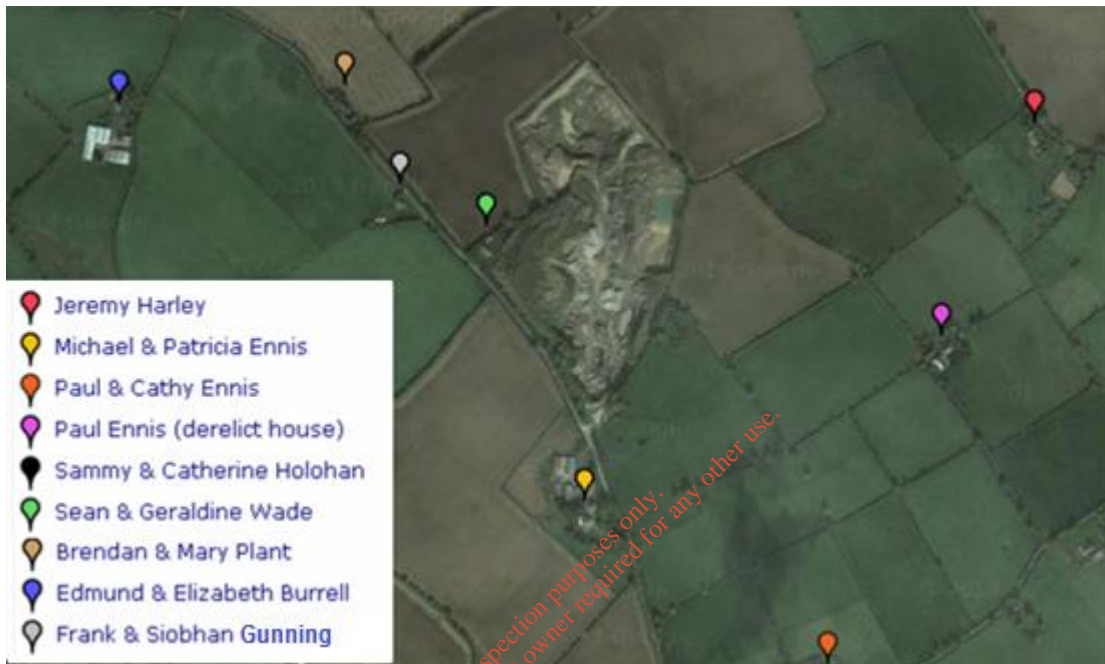
The application site will be restored on a phased basis to give a landform which merges into the surrounding undulating pastoral landscape. On completion, the final landform will be profiled to give a very slightly domed shape in order to facilitate surface water run-off into the in-situ sand and gravels along the site boundary. It will then be planted with grass in order to promote stability and minimise soil erosion and dust generation and the lands will be progressively returned to their former use as agricultural grassland.





### SECTION 3 HUMAN BEINGS

The baseline study of the area, with regard to Human Beings, involved study of the Census Report (2011) information for the District Electoral Division (DED) of Rathangan, Co. Kildare. Other statistics were derived from use of local knowledge. A survey of the local settlement patterns proximate to the site was also carried out and is evidenced by the figure below.



The existing sand and gravel quarry which is currently being operated and proposed to be restored is located entirely within the townland of Boherkill, Rathangan, Co. Kildare, approximately 3km south-east of Rathangan Co Kildare on the R401 National Secondary route way and 5.5km north-west of Kildare Town.

The sand and gravel quarry and proposed restoration site is located within the townland of Boherkill, Rathangan, Co Kildare in the electoral division of Dunmurry in which some 440 people reside. According to the census of 2011 the townland of Boherkill comprised of 27 inhabitants of 12 were males and 15 were female. There are 11 households of which one is vacant. Recent increases in population, may suggest that the area has recently come into favour with family units, possibly on account of its proximity to rapidly expanding urban centres, and a major employment centre in Dublin. The percentage of the population over 15 years of age at work is 5 percentage points lower than the State average of 53% and the level of unemployment is approximately 2% higher than the state average.

At the present time, the principal sensitive receptors in the vicinity of the application site comprise residents of four properties immediately beyond the application site. Of these, one property lies to the south of the site and belongs to the applicant Mr Michael Ennis and the other 3 principal sensitive receptor sites lie to the west / north west of the site and are identified as residences of Sean and Geraldine Wade, Frank and Siobhan Shaughnessy and Brendan and Mary Plant. It is imperative to note also that during the most recent planning application phases in 2007/2008 and also in relation to a withdrawn planning application for



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this proposal in 2015 there were no objecting parties to the application and furthermore none of the sensitive receptor residents objected to the proposals at that stage.

The impacts on human beings will arise mainly through environmental factors that are detailed in other sections of this report; most notably noise and air quality (including dust). While there will be negligible or no impact on much of the local residential housing identified there may be some limited minor impacts at the two residences closest to the application site when the active restoration area is closest to each property. The impacts which are likely to arise at these locations are associated with operational activities, specifically the importation and placement of soil and stones. These impacts are classified as temporary, minor and negative.

The potential and predicted impacts are detailed elsewhere in this report (Section 6 - Water, Section 7, Air, Section 8, Noise, Section 10, Landscape and Section 12, Material Assets. As quarrying activities have been established for some considerable time at the application site (in excess of 15 years), the importation of inert / construction and demolition materials via the existing local road network will have no adverse implications for existing traffic levels or travel patterns, provided traffic levels remain essentially unchanged ( or lower as is proposed). As no additional traffic movements will be generated by the continued operation of the existing facility, there will be no adverse traffic related impacts (noise, dust etc.) on the existing human environment.

The long-term impact of backfilling and restoration of the application site, beyond its 10 year operational life, will be the elimination of established traffic movements over the local road network going to and from the site, with consequent improvement of the human environment. This impact is classified as permanent, minor and positive. The infilling of the existing void and backfilling to former ground level will remove an unsightly feature in the existing landscape and restore the area to a more pristine agricultural landform. This impact is classified as permanent, minor and positive.

Mitigation measures to be adopted during this restoration project will relate primarily to minimising any impacts of the project on surrounding sensitive receptors. These measures are discussed elsewhere in this EIS, in the sections to which they relate.

#### **SECTION 4 ECOLOGY Flora and Fauna**

A field survey of flora and fauna at the application site at Boherkill, Rathangan, Co. Kildare was carried out to identify and assess the significance of the flora and fauna occurring on or in the immediate vicinity of the site.

The main habitat before development was tilled land (BC4 in Fossitt 2000) and the site is still surrounded by wheat fields and separated from them by hedgerows (WL1). Since excavation has occurred it now consists of active quarries and mines (ED4) and recolonising bare ground (ED3) where there is overburden storage.

There are no mammals in the quarry itself with the exception of a few rabbits in the NE corner. Around the margins however there are further burrows in the hedges while fox and hare may occur at times on the western side. There was no evidence of badgers on any visit though they are likely to be in the area. Some bats probably feed along the road and around



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the ringfort but the habitat elsewhere is not suitable for these animals and the pit would not be used.

There is no habitat available for frogs or newts as excavation does not reach the water table and there are no long-lasting or permanent, vegetated ponds.

Recent excavation has revealed bands of sand within the deposit which are suitable for nesting sand martins. The birds now occupy two sections in the SW corner and there is a small population of 10-20 pairs. The bird is essentially an opportunist, finding and exploiting new nest sites as they become available because of erosion, either natural (riverbanks) or man-made (quarries).

A pair of peregrines attempted to nest in 2015 but abandoned the site in mid-May without success. The nest was on the western side close to active extraction and the birds were generally not disturbed by machinery. The reason for abandonment is not known. In general, sandpit sites are much less suitable for the species than rock quarries. Of 90 sites occupied by nesting birds in 2002, eighty-eight were in rock quarries and two in pits (Madden *et al*, 2009).

*The assessment found that the habitats available on site are widely found in sand pits and have no significant ecological interest.* The plant species also are quite common and widespread in Kildare (cf Preston *et al* 2002). A notable feature is the lack of diversity in the flora and this is probably caused by the short period of extraction as well as the characteristics of the material. A long-established site tends to accumulate more species which are either introduced by chance or by visiting vehicles. Allied to this at Boherkill is the absence of introduced species; only two plants, *Buddleja* and *Lactuca*, are of this category and they are restricted to the entrance.

The bird fauna contributes the only items of interest with the potential nesting by peregrine falcons and the current small colony of sand martins. As mentioned, sand quarries are not the most suitable sites for the peregrine and it is relatively unlikely that the pair would attempt to breed again, having failed in 2015. Their presence may be the result of a high local population.

Sand martins will probably continue to nest as long as there is a suitable lens of fine material to support their burrows.

#### Natura 2000 Designations

An Appropriate Assessment Screening exercise was also carried out (Ref EIS Attachment 2) and it concluded that the site is not included in any area with an ecological designation (Natural Heritage Area, Special Protection Area or Special Area of Conservation) and is unlikely to be so in the future.

The following impacts will arise during the restoration works at the applications site:



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- i. Backfilling of the existing void space and the improved agricultural grassland to the south and west of the application site will alter the landscape character and disturb flora and fauna that have colonised these areas.
  
- ii. Removal of silt ponds will have resulted in the loss of wetland habitat which may support wintering birds and breeding birds during the summer periods but Mr Goodwillie did not register this in his report
  
- iii. Placement and compaction of inert soils in close proximity to hedgerows may temporarily and locally reduce potential foraging and shelter habitat for both mammals and birds.
  
- iv. The removal of partially restored grasslands as restoration works proceed, will result in the temporary loss of mostly poor habitat that is presently colonised by flora and fauna.
  
- v. Reductions in potential foraging habitat for mammals, as areas utilised by them are removed and filled as part of the proposed site restoration works.
  
- vi. The creation of berms for mitigation purposes would lead to increased foraging and nesting habitats for common species of song bird as these berms began to be recolonised by flora.
  
- vii. As backfilling works are completed, the site will be progressively restored to agricultural pasture lands. This will be in keeping with the surrounding area which is composed predominately of improved agricultural land. This process will result in the former sand and gravel quarry being returned to its original land use.

Dust deposition could occur as an indirect impact of the placement, spreading and compaction of the naturally occurring inert materials. This could potentially have a negative impact on flora in the area if foliage were to become covered in excessive levels of dust, potentially reducing the amount of photosynthesis taking place. With adequate management and mitigation through the applicants Environmental Management System the likely impacts of this will be minor.

During the filling process the site is likely to be covered by open vegetation similar to what occurs today on the south-western side. This will support an invertebrate fauna which will in turn allow feeding by sand martins and swallows.

Continuing extraction on the scale envisaged will not have any ecological effect on the habitat.

Restoration work will eventually remove suitable banks for nesting by the sand martins (and peregrines) but the species are flexible and will colonise new quarries as they become available. The eventual restoration of the site will be to agricultural land suitable for grass or tillage crops.

The EIS concludes that *“the impact of inert waste disposal on this site will be considerable in local terms but will resemble the extraction process in the habitats it creates. It will not result in any loss of heritage values in the locality or, more widely, in the Natura 2000 network of*



protected sites. The simultaneous small scale extraction will have no significant ecological effect except that it may give temporary nesting sites for sand martins”.

## Section 5 Soils and Geology

The site is surrounded by lands which are primarily used for agricultural activities. According to the EPA Corine Land use Map 2012, land use in the area has been classified as ‘Pastures and non-irrigated land.

Available geological maps, surveys, literature and reports relating to the site and the locality were examined as part of the baseline desk study.

### Bedrock Geology

Kildare’s land surface topography is characterised by glacial deposition. It is mostly underlain by Carboniferous bedrock, which only occasionally reaches the surface (e.g. Carbery Castle), but older rocks underlie the hills on the eastern edge of the county, and the distinctive high ground in a fault bound inlier (older rocks surrounded by younger rocks) to the north of Kildare town.

Reference to the 1:100,000 scale map of the Geology of Kildare/Wicklow (Sheet 16) (Geological Survey of Ireland, 1994) indicates that the entire quarry site is underlain by the Carboniferous Boston Hill Formation described as a rather uniform, thick successions of nodular diffusely bedded, argillaceous fossiliferous limestones (and their dolomitised equivalents) and subordinate thin shales (Figure 1, Appendix B).

According to the GSI online maps, the nearest mapped fault is located approximately 810 m southeast of the site. It is a north-east/south-west trending fault.

### Soils and Subsoils

The Teagasc/EPA soils map (2006) describes the soils underlying the site as deep and shallow well-drained mineral soil derived mainly from calcareous parent material (**BminSW**).

The Subsoil Map describes the overburden material at the site as glacial till, Carboniferous Limestone sand and gravels (**GLs**) the majority of this subsoil cover on the site has now been excavated.

### Geohazards

The Boherkill site is underlain by Carboniferous limestones and thin shales. Karst topography is a landscape formed from the dissolution of soluble rocks such as limestone, dolomite, and gypsum. It is characterized by underground drainage systems with sinkholes, dolines, and caves. Reference to the Geological Survey of Ireland karst database indicates that there are no karst landforms located within the site perimeter and in the vicinity of the site. Nevertheless the bedrock underlying the site is limestone and therefore groundwater flow may be karstic to some degree and more so in local zones where purer limestones exist.

Based on the relatively flat to slightly undulating topography and surrounding quaternary geology predominantly comprising glacial tills, the site is unlikely to be susceptible to natural geological hazards such as landslides. There are no raised bogs in the vicinity of the site and no historical landslides are identified in the GSI Geohive Geohazard web map.





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The OPW flood database ([www.floodmaps.ie](http://www.floodmaps.ie)) indicates two recurring flood points in the vicinity (within 5 km) of the proposed site both of which correspond to the River Slate. Given the sloping

nature of the ground immediately beyond of the site towards the river, the risk of flooding locally is considered low. The exposed slopes along the former extraction areas within the application site, being relatively steep, are prone to erosion and localised slope instability. The lack of established vegetation covering these slopes may be any indication of on-going erosion. Minor tension cracking, consistent with onset of slope instability, was observed along the perimeter of the site at the time of the site visit.

#### Geological Heritage

The Irish Geological Heritage (IGH) Programme identifies and selects a complete range of sites that represent Ireland's geological heritage under sixteen themes ranging from Karst features to Hydrogeology. The IGH Programme is a partnership between the GSI and the National Parks and Wildlife Service (NPWS) and sites identified as important for conservation are conserved as Natural Heritage Areas (NHA). Datasets are now available online detailing sites of geological heritage. Reference to this database confirms there are no sites of geological heritage within the perimeter of the site boundaries.

According to the GSI, there are two sites of interest located within a 5 km radius of the proposed development. The closest geological heritage site, Dunmurray Hill IGH 2, is located approximately 1.3 km to the southeast of the site. This site is designated under the Precambrian to Devonian Palaeontology theme and consists of a forested hillside which is the site of the discovery of Silurian dated graptolite fossils. The Chair of Kildare is located approximately 1.7 km to the southeast of the proposed site. This site is also designated under the Precambrian to Devonian theme and consists of an artificial mound on the edge of Grange Hill which is an inlier of Ordovician Rocks. The proposed development is not expected to impact on either of these geological heritage sites.

#### Assessment of Impacts

The impact on the soils is considered to be of a temporary nature as they are stored for reuse directly within the worked out areas as a fundamental part of the proposed site rehabilitation. By its nature, quarrying of the underlying sand and gravel deposits will involve removal of an identified aggregate resource. This has and will result in an *irreversible negative significant impact* on the sand and gravel resource.

As a result of backfilling using inert soils and stones, the reinstatement of the quarry will progress to land suitable for agricultural and forestry, and thus will have a *positive impact*.

The previous quarry workings have not had an indirect impact on the local or regional geology other than within the area of extraction. There is no evidence that the working of the limestone released contaminants and uncontrolled dust onto the lands.

The available site investigation data indicates that the area to be backfilled is underlain by relatively competent sand and gravel strata. The increase in loading applied to these soils



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(below existing formation level) will not exceed that which existed prior to extraction of sand and gravel. As a consequence, no deep seated failure of temporary slopes is anticipated.

Restoration of the quarry will have no indirect impact on the local or regional geology, as placement of the inert soil and stone will not instigate slope instability, release contaminants onto the lands and dust from the restoration will be tightly controlled.

If the application site is not restored completely to former ground level as proposed, and it remains essentially unchanged from its existing layout, it will have the following implications for soil and geology:

- Failure to recover soil and stone for beneficial use of land improvement, specifically reinstatement of a quarry, could result in unnecessary extraction of natural resources and exhaustion of landfill space;
- the reduced soil cover overlying the sand and gravel aquifer will result in a potential risk to groundwater quality;
- there is the potential for continued degradation of existing slopes, leading to possible slope failures;
- the site may be a target for unauthorised disposal / fly-tipping of waste by unscrupulous operators.

Given that a locally important aquifer underlies the site, and the important role soils and subsoil plays in the protection of aquifers, leaving the quarry void unrestored would cause the increased vulnerability of the aquifers caused by the quarry operations to remain.

In order to minimise the risk of importing and introducing contaminated soil to the site, management systems will be introduced at the application site to establish the source of imported materials in advance and to confirm that they are inert

Before waste is accepted at the site, all waste will be confirmed to meet the waste permit conditions, the waste acceptance procedures (WAP) and waste acceptance criteria (WAC as per *Council Decision 2003/33 of 19, December 2002 establishing criteria for the acceptance of waste at landfills*).

In order to reduce the risk of localised erosion and potential dust emissions at soil slopes during the restoration works, the area of bare or exposed soils will, insofar as practicable, be kept to a minimum. Consideration could be given to establishing temporary vegetation cover over such slope pending final backfilling and restoration to original ground level.

In order to maximise the future agricultural potential of the restored land, a minimum 150 mm thick layer of topsoil and 850 mm thick layer of subsoil will be placed over the backfilled clayey mineral soils. The final landform will also be graded so as to facilitate over-ground run-off of surface water and avoid ponding of surface water in closed depressions

The section on Soils and geology concludes with the following statement *any potential and existing risks to soils and geology from the proposed restoration works in this location will be minimised/prevented through the adherence to the proposed mitigation measures detailed in the substantive section in the EIS.*



## Section 6 Water

### Meteorology and Water Balance

Rainfall data for the area was obtained from Met Éireann. The closest rainfall gauging station to the site is at Naas (Gowran Grange), approximately 18.5 km east of the site. The average annual rainfall (AAR), based on mean monthly rainfall data during the period 1973-1991, was calculated at 859 mm/yr. However, irrespective of this, for aquifers classed as poor (Pu/PI) (or locally important (LI)), there is an upper limit to the amount of recharge that they can accept. When that natural capacity is achieved all subsequent recharge will be rejected. It is recommended that recharge caps of 100 mm/yr should be applied to poor aquifers (and 200 mm/year for locally important aquifers). When the natural recharge capacity is exceeded then rejected recharge occurs and this adds to surface runoff (or interflow) (Hunter-Williams *et al.* 2008). Long term Potential Evaporation (P.E.) data was obtained for the closest synoptic station at Casement Aerodrome, 16 km east of the quarry. The average P.E. for this synoptic station (based on 1971-1990 average monthly data) is 777 mm/year. The Actual Evaporation (A.E.) is taken to be 0.82 of P.E. Therefore, the A.E. at the quarry is estimated at 637 mm/yr. At the existing quarry, the AE will be much lower due to the absence of significant vegetation cover and therefore the AE is assumed to be approximately 100 mm/yr and therefore potential aquifer recharge at the quarry void is approximately 100 mm/yr (Recharge cap 200 mm/yr – AE 100 mm/yr = 100 mm/yr).

All effective precipitation formed within the quarry area recharges into the ground.

### Hydrology

In a regional context, the site is situated in the South Eastern River Basin District (SERBD) within the Barrow River catchment.

The major surface water feature in the vicinity of the site is the River Slate, approximately 3 km north of the site. The River Slate flows in a westerly direction discharging into the Figile River approximately 9 km west of the site.

Aside from the River Slate there is one small unnamed stream approximately 2.3 km to the west of the site, which flows northwards discharging to the River Slate.

The Environmental Protection Agency (EPA) monitors the biological quality of rivers and other water bodies on an on-going basis. They use an assessment scale known as a Q-Value where Q1 indicates gross pollution and Q5 indicates pristine conditions (Toner *et al.*, 2005). These values are based on the communities of macroinvertebrates in a stream as different species display varying sensitivities to pollution. The nearest monitoring station on the Slate is just east of Rathangan. Ecological water quality was most recently assessed here (2004-present) as Q3-Q4 which is Moderate Status (slightly polluted). The nearest station west of Rathangan also registers as Q3-Q4. Overall, for the 2010-2012 reporting period, the Water Framework Directive (WFD) status of the River Slate in this region is assessed as 'moderate' upstream of Rathangan and "good" downstream of Rathangan.



The groundwater vulnerability maps suggest that the depth to bedrock within the area of investigation is >3 m below ground level. This is based on a High (H) vulnerability classification and high permeability subsoil (DoELG/EPA/GSI 1999). As the subsoil has been excavated at the site the groundwater vulnerability is revised to Extreme (E & X)

#### Aquifer Classification

The rock underlying the northern and principal area of the site is mapped as part of the Kildare groundwater body (GWB) and classified as a **locally important aquifer** - bedrock which is moderately productive only in local zones.

The key characteristics of the Kildare groundwater body have been identified as follows:

- This aquifer is located northwest of Kildare town. The area is defined by the SERBD - ERBD boundary to the northeast and elsewhere by the extent of the Waulsortian and Boston Hill formations.
- This GWB is considered to comprise local or poor aquifers. Nevertheless the lithologies are limestone and therefore groundwater flow may be karstic to some degree and more so in local zones where purer limestones exist. This implies the groundwater flow may be fast if concentrated in conduits along openings in the rock e.g. fractures and faults.
- The main recharge mechanisms for this groundwater body are from areas exposed to the surface where subsoil is thin and also from surrounding groundwater bodies. The topography and surface drainage show flow from the Bagenalstown GWB into this GWB. It is also likely that some karstic conduits may also carry flow across the geological boundary where structural fractures are more important than lithology in determining groundwater flow.
- Discharge from this groundwater body will be to the associated surface water bodies and also, in local zones, to adjacent groundwater bodies. Discharge may be in the form of karstic springs, which then flow into nearby rivers.
- The interaction between surface water and groundwater will differ throughout the area depending largely on the overlying strata type. In areas of outcrop the surface water and groundwater will be very closely linked at streams etc. Where there are areas of till covering the bedrock the interactions may be more subdued depending on the thickness of the over burden. In areas where there are deposits of peat this may completely seal off the surface water from the groundwater. Where the gravel aquifers occur there will be little or no interaction between the bedrock groundwater and the surface water bodies
- There are numerous hydrogeological settings in the area due to the variation in the following:
  - Subsoil (Bog, till, outcrop and major gravel aquifers)
  - The degree of structural deformation (from intense faulting in the area of Allenwood to little or none in the south)
  - The variety of rock type and hence aquifer types.



Such variations make broad statements fallible and individual site investigation will be essential to understanding any given location of interest. The majority of groundwater flow in this area is considered to take place in the upper weathered zone of the aquifer.

#### Karst Features

Reference to the Geological Survey of Ireland karst database indicates that there are no karst landforms located within the vicinity of the site. No karst features have been mapped within the site perimeter. Nevertheless the bedrock underlying the site is limestone and therefore groundwater flow may be karstic to some degree and more so in local zones where purer limestones exist.

#### Groundwater Abstractions

A well survey was not carried out as part of this assessment. Three nearby disused wells were audited as part of this investigation on the 18<sup>th</sup> November 2015. Two of these were stoned lined wells (Well 2 and Well 1). Well 4 appeared to have been a stone lined well similar to the wells 1 and 2, but was subsequently modified with a concrete lining to the base. Summary details for the wells are tabulated below. Wells 2 and 4 are located south of the site and were both dry. Well 1 is located north of the site and the static water level in this well was 18.38 mbgl.

#### Groundwater levels and flow direction

The water table appears to be deep in the vicinity of the site. Static (non-pumping) groundwater levels in the nearby disused wells, were measured. Based on the topography and surface water drainage, groundwater infiltrating from the higher ground to the south of the site flows in the vicinity towards the Slate River to the northwest.

#### Groundwater vulnerability

A review of the Groundwater Vulnerability Map and the Aquifer Map) in accordance with the DoELG / EPA / GSI methodology indicates that the Boherkill site is located within an area of High vulnerability and a Locally Important Bedrock Aquifer. Due to the removal of subsoil over the current worked area the vulnerability classification is revised to Extreme.

The proposed backfilling of the existing quarry with inert C & D including predominantly cohesive inert glacial till can provide an enhanced degree of protection, over and above that which exists at present. Given the limited risk to groundwater associated with the placement and compaction of inert soil compared to those presented by non-hazardous landfills, it is considered that the site setting is appropriate for an inert soil recovery facility.

#### Groundwater Quality

Under the Water Framework Directive (Directive 2000/60/EC) groundwater bodies and surface water bodies were assigned a status rating (Bad – Poor – Moderate – Good – High)





based on chemical and ecological status. The Kildare Groundwater Body is classified as “Good” status.

#### Site Water Management

The water supply for the site is sourced from the mains where it is utilised for the wheel wash, washing of the excavated material and for dust suppression on the site. All wheel wash water either evaporates from the surface or percolates to ground. Any excess water from the circulation system is pumped to the settlement lagoon on the western perimeter of the site. Currently this lagoon is un-dredged and water pumped to it flows over the top of the accumulated silt and flows by gravity to the natural sump at the northern perimeter of the site. This sump allows the silt to collect and settle. The water then percolates to ground. There is an existing septic tank system off site for the treatment of wastewater.

#### Risk Assessment

The study assessed the risk involved in carrying out the proposed development and aimed at identifying potential Source – Pathway – Receptor relationships with potential impacts present on site.

The assessment identified primarily that:

- (i) there are no surface water bodies on-site or within the vicinity of the site therefore risk to surface water is minimal.
- (ii) The continued operation of the quarry site and the proposed recovery facility has the potential to impact on groundwater in terms of both the groundwater quality and the groundwater flow regime.
- (iii) Groundwater flow path diversion is expected to result in a *neutral permanent slight long-term impact* on the groundwater flow.
- (iv) Possible contamination of soil and subsoil, by leakage or spillage from machinery and associated equipment, may occur during the construction phase. Any accidental hydrocarbon spillage would have a *negative short-medium term moderate impact* on groundwater quality at the site.
- (v) Any removal of soils will temporarily increase the groundwater vulnerability during construction. This would have a *negative short-term moderate impact* on the groundwater.

A series of mitigation measures have been suggested which would as a matter of course be implemented but which will ensure that the proposal will have a minimal effect on water and groundwater.

The report concludes that there are no surface water bodies directly connected to the proposed site area. The proposed development will not discharge directly to any water bodies and will therefore have no significant impact on the water quality or hydrology of the surrounding area. The evidence to date indicates that the groundwater level is deep in this area (> 18 m bgl). It is recommended that groundwater monitoring is commenced for the duration of the restoration works and for a short aftercare period. Any potential and existing risks to groundwater and



surface water from the proposed restoration works in this location will be minimised/ prevented through the adherence to the proposed mitigation measures detailed.

## SECTION 7 AIR QUALITY

The Air Quality and Climate assessment has been carried out in line with all relevant guidelines. The proposed remediation plan has been designed to ensure that there are no significant adverse effects on air quality.

An air quality assessment has been carried out in the area utilising existing monitoring data collected by Boherkill Quarry and baseline air quality data collected and generated by synoptic EPA monitoring stations in the area. The purpose of this study was to identify existing pollutant trends in the vicinity of the existing development, and to assess the potential impact of the proposed development.

### Baseline air quality assessment

The EU Air Framework Directive deals with each EU Member State in terms of 'Zones' and 'Agglomerations' for air quality. For Ireland, four zones, A, B, C and D have been defined and are included in the *Air Quality Standards (AQS) Regulations* (SI No 180 of 2011).

- Zone A – Dublin conurbation
- Zone B – Cork conurbation
- Zone C – 21 towns in Ireland with population > 15,000
- Zone D – remaining area of Ireland

Boherkill and its environs are classified for the purposes of this assessment as falling within Zone D. A baseline air quality survey was performed between November 2015 and December 2015 at four locations in the vicinity of the application area. This survey was undertaken in order to assess the baseline air quality concentrations of specific key pollutants including Nitrogen dioxide, Sulphur dioxide, Benzene and Total particulate matter.

The assessment methodology of the existing climatic environment involved a desk-based review of literature including the National Climate Change Strategy 2007-2012 (Department of Environment Heritage and Local Government, 2007).

### Potential Impacts of the Proposal

'Do Nothing' Impact - The baseline survey undertaken as part of this assessment suggests that air quality in the vicinity of the application area is expected to be average/good with typical levels of pollutants for a rural area. All pollutant levels are within the relevant Irish and EU limits (for similar sized population centres).



## Construction Phase Impact – Air Quality

Potential sources of dust from construction and operation include the following:

- The working of the borrow area,
- The transport of material including vehicles carrying dust on their wheels,
- Un-vegetated stockpiles of construction materials,
  
- The handling of construction materials for the construction phase of the facility,
- Construction of the raise.
- Construction dust and its potential to impact on sensitive receptors and to cause an environmental nuisance,
- Construction traffic emissions and their potential for impacts on sensitive receptors.

The construction phase of this proposal is deemed for the purposes of this assessment to be of a minor to moderate scale. At a minor to moderate construction site there is a risk that dust may cause an impact at sensitive receptors within 50m of the source of the dust generated. The nearest sensitive receptors to the centre of the subject site is located at a distance of greater than 50m from the activities, therefore, the impact from construction activities can be considered to be imperceptible. All sensitive habitats are located at a distance greater than 25m from the emission source as a result the impact on habitats will be imperceptible.

Emissions associated with construction traffic can impact on local air quality. In particular, the proposed routes used for deliveries and any sensitive receptors that line these routes may experience impacts to local air quality. The potential impact of construction traffic associated with this proposal was estimated as a worst case Annual Average Daily Traffic scenario of 200 with a mean traffic speed of 20km/hr. Air quality impacts may arise from process based emissions and traffic movements associated with the operational phase of the proposed plant. There is no significant increase in the air quality impact of named pollutants as a result of increased baseline traffic numbers in 2017, 2022 and 2027 with only a slight increase occurring in pollutant concentration predicted 5m from the road centreline. In terms of the 'do nothing' versus 'do something' for 2017, 2022 and 2027, there is a slight increase in pollutant concentration in the order of 1 to 2% which is considered to be imperceptible. When this increase is added to baseline data for each named pollutant, emissions will remain well within the air quality limits presented for the protection of human health.

The baseline survey results suggest that air quality in the vicinity of the existing facility and proposed development is good and shows typical levels for a rural area with all pollutants within the relevant Irish and EU limits. If the proposed development were not to take place, the current air pollutant concentrations will remain unchanged. In relation to dust, non-development of the site would result in no movement of soils/sands and no construction activity and therefore no dust creation as a result of construction works.



A series of remedial measures have been suggested to mitigate the potential effects of any impact on air quality in both the limited construction phase but also in relation to the extractive phase and traffic management requirements as a result of the proposed development.

It is envisaged that the proposed facility development will not have a significant impact on the surrounding air quality. But it is stressed that adherence to the suggested mitigation measures is highly recommended.

Emissions of Oxides of nitrogen, Sulphur dioxide, Carbon monoxide and Carbon dioxide should be mitigated by using efficient construction vehicles, appropriate scheduling of construction activities to minimise duration, the shutting off of equipment during periods of inactivity if they do occur, and a transport management plan as part of the CEMP as described above. No additional mitigation measures are considered necessary.

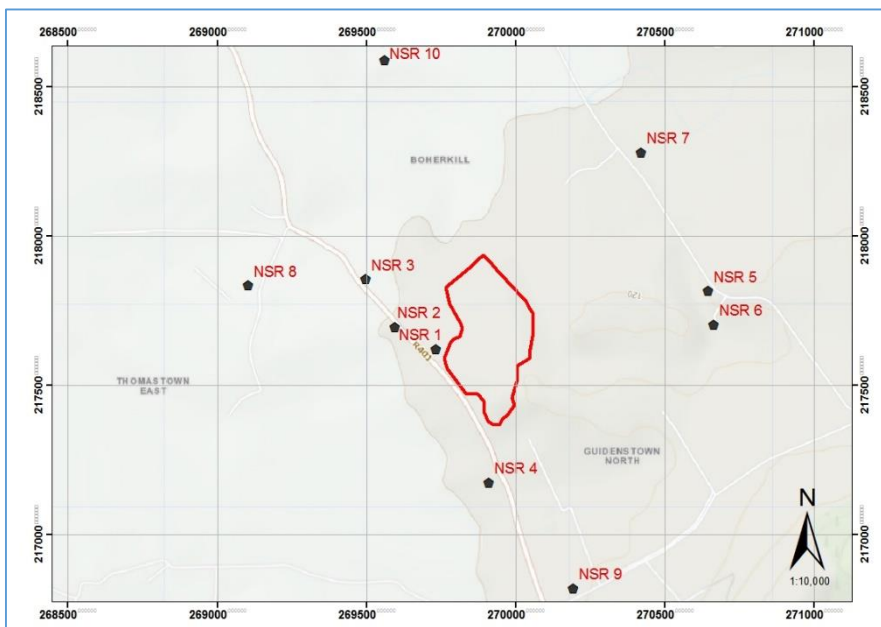
The impact will be insignificant due to the implemented mitigation measures. Current good quarry management practice as adopted by Boherkill Quarry will be continued.

## SECTION 8 NOISE

The Noise report was structured to give an understanding in the following areas:

- Establish the existing noise environment
- Determine applicable noise limits
- Description of the noise aspects of the proposal
- Predict potential noise impacts associated with the proposal
- Suggest mitigating measures
- Establish residual noise impacts

The existing sand and gravel pit is located in a rural area surrounded by agricultural land. Population density is low with only a small number of dwellings in the environs of the quarry. A select number of representative noise sensitive locations have been identified





The area was screened for background noise sensitivity and the report concluded the following:

*It is apparent that the conditions listed above are **not pertinent** to this particular site and its therefore **deemed not to be** “Areas of Low Background Noise”.*

Due to the fact that the sites fall outside the category of “Area of Low Background Noise” therefore based on the findings in section 2 above the following noise limits are deemed appropriate for the site:

- Daytime 55 dBA
- Evening 50 dBA
- Night 45 dBA

Existing road traffic bears a significant influence on the ambient and background noise levels in the environs of the quarry site. Access to and from the site shall be from the existing site access onto the R401. In relation to the impact of traffic from the proposed facility the report states “*Critically the proposed development will result in a reduced traffic volume and therefore the resultant noise levels will be lower than currently*”.

Noise emissions will be associated with mobile quarry plant and machinery. Table below represents typical noise levels and numbers of mobile plant for the proposed construction jobs. These noise levels have been sourced from measurements of noise sources at other construction sites. The levels are based on measurements taken at 20m from the geometric centre of activity when the equipment was in continuous operating mode.

Typical Quarry Plant and Associated Noise Levels

Type	Number	Typical Noise level dB(A) Leq @ 20 meters
Excavator – Tracked 25 Tonne	2	76
Water pump	1	70
Screen	1	86
Bulldozer	1	82

Maximum potential cumulative noise levels from quarry activity would be 87 dB(A) at 20 metres. Using this information it is possible to predict the impact of the generated noise on the nearest sensitive noise receptors to the site. The table below shows the predicted levels at the various receptors:



Table 8.7 Predicted Operational Noise Levels

Id	Address	Predicted noise level without mitigation, LAeq, dB
NSR 1	BOHERKILL, RATHANGAN, KILDARE, R51 VK72	52
NSR 2	AISLING HOUSE, THOMASTOWN EAST, RATHANGAN, KILDARE, R51 K761	48
NSR 3	BOHERKILL, RATHANGAN, KILDARE, R51 CY64	45
<a href="#">NSR 4</a>	THOMASTOWN LODGE, THOMASTOWN EAST, RATHANGAN, KILDARE, R51 CR40	44
<a href="#">NSR 5</a>	HILL VIEW, GUIDENSTOWN NORTH, DUNMURRY, KILDARE, R51 FT98	41
NSR 6	THE PADDOCKS, GUIDENSTOWN NORTH, DUNMURRY, KILDARE, R51 A718	41
NSR 7	KILMONEY LODGE, KILMONEY, RATHANGAN, KILDARE, R51 E290	40
NSR 8	THOMASTOWN EAST, RATHANGAN, KILDARE. R51 HN82	40
NSR 9	SAINT CONLETH'S, GUIDENSTOWN SOUTH, KILDARE. R51 D993	39
NSR 10	BOHERKILL, RATHANGAN, KILDARE, R51 YA02	38

Based on the cumulative impact of all plant operational simultaneously, it is predicted that the cumulative noise levels at the closest noise sensitive receptor, NSR 1, could be 52 dBA.

The study document then takes the predicted levels and suggests a series of mitigation measures that should be implemented to reduce any potential impacts that may occur. When implemented the table below highlights the predicted post mitigation noise levels:

Table 8.8 Predicted Operational Noise Levels

Id	Address	Predicted noise level without mitigation, LAeq, dB	Predicted noise level, taking account of mitigation LAeq, dB
NSR 1	BOHERKILL, RATHANGAN, KILDARE, R51 VK72	52	45
NSR 2	AISLING HOUSE, THOMASTOWN EAST, RATHANGAN, KILDARE, R51 K761	48	41
NSR 3	BOHERKILL, RATHANGAN, KILDARE, R51 CY64	45	38
<a href="#">NSR 4</a>	THOMASTOWN LODGE, THOMASTOWN EAST, RATHANGAN, KILDARE, R51 CR40	44	37





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Id	Address	Predicted noise level without mitigation, LAeq, dB	Predicted noise level, taking account of mitigation LAeq, dB
NSR 5	HILL VIEW, GUIDENSTOWN NORTH, DUNMURRY, KILDARE, R51 FT98	41	34
NSR 6	THE PADDOCKS, GUIDENSTOWN NORTH, DUNMURRY, KILDARE, R51 A718	41	34
NSR 7	KILMONEY LODGE, KILMONEY, RATHANGAN, KILDARE, R51 E290	40	33
NSR 8	THOMASTOWN EAST, RATHANGAN, KILDARE. R51 HN82	40	33
NSR 9	SAINT CONLETH'S, GUIDENSTOWN SOUTH, KILDARE. R51 D993	39	32
NSR 10	BOHERKILL, RATHANGAN, KILDARE, R51 YA02	38	31

The study in this instance recommends that the planning authority should attach noise conditions to the permission to ensure that the plant is so operated and maintained as to ensure that it avoids causing noise nuisance. It is recommended that such noise limits/condition be set at the nearest noise sensitive receptors rather than at the site boundary.

It has been determined that the site of the proposed development is not by definition an "Area of Low Background Noise". The proposed development will result in a reduced traffic volume and therefore the resultant noise levels will be lower than currently.

- The site of the proposed development is located along the busy R401 Kildare road. Road traffic is the dominant factor on existing ambient noise levels in the area.
- Noise impacts from road traffic will therefore be negligible.

During normal operation of the facility there should be a negligible noise impact at all nearby residents. Noise emissions should contain no clearly audible tones and should not be impulsive in nature. Predicted noise emissions should be well within recommended criteria levels if mitigation measures are implemented.

## SECTION 9: CULTURAL HERITAGE

This section of the EIS outlines the Architectural, Archaeological and Cultural Heritage issues with respect to proposed quarry restoration project at Boherkill, Rathangan, Co. Kildare.

This study determines, as far as reasonably possible from existing records, the nature of the cultural heritage resource within the area of proposed development using appropriate methods of study.

The subject development lands are located in the townland of Boherkill, in the civil parish of Rathangan and in the barony of Offaly East. The field boundary to the east of the subject development area forms a townland boundary between Boherkill and Guidenstown North while that to the west/southwest forms a townland boundary with Thomastown East. The latter is also a parish boundary between Rathangan and Thomastown.



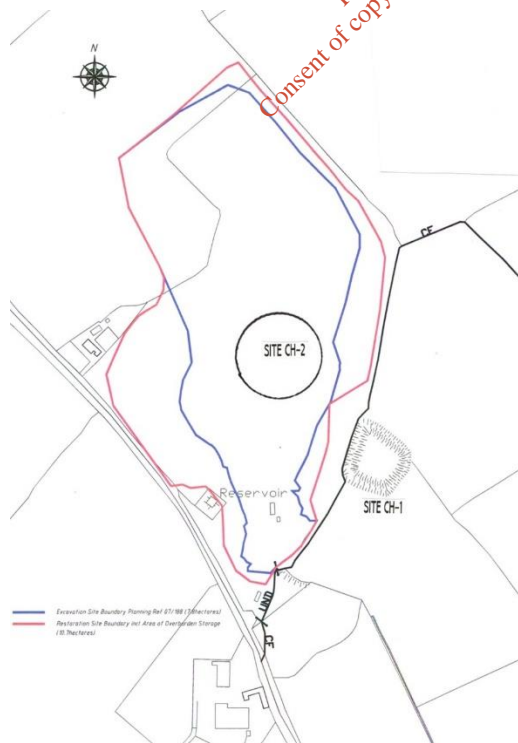
The townland name may derive from the Irish *An Bóthar Cúill* – The Hazel Road (Placenames Commission – [www.logainm.ie](http://www.logainm.ie)). Lewis (1837) notes that the civil parish of Rathangan at that time comprised 8872 statute acres, as plotted under the Tithe Act and that the principal seat within its limits was Tottenham Green, that of Geo. Tottenham, Esq. Griffith's Valuation of 1854 notes that the lands in the general area formed part of the estates of the Duke of Leinster and that the subject lands were leased by a Thomas Flood.

*No events of historical interest were noted in any of the documentary or cartographic sources examined during research undertaken with respect to the preparation of this report.*

Archaeological Heritage

There are a total of two sites of archaeological interest/potential, both listed as a Recorded Monuments as being located within the overall defined Cultural Heritage study area associated with the project (i.e. lands within the site boundaries and c. 100m surrounding such).

SITE No.	SMR No.	TOWNLAND(S)	CLASSIFICATION	ITM
CH-1	KD017-026	Boherkill Guidenstown North	Moated Site	669985 717520
CH-2	KD 017-038	Boherkill	Enclosure Site	669885 717570



**Figure CH-1 Locations of Archaeological Monuments CH-1 & CH-2**



The monuments are described as follows:

Site CH-1	Description
<p><b>SMR No:</b> KD017-026</p> <p><b>TOWNLAND:</b> Boherkill Guidenstown North</p> <p><b>CLASSIFICATION:</b> Moated Site</p> <p><b>ITM (from ASI):</b> 669985 717520</p> <p><b>PROTECTION:</b> RMP; KCDP;</p>	<p>This monument is located on a narrow tillage spur projecting west from the western foot of Grange Hill. It consists of a large fosse and bank, enclosing a rectangular area (c. 60m [NW bank] x c. 58m [NE bank]), with an entrance in the SW side. The bank is 1.5 – 1.7m high on the inside, dropping to c. 2.2m to base of fosse. The bank is steep sided and well defined; c. 2m wide at base and 1m wide at top. The base of the fosse is up to 1.3m below external ground level and is a broad U - shape in profile. It is 6-7m wide at ground level. Gaps in the NW bank close to the N corner and SE bank close to the E corner are probably modern. The interior is generally of a flat surface though very overgrown. Indeed, the banks and immediate area surrounding the site generally consists of dense growths of trees and bushes, as illustrated in Plate CH -1. A 30m buffer area along the western edge of the monument was established in advance of the commencement of quarrying activities, as illustrated in Plate CH2. This is largely still intact although there has been some encroachment near the north -western corner of the monument by the establishment of a retaining bund for a silt pond, as illustrated in Plate CH-3. The base of this bund is located c. 15m from the external north-western corner of the fosse.</p>



**Plate CH-1 SITE CH-1 (Moated Site) from southwest (Date: 2003)**





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***Plate CH-2 Buffer Area along western edge of SITE CH-1 (looking south)***



***Plate CH-3 Silt Pond Retention Bund located close to north-western corner of SITE CH-1 (looking north)***



BOHERKILL SAND AND GRAVEL QUARRY RESTORATION MAY 2016

Site CH-2	Description
<b>SMR No:</b> KD017-038 <b>TOWNLAND:</b> Boherkill <b>CLASSIFICATION:</b> Enclosure <b>ITM (from ASI):</b> 669885 717570 <b>PROTECTION:</b> RMP; KCDP	A possible circular enclosure was identified on aerial photographs from the archives of the Geological Survey of Ireland (R efs. GSI N425 & N426). The site is not marked on any O.S. or other historic maps and there were no surface traces of the possible monument noted during any surface reconnaissance of the site undertaken in advance of the commencement of quarrying activities . A programme of archaeological testing (Figure CH-2), undertaken by the writer in November 2003 (Licence No.: 03 E 1891), did not reveal any subsurface features associated with this possible monument. Likewise, subsequent monitoring of topsoil stripping/general ground reductions onto the surface of the underlying subsoil did not reveal any subsurface features, deposits or material of archaeological interest/potential. However, it was noted that the topsoil cover in this area was noticeably deeper than elsewhere within the present quarry pit and it is speculated that such led to more vibrant crop growth at this location and it was this that was noticeable in the aerial photographs.

Results of previous Archaeological Investigations

A programme of archaeological testing was undertaken at the site in November 2003 in compliance with a grant of planning (Kildare Co. Co. Plan Ref: 01/1270; ABP Reg. No.: PL 09.130086) with respect to the retention of an existing gravel pit and the extension of same to 2.83 ha for the extraction and dry screening of Grade 1c fill, new enlarged recessed entrance at existing double entrance, security hut with portaloo and all associated site works.

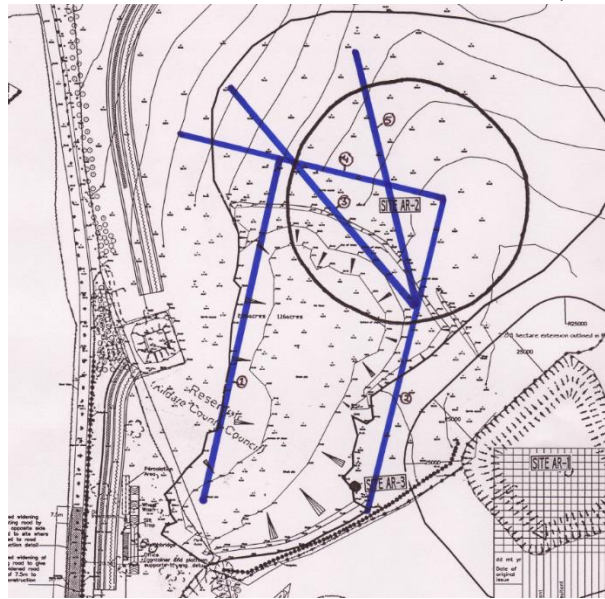
This comprised the excavation of five test trenches (Figure CH-2) within the overall extension area, with a concentration within the area of the possible enclosure site (SITE CH-2). Nothing of archaeological interest was uncovered during the course of such testing.

It had been noted that the topsoil was noticeably deeper within the general area of the possible enclosure site, and this was further verified during the course of topsoil stripping, undertaken on a phased basis from December 2003 – March 2006. It is speculated that the additional depth of topsoil in this area lead to a more vibrant crop growth in this area, relative to the immediate environs, and it was this variation that was noticeable in aerial photographs.

No features, deposits or artefacts of archaeological interest were uncovered during the course of either the Archaeological Testing or subsequent Monitoring programmes. Likewise, a subsequent surface reconnaissance survey of the remaining quarry lands, undertaken in 2006 in preparation of an EIS, did not reveal any possible features of archaeological potential.



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**Figure CH-2 Locations of Archaeological Test Trenches excavated in 2003**

**Reported Archaeological Artefacts**

A search of the Topographical Files of the National Museum of Ireland, together with published sources, was undertaken as part of the preparation of the report. No entries concerning the overall townland areas were noted.

**Architectural Heritage**

There are no protected structures within the meaning of the Planning and Development Act, 2000 and listed in the Kildare County Development Plan, 2011 - 2017, situated within the defined Cultural Heritage study area. Likewise, no structures of interest are noted in such study area by the National Inventory of Architectural Heritage.

**Development Impacts**

**Local History**

There are no significant historical events associated with the proposed development lands which have the ability to be impacted upon by the proposed development.

**Archaeological Heritage**

There are a total of two sites of archaeological interest/potential, both listed as a Recorded Monuments, located within the overall defined Cultural Heritage study area associated with the project. It is considered that the reinstatement and restoration of the quarry pit to its pre-development levels will have a positive impact visual impact on SITE CH-1, as the temporary visual impact on the site, caused by the existing nature of the quarry pit, will be removed.

Works associated with the removal of the silt pond bund adjacent the north-western corner of SITE CH-1 could potentially result in damage to fosse, particularly by soil run-off into the





feature. However, with the adoption and implementation of a specific mitigation strategy, it is considered that such moderate impact can be totally negated. Likewise, possible use of the buffer area for machinery access could cause a similar impact on SITE CH-1 but this too can be negated by the adoption and implementation of a mitigation measure.

#### Architectural Heritage

There are no protected structures within the meaning of the Planning and Development Act, 2000 and listed in the Kildare County Development Plan, 2011 - 2017, situated within the defined Cultural Heritage study area. Likewise, no structures of interest are noted in such study area by the National Inventory of Architectural Heritage. Consequently, no impacts in this regard will occur.

It is not considered likely that the development, as proposed, will cause any direct impacts to previously identified monuments or structures of archaeological heritage interest or potential. Likewise, no impacts, direct or indirect, will occur to any items of architectural heritage or historical interest.

However there is potential for indirect impacts to occur with respect to SITE CH-1 during removal of the silt pond bund adjacent its north-western corner or by the remains of the established buffer area being used as an access by construction vehicles. However, such possible impacts can be negated by the adoption of the following mitigation strategy and its inclusion as a specific condition of any Grant of Planning:

1. The existing buffer area between the western edge of the quarry pit and the eastern edge of the Moated Site (Site CH-1) shall be maintained during all reinstatement works. This should be marked by a series of temporary timber stakes. No construction of other vehicles should enter this area during the course of the subject reinstatement works, save for the works associated with Item 2 below.
2. Removal of the silt-pond bund should be undertaken under supervision of an archaeologist. Care should be taken to avoid soil run-off into the fosse of the Moated Site (SITE CH-1). In the event that such occurs then to should be removed by hand under archaeological supervision, ensuring that the present grass surface of the monument is not disturbed.

#### Re-Instatement Phase

The requirement for the continued retention of the 30m buffer zone adjacent SITE CH-1 will ensure that no impacts will occur to the monument. In addition, the requirement for archaeological supervision of the silt-pond bund presently located adjacent the north-western corner of the monument will ensure that no damage is cause to it during the course of such works.

#### Worst Case scenario

A 'worst case' scenario with respect to archaeological heritage would arise where the development was permitted to commence without any archaeological mitigation requirements being included in a Grant of Planning, without the appointment of an archaeologist to undertake and mitigation requirements or without the attendance of the archaeologist. In such scenarios, there is potential for accidental damage to be caused to SITE CH-1



### Residual Impacts

It is envisaged that the residual effect of the reinstatement of the quarry pit and its subsequent use for agricultural purposes will result in an enhanced visual setting to SITE CH-1 over that which presently exists.

## SECTION 10 LANDSCAPE

This section classifies and evaluates the existing landscape and visual resource, focusing on its sensitivity and ability to accommodate change. The existing / proposed restoration scheme was then applied to the baseline conditions to allow identification of potential impacts, prediction of their magnitude and assessment of their significance. Mitigation measures were then identified to eliminate and reduce, insofar as practical, potential environmental impacts.

### Existing Environment . Land Use

The application site and existing Sand and Gravel quarry are located within an undulating rural landscape. The predominant land use in the surrounding area is agricultural, principally pasture and tillage with limited forestry. In the immediate vicinity of the application site however, mineral extraction activities constitute a locally significant land use. Although sand and gravel extraction activities have been significantly reduced at the site, there are few large scale operations in the immediate vicinity.

There are a number of isolated residences in the area immediately surrounding the existing facility. There is a residence immediately west of the application site, another at the north-west corner of the site, three around the north-east corner of the site and one to the south of the site.



Location of proximate residences



The site is located in an area of rich pastoral landscape at the foothills of Dunmurray Hill, it is outside the recognised 'uplands' specifically identified in the Development Plan Rural Detail Map 'Robertstown Countryside'. The site does not appear to be located within a designated Area of High Amenity.

Kildare County Development Plan identifies the surrounding area as an area of specific landscape and visual interest. The area itself is referred to as "The Central Uplands or the Chair of Kildare"

The Central Uplands or the Chair of Kildare as the area is locally known consists of a number of hills that interrupt the continuity of the Kildare plains. This landscape character unit is located immediately north of Kildare town. The land rises to a maximum of 233m O.D. at Dunmurry Hill. The ridgeline of Dunmurry together with the ridgelines of Grange Hill (223m O.D.), Red Hill (197m O.D.), Boston Hill (159m O.D.) and Hill of Allen (219m O.D.) define the skyline of central Kildare and represent significant features on the landscape. The elevated nature of this area provides highly scenic views over the central plains and boglands of Kildare.

#### Cultural Significance

The Hill of Allen is of mythological significance, with the legendary Fionn MacCumhaill and the Fianna. It is supposed to have been the site of their camp, with the surrounding area as their training ground.

#### Land Uses

The Chair of Kildare comprises a number of landuses. Large fields within this area are generally used as pasture lands, however a significant amount of non-irrigated agricultural lands, mainly containing tillage, can also be found. Coniferous forestry represents another

significant landuse in the area, with some patches of naturally occurring vegetation, mainly at Allen and Dunmurry Hills. Allen Hill is characterised by the mineral extraction and quarrying activities on its north-western part. Similarly, Boston Hill has a large area of gravel extraction activities. A visually dominant feature of Red Hill is the telecommunication mast located on the hilltop.

Land parcels within this unit are of medium to large size, with generally well-maintained low hedgerows. Small villages such as Allen, Killeagh and Guidenstown, together with a dispersed pattern of rural houses and farm structures are indicative of a relatively high rural population density.

The boundaries of this unit are directly derived from the geology, subsoils (i.e. quaternary geology) and topography of the area, which largely coincide with the soils and landform and are further confirmed by the existing land uses.

#### Critical Landscape Factors

- Elevated Vistas

A number of regional and local roads run through this landscape character unit. The roads cross the upper and lower slopes of the hills and provide access to established residences as well as to Kildare town. As a result of the elevated road level and the generally low



vegetation, there are long distance and extensive views towards the surrounding lowlands and boglands.

- Slopes

The slopes of the hills that form the Chair of Kildare define the visual boundary of the adjacent lowland areas. Sloping land intensifies the visual prominence of any feature over greater distances, as in the case of the Hill of Allen, Red Hills, Dunmurry and Grange Hills. Slope also provides an increased potential for development to penetrate primary and secondary ridgelines when viewed from lower areas of the public realm such as the roads and population centres in this area.

- Prominent Ridge Lines

These occur as either primary ridgelines (visible only against the sky from any prospect) or secondary ridgelines (visible at least from some prospects below a distant primary ridge line). In this upland environment of the Chair of Kildare, nearly all ridgelines are primary when viewed from the surrounding lowland areas. Ridge lines perform the important roles of providing adjacent areas with visual identity, acting as dominant landscape focal points, and defining the extent of visual catchments.

- Undulating topography

Gently undulating topography is presented within the upland area of this character unit, particularly to the south (i.e. between Red, Dunmurry and Grange Hills). The physical shielding within the lee of hills can conceal relatively large new features, where it does not break the skyline. The dynamic and complex nature of undulating land has the potential for locally enclosed vistas.

- Low Vegetation

Low vegetation, represented in this unit by grassland, moorland and generally low hedgerows, is generally uniform in appearance, failing to break up vistas and allowing long distance visibility, thereby, providing an inability to visually absorb development.

- Shelter Vegetation

Shelter vegetation, represented in certain areas of this unit by coniferous plantations, provides visual screening, enclosing vistas and helping to provide a visual containment.

- Localised Canal Views

Canal corridors are generally visually enclosed and highly localised areas of very distinctive character with a high degree of visual consistency. The area has localised vistas to the Milltown Feeder of the Grand Canal that runs south of Hill of Allen and north of Grange Hill.

In the case of the application site at Boherkill, while extraction of sand and gravel has been greatly reduced, the resultant void has not been backfilled and restored and there are significant areas of bare exposed soils across the site. In assessing the visual impacts arising from the proposed restoration scheme, the main requirement is to assess the following:

- The views and viewers affected



- The distance of the view

The restoration works, and backfilling activities in particular, are expected to have only limited temporary visual impact due to the natural screening afforded the site by the surrounding landscape elements, a combination of the undulating topography and existing hedgerows. The phasing of the restoration scheme will minimise the area being actively restored and open to public view at any time due to the deep excavation and levels attained in the excavation phase. Only a limited extent of the restoration works, if any, will be open to public view, and where it is, this will be of an intermittent nature and as such will constitute a temporary, minor negative impact.

There will be no significant visibility of the existing or future landform from any of the viewpoints identified by the County Development Plan.

The restoration scheme will not have any significant impacts on designated scenic roads and viewpoints on account of its location; the intervening undulating topography; screening by hedgerows, the phasing of the works and the proposed mitigation measures. The scheme will not restrict or obscure any westward vistas along the adjoining local roads

The restoration scheme will not have any significant indirect impacts on designated tourism routes and viewpoints.

#### Other Roads and Residences, Hotels and Amenities

The visual aspects of the restoration scheme are primarily concerned with views from the closest residences and roads within the area. A photographic survey was undertaken which involved taking still digital photographs from a number of locations. The photographs were taken at eye level (c. 1.5 metres above ground level) at the points indicated, towards the development. The views are shown in appendix 8 of the main EIS.

Potential views from residences into the application site are and will be restricted to a small number of local dwellings. Many of these dwellings are fully or partially screened by a combination of the existing hedgerows (to be retained) and / or topography. The phasing of the restoration scheme and direction of backfilling has had regard to the need to minimise the impacts on views from nearby residences. Due to the separation distance and intervening topography, the impact on views from residences, if any, will constitute a minor to moderate negative impact for a limited duration during the restoration phase. In the longer term, the restoration of the site is likely to have a minor positive impact.

The application site is too distant to be perceptible from the Curragh or the racecourse at the Curragh (Major point of leisure amenity). Views toward the site will be drawn more toward the intervening extraction activities at a lower level. During the restoration works, there will not be any temporary visual impact on views.

The development will not have any significant indirect impacts on views from roads, residences, hotels and amenities.



The proposed restoration works will not be visible from any archaeologically significant sites in the immediate vicinity of the application site.

Throughout the restoration phase, plant, equipment and backfilled soil may potentially be slightly visible (although not assumed to be the case) immediately beyond the boundary, primarily because of its elevated position, proximity to the site and the absence of any screening by intervening vegetation or topography. This impact constitutes a moderate negative impact of extended (although not permanent) duration.

The development will not have any indirect impacts on identified sites and monuments of archaeological, architectural or historical interest.

The following landscape mitigation measures should be put in place to further eliminate and / or minimise any potential visual impact associated with the proposed restoration scheme:

- i) Retain all hedgerows along the site boundary and reinforce with additional planting where necessary.
- ii) Provide for off-site removal, re-use and/or recovery of all buildings, plant, infrastructure and paved surfaces on completion of restoration activities;
- iii) Ensure the final restored landform is graded at a shallow angle so as to merge in with the surrounding agricultural landscape.

These mitigation measures are in accordance with the recommendations provided in the DoEHLG (2004) publication 'Quarries and Ancillary Activities: Guidelines for Planning Authorities'.

Overall, it is considered that the potential for negative visual impacts arising from the restoration of the former sand and gravel quarry will generally be limited on account of

- the physical distance between the site and publicly accessible areas
- the existing undulating topography
- the phasing and direction of backfilling during the restoration works
- the positioning of temporary site infrastructure and
- the final restored profile of the site.

#### Photographic Representation of Visual Impacts

For a photographic representation of the visual impacts of the proposed facility please revert to Appendix 8.0 to view all photos.





## SECTION 11 TRAFFIC

A Traffic Report was prepared relating to the proposed reinstatement operation of an existing gravel pit facility at Boherhill, Rathangan, County Kildare. This existing gravel pit was granted planning permission by Kildare County Council (Planning Ref: 07/188) in August 2008. On 12/08/2015 via Planning Ref 15/515, Kildare County Council approved the extension of the current operations of the quarry by 5 years to 2020, allowing the proceedings from PL 07/188 to be extended.

Specific to this planning application Kildare County Council set out 3 traffic and transportation related planning conditions within this grant of permission.

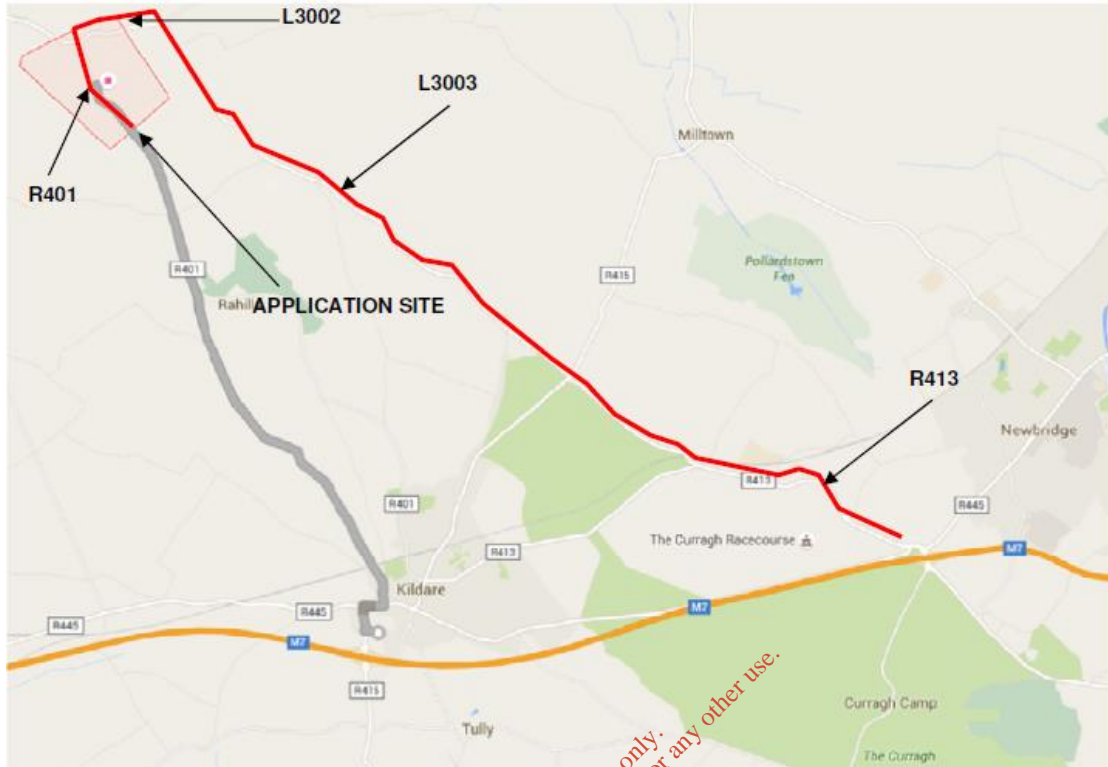
They were:

- Condition 2 d) related to a maximum of 50 inbound and outbound vehicles in both directions accessing the site per day.
- Condition 17 related to lines of sight within the site access being in accordance with the Design Manual for Roads and Bridges.
- Condition 23 related to the erection of advance warning signage being erected 150.0 metres either side of the site access

The gravel pit site is bounded to the west by the R401 which functions as an 80kph regional road within Kildare County Council's road hierarchy. Along the length of the R401 vehicular access is provided to individual residential properties, farm holdings and agricultural farmlands with all of these access points taking the form of simple gated agricultural access points or simple priority 'T' junction arrangements. Thus, it can be considered that the principle of direct vehicular access to serve land use development from this road is well established in this area.



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The existing gravel pit site is accessed from the R401 by means of a wide simple priority 'T' junction. This access also contains a localised widening of the R401 to 7.5 metres for a general distance of 50.0 metres upstream and downstream of the site access 4.5 The general layout of the existing access and the localised road widening of the R401 in this area is shown within Photograph 1.0, Photograph 2.0 and Photograph 3.0 below:



Photograph 1.0: Southbound view into R401 from existing gravel pit access.



Photograph 2.0: Northbound view into R401 from existing site access.



Photograph 3.0: View to the east from R401 into existing site access.



It can be seen from the above that the roads and traffic conditions assigned to the grant of planning permission for the gravel pit have been fully implemented. In addition this access has been designed to a standard that provides sightlines within the site access that accords with the standards set out with the Design Manual for Roads and Bridges.

In traffic terms the heavy vehicles associated with the proposed reinstatement of the gravel pit can be regarded as already accessing this site from the adjacent road network albeit removing gravel product under the current planning permission.

As such the traffic impact of reinstating the gravel pit can be regarded as neutral.

The report suggests a series of mitigation measures which are recommended for implementation by the Local Authority via the planning permissions.

The report concludes that the level of daily heavy vehicle trips proposed is less than permitted under the current planning permission and can be readily accommodated within the existing road network.

## SECTION 12 MATERIAL ASSETS

The baseline study of the area with regard to material assets involved a general assessment of the local road network around the application site, economic activities, commercial properties and housing in the area. Information presented is based primarily on observations made during a site visit to the area in November 2015 and January 2016 and information obtained from the internet.

The application site fronts onto a relatively lightly trafficked local road which has a number of one-off residential units located intermittently along it. This local road runs northwards on the R401 Regional Road. A relatively high proportion of the traffic along the local road is HGV traffic generated by restoration activities at the application site. There is no other transport infrastructure in the vicinity of the site.

Overhead electrical supply and telephone cables run along the local road beyond the southwestern boundary and also parallel to the hedgerows on along the western and southern boundaries.

The application site is located within a rural agricultural landscape. The final restoration of the site will restore the agricultural landscape to its original, pre-extraction state. The backfilling operation at the site will not impact on, or interfere with, any established agricultural activities at surrounding landholdings.

There are no tourist attractions or sites of interest in the immediate vicinity of the application site.

The only facility of any recreational or leisure interest is the Curragh Racecourse which is located approximately 1km west of the site. Race meetings are only occasionally held at the course.



The Curragh itself represents a large open commonage plain used for galloping horses and as an amenity for walking enthusiasts runners and sports activists alike. It's frequency of use is daily.

The proximity of the area to the towns and employment centres of Kildare, Naas, Newbridge and Dublin further beyond, coupled with lower local house prices have contributed to population growth in the area, which may be considered as part of the Greater Dublin housing market. Most of the housing in the area has been now established for several (>5 ) years.

The sand and gravel deposits beneath the application site are classified as a locally important gravel aquifer .Lg. by the National Aquifer Map. This deposit can store and transmit relatively large quantities of groundwater due to its relatively permeable nature. It is not likely that many of the local houses in the vicinity of the application site source drinking water from this aquifer as they are on mains supply predominantly.

#### Short-Term Impacts

As the application site has functioned as a sand and gravel quarry for more than 15 years, there are likely to be few additional short-term impacts arising from its continued operation. The level of HGV movements to and from the site will remain at or more likely below present levels. There will also be no short term impact from increases in existing traffic movements to and from the facility, during the installation and commissioning of site infrastructure as there is no construction works planned per say or no major infrastructural changes planned save the proposed restoration itself.

The backfilling activities at the site, present a number of risks to groundwater including fuel spillage, increases in suspended solids in run-off and placement of a rogue load of contaminated soils. Overall, these risks are likely to constitute a minor to moderate negative impact.

There may be some short-term impacts at residences proximate to the site with the most noticeable short term impacts will be increased ambient noise and dust levels. The suggested mitigation in the main EIS measures if implemented will ensure no negative short term impacts.

The continued backfilling of the former sand and gravel quarry will have little impact on the existing public road network, other than an increased traffic hazard if HGV.s egressing the site carry mud onto the road.

There will be no impact on the existing electricity or water supply infrastructure.

The operation of waste recovery activities at the application site will have no impact on established activities or housing nearby.

There are no other commercial operations in the immediate vicinity of the site.

In the absence of any local tourist attractions or established tourist / leisure activities in the area, there will be no impact on local tourism.



There will be no detrimental impact on established activities at The Curragh Racecourse.

Given that all the materials used in the restoration of the site will be completely inert and that specific measures will be implemented to ensure this, there will be no long term risks of soil or groundwater pollution and no detrimental impacts on land values or residential property value.

It is arguable that the infilling of a large and unsightly void may actually enhance property values in the immediate vicinity of the site in the longer term.

In the long-term, backfilling of existing temporary groundwater ponds with granular fill or processed secondary aggregate and a significant depth of inert impermeable, cohesive soil (predominantly glacial till) will increase protection to, and reduce the vulnerability of, the existing groundwater aquifer to contamination risks associated with accidental chemical spills and agricultural or animal wastes.

It is suggested that the following mitigation measures are implemented:

Warning notices, speed restriction signs and construction traffic signposting which is established will be reviewed along the existing local road network to direct traffic to the proposed facility. Signposting will also be erected along roads within the application site in order to maintain a safe and orderly traffic regime at the site. All construction traffic exiting the site will pass through a wheel wash, thereby minimising amount of mud and soil carried onto the local road network.

Measures to minimise groundwater, noise and dust impacts at nearby residences will be implemented when active backfilling operations are under way in the immediate vicinity thereof.

#### **NON-TECHNICAL SUMMARY CONCLUSIONS:**

The non-technical summary has assessed all of the potential impacts of the proposed development aiming to restore the existing sand and gravel quarry back to agricultural land via the importation of inert construction and demolition derived waste material. In each discipline and environmental aspect there have been a series of potential impacts identified, quantified in some instances and where deemed possible mitigated against. No serious or long term adverse impacts have been identified and no significant changes to the current environmental situation have been identified.